

PARIAHS AND PROLIFERATION: ISRAEL AND SOUTH AFRICA

BY

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

DEGREE OF MASTER OF ARTS

DEPARTMENT OF POLITICAL SCIENCE

CALGARY, ALBERTA

April 12, 1989.

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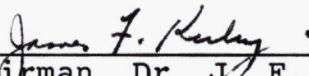
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ISBN 0-315-50315-7


THE UNIVERSITY OF CALGARY

FACULTY OF GRADUATE STUDIES

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## ABSTRACT

Essentially there are two theoretical orientations towards the study of nuclear proliferation, one predicated on the belief that technology provides the dynamic for "going nuclear", the other positing that it is compelling motivations which propel and give shape to the proliferation process. The appropriateness of a technological conceptualisation of proliferation is particularly contentious as it applies to states which have compelling motivations to "go nuclear" and in which it might seem that motivations define a need to develop the requisite nuclear technology. As it is states with the most vivid motivational profiles which constitute the greatest threat to the integrity of the non-proliferation regime there is a need to acquire an understanding of the proliferation process as it operates within states confronted with serious security or political problems. This study is therefore concerned to analyse the alleged proliferation of two so-called "pariah" states, Israel and South Africa.

The object of the study is to establish which of the various theories advanced as accounting for proliferation provides greatest heuristic leverage on the

specific question of whether capability drives motivation or vice-versa. Access to this concern is achieved by detailing the proliferation processes presumed by the relevant theories - motivational, technological, and *sui generis* - and deriving from this exposition of the processes decision-rules which form the criteria for assessing which theory best accounts for proliferation.

Application of these decision-rules reveals that a motivational dynamic accounts for the proliferation of both Israel and South Africa, though technology and certain idiosyncratic elements were also evident in, but by no means crucial to, the process. The cases of Israel and South Africa seem to indicate, therefore, that the proliferation of pariah states is motive-driven, with technological and idiosyncratic aspects mediated through the broader motivational dynamic.

Accordingly, the non-proliferation regime's supply-side focus appears rather akin to treating the symptoms of the problem rather than the cause. On a theoretical level, manipulating the motivational side of the proliferation equation seems to offer the most efficacious approach to the task of formulating non-proliferation policies, but such are the political problems involved in this endeavour that this approach is by no means assured of practical success either.

## ACKNOWLEDGEMENTS

I would like to express my appreciation to my thesis supervisor Dr. J. F. Keeley for his guidance and help in the preparation of this study. His approachability and enthusiasm have been exemplary throughout and his cogent criticisms and advice have greatly improved the quality of the finished product. I am similarly indebted to the University of Calgary's Department of Political Science for affording me the opportunity of studying in their graduate programme and in particular to Departmental Head, Dr. Roger Gibbins, for easing the path of an innocent abroad.

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## INTRODUCTION

Nuclear proliferation has, virtually since the end of the Second World War, been a persistent concern to American and Soviet policy-makers in their role as chief architects of the existing non-proliferation regime and, as objects of their policies, to the 130 or so states which have expressed a similar concern by signing the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The fear of nuclear weapons falling into the "wrong hands", particularly the hands of states deemed to be irresponsible or located in the world's most crisis-prone regions, has generally been viewed with some foreboding, it being felt that the dissemination of such destructive potential was inimical to prospects for world peace. Reflecting on the Partial Test Ban Treaty which had, perhaps, a limited non-proliferation rationale but which was presented to the public almost exclusively in these terms, President John F. Kennedy invoked a sense of urgency by stating:

Personally I am haunted by the feeling that by 1970 unless we are successful, there may be ten nuclear powers instead of four, and by 1975, fifteen or twenty.....I see the possibility in the 1970s of the President of the United States having to face a world in which fifteen or twenty or twenty-five nations may have these weapons. I regard that as the greatest possible danger and hazard.(1)



President Kennedy's rather bleak prognosis was implicitly based on the assumption that the dispersion of scientific expertise, engineering skills, and sophisticated nuclear technologies was an appropriate barometer of future weapons acquisition. As nuclear weapons were perceived to have unquestioned military utility and, in being consonant with great power status, constituted seemingly a new index of prestige in international affairs, it was felt that all states would endeavour to acquire them. Thus capability was seen as being virtually synonymous with proliferation, an understanding of the problem which tended to produce the corollary view that proliferation could only be prevented or forestalled by erecting technical barriers and restricting the dissemination of sensitive technologies. In the event, the NPT/IAEA regime developed along rather different lines. Rather than denying access to the requisite technology the non-proliferation regime sanctions safeguarded-access, in the sense that the non-nuclear weapon states (NNWS) are assisted in exploiting the peaceful potentialities of nuclear power in return for a commitment not to attempt to develop nuclear weapons.

One can perhaps discern, however, in the development of the non-proliferation regime, a movement

away from an exclusive concern with the proliferation of nuclear weapons to a growing concern to inhibit the proliferation of nuclear capabilities. In attempting to tighten the safeguards system and attach more stringent conditions to the receipt of nuclear goods the activities of the Nuclear Suppliers Group (NSG) and the International Fuel Cycle Evaluation (INFCE) seemed to be indicative of such a shift in emphasis towards more restrictive practices.(2) Reflecting a similar desire, indeed constituting the apogee of the process, was President Carter's 1978 Non-Proliferation Act which, amongst other things, denied access to U. S. nuclear technology to NNWS which failed to place full-cycle safeguards on their nuclear facilities. This is not to suggest that technological denial is the new non-proliferation ethic, but such developments do illustrate the extent to which non-proliferation policies focus on supply-side as opposed to demand-side considerations. Perhaps because the problems seem to be so intractable, no attempt is made to address political factors in the proliferation calculus. In short, the emphasis is very much on sensitive technologies to the exclusion of the politico-security concerns of states sensitive to a threatening international environment.

Yet the denouement has been rather different from

what might have been expected from President Kennedy's predictions, and the very success of the non-proliferation regime (if, indeed, it can be held to account for the fact that since the NPT came into force only one state, India, has openly demonstrated a nuclear capability) seems to vitiate the logic, if not the intent, of efforts to construct a technology-based non-proliferation edifice. Rising levels of proficiency in nuclear technologies across the globe, whether resulting from the gratuitous giveaway of "peaceful atoms" under the remit of the IAEA or as sanctioned by the NPT, or deriving simply from national economic and scientific development, have not resulted in rampant proliferation. According to Stephen Meyer, as of 1982 thirty-six nations had acquired a capability to manufacture nuclear weapons,(3) but only five of them (if one excludes India on the grounds that it appears not to have developed an operational nuclear capability) have actually chosen to exercise this option. Such laudable abstention, uncharacteristic in security affairs, cannot readily be accounted for if technology is regarded as being the sole catalyst of proliferation.

It seems apparent, then, that capabilities and intentions need not be congruent and that the possession of a nuclear weapons capability implies no probability that it will be exercised. In order to explain

proliferation one perhaps has to factor exigent motivations and foreseeable and threatening contingencies into the calculus; proliferation should thus be placed in a foreign policy context and be regarded as a state's response to the strategic and political climate within which it operates. There is therefore nothing inevitable or inexorable about proliferation; not all states want nuclear weapons, and in considering the option they undertake a rational cost-benefit analysis based on the perceived incentives and disincentives attendant upon proliferation. Consequently, many states have abjured nuclear status for a variety of strategic and political reasons. The Federal Republic of Germany, for example, is aware that its acquisition of nuclear armaments would constitute a *casus belli* for the Soviet Union while, in a rather different vein, nuclear weapons are constitutionally proscribed for Japan. In any case, given these circumstances, both are quite content to be protected by the United States' strategic umbrella. From this perspective, whether states choose to activate their nuclear options depends upon the pressures to which they are subjected. If these pressures are sufficiently demanding, a state may decide that its interests are best served by acquiring nuclear weapons and the proliferation process may, therefore, be characterised as one of

motivational-technological convergence.(4)

This study arises from the belief that the latter formulation provides the more perspicacious and compelling account of proliferation. The significance of embracing this conceptualisation of proliferation is palpable given that the non-proliferation regime addresses only the technological side of the proliferation equation. In short, the implication is that the non-proliferation regime, while valuable in certain respects, nevertheless fails to sufficiently take into account or constrain those states which most threaten to infringe it - that is, those with distinct motivational profiles. Moreover, in practical policy terms, bearing in mind that very many states have mastered the requisite technology to manufacture nuclear weapons, there is surely a need in studying proliferation to focus increasingly on "Nth" country motivations.

My intention then, is to apply Meyer's typology of proliferation theories - proliferation as a technological imperative, as a result of existing motivations, and proliferation as a *sui generis* decision(5) - to two of the so-called "pariah" states, Israel and South Africa, in order to see which theory best accounts for their alleged proliferation. Essentially, the issue revolves around certain key questions:

(1) Most fundamentally, is it the case that technology is the real dynamic behind proliferation? In other words, does the process of nuclear development create an existential logic which ineluctably pushes a state towards acquiring an operational nuclear capability?

(2) Alternatively, is technology a necessary, but not sufficient, condition for proliferation, the real catalyst of which is the pressures projected onto a state by its international milieu? Accordingly, notions of threat, power, and prestige are what really count, as if the motivation is strong enough the technological obstacles interposed between precipitant and capability will prove to be surmountable. Eventually, capability will converge with motivation, though significantly it is the motivation which defines a need for, and gives shape to, a weapons programme.

(3) The final possibility is that the search for universally applicable underlying precipitants is misplaced. Proliferation decisions are all unique; the elements involved in each case may be similar, but they coalesce in a random fashion which dictates that there is no pattern to proliferation decisions.

Although for analytical purposes they are treated as being conceptually distinct, in logical terms there is a good deal of overlap among the theories. Indeed, there

would appear to be considerable validity in the assertion that the technological imperative and *sui generis* models are simply variations on a motivational theme. The relevant motivations may manifest themselves differently, may be prominent in some and latent in others, but in each case motivations can be identified. In technological explanations, for example, technology, paradoxically, becomes in itself a motivating force; essentially it plays the role of self-fulfilling prophecy, in the sense that proliferation being achievable becomes the very reason that it is achieved. The process denoted here is distinguished from that of the "motivational" hypothesis in that capability has a driving effect on motivation rather than motivation defining a need to produce a commensurate capability. Similarly, the *sui generis* model can be regarded as a special case of a broader motivational model in which the overall picture of cause and effect relationships is somewhat obfuscated by the innumerable constellations of contextual variables potentially involved. Thus, while I shall tease out certain key differences between the theories in order to facilitate testing, it should be borne in mind that these are differences of emphasis, not of kind.

Why focus on pariah states? Indeed, what exactly are pariah states? The most comprehensive description of

the defining characteristics of a pariah state is that of Harkavy, and is worth detailing in full:

(1) A rather small and weak nation, actually or potentially outnumbered by its surrounding adversaries, in an exposed position due to weak, waning or nonexistent support from its big-power benefactor(s) to which it may be - or is - a liability.

(2) A nation whose very national origins and legitimacy - or present constitutional status - is widely questioned, variously on grounds of borders, the splitting of a "nation", or a conflict over self-determination, racism, ethnic minorities, etc.; that is, its present national status within its own defined borders is at issue.

(3) A nation with objectively poor diplomatic leverage and, therefore, not considered a good alliance partner by the major powers (to the contrary, a liability). It relies primarily on the momentum or credibility of relationships earlier formed, or on mere sentimentality, or perhaps weakly on some objective factor such as the availability of strategic bases.

(4) A nation with precarious, perhaps sole, sources of conventional arms supply and which is too small or underdeveloped to provide a significant proportion of its arms needs through indigenous production; also, very vulnerable in a crisis to cutoffs of spare parts or to denial of weapons resupply. Hence, there is some incentive to develop weapons of mass destruction as an "equaliser".

(5) A nation faced with adversaries having solid support from a major power, which support it cannot match. (6)

The states most commonly alleged to exhibit these characteristics, with varying degrees of cogency, are Israel, South Africa, Taiwan and, to a lesser extent, South Korea. (7) One can, perhaps, cavil over Harkavy's criteria, but it would nevertheless appear to be the case that the phenomenon of the "pariah" state has been



reasonably well articulated and that the pariahs constitute a distinct type of actor in international affairs.(8) Definitional details aside, the animating concept of this phenomenon is enshrined in the connotations of the epithet "pariah". Such a label is evidence of the contumely with which these states are addressed, and of the censure in which they are held by the vast majority of the international community. Such manifest disapprobation derives, of course, largely from the question of legitimacy, or lack thereof, as it pertains to the pariah states as presently constituted.

Leaving aside any judgements as to their internal policies, it is nevertheless apparent that this observation is especially pertinent as it applies to Israel and South Africa. It is precisely the perceived character of both states, and the related point that their very right to exist is so vehemently contested, which renders their strategic horizons so threatening. If, to borrow Betts' marvellous apophthegm, those states with the most significant security problems can be classified as "paranoids, pygmies and pariahs", it is the pariah states which occupy the most inauspicious position because "they combine the disadvantages of pygmies and paranoids along with more visceral and unremitting opposition by their regional enemies and growing isolation from the rest of

the world".(9) Hence the link between pariahs and proliferation: pariahs have the clearest incentives to produce a nuclear "equaliser" and the least to lose in doing so.

Israel and South Africa have been selected as case studies simply because it is felt that they have, in a particular meaning of the term, "proliferated". Whereas South Korea and Taiwan have been protected and constrained by security guarantees from the United States, Israel and South Africa have largely been forced to confront their security dilemmas alone.(10) One aspect of their response to this situation has been the development of what have been termed "bombs-in-the-basement" or "instant options", denoting an undisclosed nuclear weapons capability. The physical status or deployment mode of these options is academic; if either Israel or South Africa should have need of nuclear weapons they would be available virtually immediately, a reality which is to all intents and purposes tantamount to proliferation. The issues to be addressed, then, are why did they resolve to "go nuclear", and to which model of proliferation do their experiences conform?

It may seem that the selection of these cases builds something of a bias into the study, for, in occupying central positions in the Middle-Eastern and

southern African crucibles of conflict, Israel and South Africa appear to be prime candidates for motivational proliferation. The issue, however, is not altogether cut-and-dried. In purely logical terms, there is no reason for the technological model to be exempted from explaining those cases with which it seems to rest most uneasily, an assertion which perhaps accounts for attempts that have been made to treat the proliferation of pariah states under the rubric of technological explanations. Steve Chan, for example, in articulating a technological momentum hypothesis, has observed that "in the absence of a clear and firm commitment by the top executive to nonproliferation, a country is likely to drift to a *de facto* nuclear status. And...there are few incentives and many disincentives for the policy-maker of the pariah state to make this commitment".(11) Nevertheless, it seems to be a reasonable formulation and an appropriate test of the theories, to regard Israel and South Africa as most likely cases to conform to the motivational hypothesis and correspondingly least likely to bear out a technological explanation. Thus, if the motivational hypothesis is not validated, one would have to conclude that it is seriously flawed; if it does not fit these cases, then it probably would not work for others.

My approach to the study is quite straightforward,

Chapter 1 being a discussion of its theoretical premises and Chapters 2 and 3 respectively being attempts to apply the theories to the cases of Israel and South Africa. In Chapter 1, then, I begin by discussing what proliferation can be held to mean and suggest that conducting a nuclear test is little more than a rite of passage into the exclusive nuclear club, not a particularly meaningful measure of proliferation. Rather, possession of what I have termed an "effectual nuclear capability" - the ability to deploy nuclear weapons within hours or days if need be - is taken as the benchmark of proliferation. I then proceed to discuss in some detail the logic upon which Meyer's typology of proliferation theories is based, before highlighting the key, distinguishing themes of the rival paradigms. This process then informs the articulation of decision-rules which form the criteria against which to assess the alleged proliferation of Israel and South Africa.

The case study chapters essentially divide into descriptive and analytical sections. The descriptive task is that of tracing the evolution of the countries' nuclear policies and capabilities and is essential in order to date the acquisition of an effectual nuclear capability and to map any possible relationships between developing nuclear capabilities and the intent to put them to

military use. The efficacy of this approach is best illustrated in the case of South Africa where a paucity of relevant information with regard to the nuclear decision-making process means that one has to effectively adduce the impulses lying behind certain key decisions with reference to contemporaneous circumstances. In this respect, an account of what was acquired and when is of crucial import.

The analytical section is comprised of a discussion of the postulated motivations for the acquisition of nuclear weapons, an account of why the relevant decisions were actually taken, and lastly, the groundwork having been laid, the application of the decision-rules. Finally, in the Conclusion I venture some generalisations about the process of proliferation in the peculiar circumstances of pariah states and suggest some implications for the non-proliferation regime as presently constituted.

It is perhaps prudent to note, however, that problems normally associated with research, particularly with regard to the veracity of information and the credibility of its source, are exacerbated in a study of this nature. The contention upon which this study is based - that Israel and South Africa have, in the most meaningful sense of the term, proliferated - is virtually

universally attested to in the reputable proliferation-related literature. Less certainty, however, can be ascribed to a description of the physical status of their respective nuclear capabilities. This is the case, firstly, because both the Israelis and the South Africans have a vested political interest in perpetuating a sense of ambiguity with regard to their nuclear precocity and, secondly, because of a tendency towards polemics which often manifests itself in studies of these particular countries. The result is that the literature on this topic is extremely short on clearly reliable information and expansive with regard to speculation. Alan Dowty's comments on Israel are particularly germane in this respect, and can be taken as applying in equal measure to South Africa:

Given the deliberately developed fog that envelops the subject, it is hardly surprising that experts must speculate, but the inventiveness of the speculation is sometimes astounding. Problems of evidence are solved by citing other experts' opinions, which in turn are based on other unconfirmed reports, creating a "preponderance" of opinion. "Israel apparently has been actually building nuclear weapons" says one typical recent study that was widely published as a scholarly finding. On closer examination the "evidence" is the same body of speculative literature."(12)

I have therefore attempted to pass a rather jaundiced eye over some of the more elaborate and unsubstantiated claims which abound in "analyses" of

Israel's and South Africa's nuclear capabilities and intentions. Much of the detail contained in the case-studies - though not, one believes, the premise of proliferation having occurred - must, however, be acknowledged as speculative in nature. This having been said, I have made every effort to rely on the more circumspect accounts of recognised experts in the field, sources which betray no suspicions of polemical intent and in which unavoidable speculation is at least informed by appropriate technical and political frames of reference.

## THEORIES OF PROLIFERATION

### What is Proliferation?

While the phenomenon of nuclear proliferation would seem at first glance to be rather straightforward, indeed self-explanatory, it is in fact multi-faceted, a phenomenon tractable to various interpretations and prone, therefore, to be approached with terms of reference which are judiciously imprecise. Cognisant of the tendency to discuss proliferation in somewhat imprecise or occasionally inappropriate terms, I will try to explain in some detail what can be understood by the term "proliferation", and what criteria are therefore appropriate in discussing and attempting to ascertain the nuclear status of Israel and South Africa.

Self-evidently, this study is concerned with horizontal as opposed to vertical proliferation.(1) The rather arbitrary nature, alluded to previously, in which horizontal proliferation (henceforth simply referred to as proliferation) is occasionally conceptualised, is a function, perhaps, of the inadequacy of its definition as enshrined in the NPT. The NPT defines a "nuclear weapons state" as one that had manufactured and exploded a nuclear weapon or explosive device prior to the cut-off date of



January 1, 1967, thus designating a nuclear test as the threshold which distinguishes between proliferator and non-proliferator. While this seems logical enough, it is, nevertheless, a rather inflexible characterisation of proliferation, one which delineates nuclear status but fails to accommodate or give insight to the diverse activities entailed in "going nuclear". The result of this apotheosis of a nuclear test as the benchmark of proliferation status is a failure adequately to account for the disparities which exist between states with regard to the level and extent of their nuclear development. There are, for example, great differences amongst the nuclear powers with regard to the size, structure and sophistication of their nuclear arsenals. A very significant threshold then divides these states from the non-nuclear majority amongst whom there are, in turn, innumerable combinations of capabilities, motivations and intentions. Whether or not a state has conducted a nuclear test would therefore seem to be a rather arbitrary and not especially meaningful measure of proliferation.

In addition to being analytically obtuse, the emphasis on nuclear tests greatly exaggerates their practical military significance which, in merely announcing the successful completion of prior research, is certainly not of an order consistent with the instant

metamorphosis to elite status conferred by the NPT. Given that all previous nuclear tests have been successful, and that modern computer simulation techniques give an accurate assessment of the technical characteristics and reliability of nuclear weapons, recourse to testing, especially of weapons of basic design, is certainly not essential.(2) This point is of quite profound significance for this study, which is based on the premise that Israel and South Africa have in some sense of the word "proliferated". By not openly conducting, or at least admitting to, a nuclear test,(3) they have not been anointed as such, but it is important to note that they have been willing to forego what has been characterised as the "initiation ceremony"(4) simply because, for them, public membership of the club entails more costs than it confers benefits.

An alternative to the analytical poverty of conceptualising proliferation as a discrete event is to think of it instead as being a process. Thus, rather than having a distinct line of demarcation separating the have's from the have-not's, one can ask in a meaningful sense how "proliferated" a state is. Schelling, for example, suggests that rather than giving a yes or no answer with regard to delineating nuclear status, one ought to think of proliferation in terms of a

time-schedule; accordingly, he notes that "the answer will be a chart, giving the number of weapons of certain energy yields and certain physical characteristics that could be available after elapsed hours, days or weeks from the decision to assemble them." (5) Such an approach provides for a more differentiated and detailed account of nations' nuclear development and provides the underpinning logic for efforts to produce such measures of proliferation as capability ladders, each step up the ladder representing progress towards the acquisition of a nuclear capability.

The concept of a capability ladder has definite heuristic utility but is too one-dimensional to provide a comprehensive account of the proliferation process. The exclusive focus on capabilities occludes any effort to consider other variables, notably motivations, and implies, occasionally unintentionally, a technology-driven model of proliferation. An important exception in this respect is an attempt by Potter to marry the hypothesised motivational dimension of proliferation to the logic of the capability ladder. This conceptualisation indicates that, in certain cases, these two aspects - capabilities and nuclear propensities - coincide to produce proliferation decisions. (6) Potter's representation of the proliferation process appears to be exacting and compelling but, as it essentially postulates what I hope

to test with regard to Israel and South Africa (i. e. that proliferation can be seen as a process of technological-motivational convergence), it presumes a certain outcome and therefore provides an inappropriate standard against which to assess their alleged proliferation.

It is, however, possible to embrace a rather different conceptualisation of the proliferation process, one which remains efficacious but which is also empirically valid. The proliferation process can, for example, be accurately depicted as an outward manifestation of a state's decision-making process. It is, after all, generally the case that a state's nuclear capability is derived from executive decisions with regard to investing the requisite time, energy and resources. Even in those cases in which a latent capacity evolves as an unintended, if not unwelcome, byproduct of economic development, the manner in which this capability is disposed of is entirely at the discretion of the government.

Decision-making is thus absolutely fundamental to the development of a nuclear weapons programme, and two decisions in particular - the proliferation decision and, to a lesser extent, the capability decision - are central to the process. A capability decision, according to

Meyer, is "an explicit government decision to develop a latent capacity that provides an indigenous capability to implement and support a nuclear weapons programme,"(7) while a proliferation decision, quite simply, is "an explicit government decision... to transform a latent capacity into an operational capability."(8) This, of course, is the crucial step in the proliferation process, though it should not be assumed that it necessarily follows a capability decision. The two can occur in conjunction, such an occurrence denoting that a state set about acquiring a latent capacity with the express intention of manufacturing nuclear weapons. The Bhutto government of Pakistan provides such an example, having apparently made simultaneous capability and proliferation decisions in the early 1970s.(9) Alternatively, and most commonly, a state may make a capability decision but not proceed with a proliferation decision. Thus, it develops a "nuclear option" but chooses not to activate it, although it always has recourse to it should it ever be needed.

For the purposes of this study proliferation is regarded as having taken place in Israel and South Africa in that each possesses, for want of a better expression, an effectual nuclear capability. This should not be confused with what Meyer has identified as a "latent

capacity", which simply denotes that a state possesses the nuclear materials and industrial-scientific expertise upon which to base a nuclear weapons programme; no inference is made with regard to a state's intentions, so a latent capacity simply refers to an unrealised potentiality. An effectual nuclear capability denotes that a weapons programme has been undertaken and the relevant technical obstacles overcome, so enabling a state, if it chooses, to deploy nuclear weapons. Thus the latent capacity has been activated by a proliferation decision, this being indicated by efforts with regard to warhead design, delivery systems, bomb construction and so on. Nuclear weapons need not actually be deployed; it is enough that a capacity exists such that bombs could be produced or assembled within hours or days. The difference here is very significant: according to my account of the proliferation process, proliferation can be identified at the precise moment at which the capability to give meaning to the proliferation decision emerges; according to the process implied by Meyer, however, it is the capacity to produce nuclear weapons which is of crucial import. Yet there is a significant time-lag involved in progressing from latent capacity to effectual capability, and it is this crucial intervening period which ensures that it is the latter condition which constitutes the more authentic.

indicator of proliferation.

There are several advantages to this conceptualisation of the proliferation process. Moving from the general to the specific, these include:

(1) It presupposes neither a technological nor motivational model of proliferation, as in both cases proliferation decisions are taken, albeit for different reasons. If a proliferation decision precedes the acquisition of a nuclear option then this is clear evidence of motivational proliferation, while both technological and motivational explanations are potentially valid if the sequence is reversed.

(2) Focussing on an effectual capability enables one to establish more clearly the date of proliferation and thus allows greater certainty in discussing potential motivations and ascertaining cause and effect.

(3) Such an approach obviates the need to divine in minute detail the exact physical status of the alleged Israeli or South African "bombs in the basement". Given that they both possess the necessary technology and materials, it is the decision to put them to use which is of crucial import and, if such a decision has been taken, the conjectural exercise as to whether their "weapons" are assembled, unassembled, or a "screwdriver-away" from operational readiness is entirely academic. What matters, surely, is

the availability of nuclear weapons should they ever be required, an availability which, for technologically-advanced states such as Israel and South Africa, is a function of their having taken a proliferation decision.

### Proliferation Theories

My intention is to analyse Israel's and South Africa's putative proliferation in the context of Meyer's classification of proliferation theories - technological imperative, motivational and *sui generis*. These rather general theories have been culled from the available literature, but it may be appropriate, in order to explain some of the logic and arguments upon which they are based, to enlarge the picture somewhat and, by way of a literature review, to fasten the respective authors into place in terms of Meyer's framework of analysis. It should be noted, however, that while I adopt Meyer's categorisation of proliferation theories, it is not Meyer's articulation of the theories which is to be tested.

### **Technological Imperative**

This hypothesis focusses on nuclear technology itself as the driving force behind decisions to acquire



nuclear weapons, postulating the operation of a technological imperative which inexorably pushes nations from latent capacity to operational capability. The actual process through which the technological imperative makes itself felt is ill-defined but revolves around the effects that acquiring a latent capacity or possessing an advanced nuclear infrastructure has on the larger decision-making process and on the proliferation cost-benefit calculus in particular.

Perhaps the most interesting account of the relationship between a latent capacity and the desire to activate it is that of Lovins and Lovins who identify something of a symbiosis between the two. While conceding that the production of nuclear weapons requires both capability and intention, they suggest that "intention seeks capability to fulfil it, while capability lowers the threshold - in time, money and political initiative - for developing a matching intention." (10) If capability affects intention, then it can be identified as the dynamic behind the process; the availability of the option means that the costs which figure in the cost-benefit analysis appear not to be too daunting, a reduction in marginal cost which, in a rather nebulous fashion, seems to "warp" the decision-making process such that nuclear weapons more easily justify themselves.

Essentially, the logic enshrined here is that although there may not be a specific reason to proliferate neither is there any reason to elide the option; therefore, if only because it is possible, why not proceed with a proliferation decision? This tendency towards a "nuclear drift" seems to be exacerbated by the technological momentum which research projects involving large bureaucracies can engender, a momentum which can be skilfully deployed by a military-scientific community which has invested considerable effort, not to mention prestige, in bringing their research to a successful conclusion. If one side of the coin is revealed by Dr. J. Robert Oppenheimer's comment about the American hydrogen bomb - "it was so technically sweet we just had to do it"(11) - the other is the relative absence of countervailing forces which the relevant authorities can bring to bear upon the military-scientific cadre responsible for the project.(12) That this should be the case is attributable to the interchangeable nature of the technologies employed in civilian and military nuclear research projects, a congruence which makes the task of regulating research activities a rather difficult one. Unless executive decision-makers expressly intervene in order to inhibit the progression towards nuclear status, they are likely, it is claimed, to be presented with what

amounts to a "*fait accompli* of *de facto* nuclearisation." (13) Perhaps the question then, is not so much what motivates decision-makers to seek nuclear status as, given the momentum pushing in that direction, why they should abnegate such a status. (14)

Chan takes this argument to its logical conclusion by stating that,

for countries that are already in substantial possession of the pertinent technical and institutional facilities, an eventual possession of nuclear weapons does not necessarily imply a deliberate policy-decision, whereas a rejection of the weapons does require an act of conscious political choice. (15)

The inference, then, is that a proliferation decision need not, in fact, be taken, and that proliferation can occur simply because of the absence of a non-proliferation decision. Yet, in drawing this conclusion, Chan is guilty of failing to distinguish between a nuclear capacity and an effectual nuclear capability; he fails to recognise that, regardless of its physical status, a nuclear capacity remains simply an unrealised potential until a government chooses to take it up. Stated more succinctly, a capacity does not become an effectual capability until sanctioned as such by the government which deploys it.

Meyer's representation of the technological imperative as developed below seems more compelling, recognising as it does that humans still make the relevant

decisions but are prone to be "carried along" by technological momentum or by the chimeric appeal of nuclear weapons.(16) While a sense of "nuclear drift" can certainly be discerned, indeed may constitute the animating concept of this hypothesis, this is not inconsistent with a proliferation decision being central to the process. Significantly, however, the decision may be taken in a rather ambiguous fashion, in the sense that it is not related to any specific foreign policy objectives.

Based on logic of this sort, Meyer has constructed three models of the technological imperative which, *mutatis mutandis*, share certain common features. Notable amongst these are: the belief that a latent capacity to manufacture nuclear weapons is, in itself, sufficient to produce a decision to do so, indeed, that latent capacities are inevitably converted into operational capabilities; an exclusive emphasis on capabilities which obviates the need to lend credence to any contextual factors other than those directly related to a nation's resource capacity; and a disregard of disincentives on the assumption that all states desire nuclear weapons.(17)

Technological Imperative 1 simply states that once the production of nuclear weapons becomes technologically

and industrially feasible, states, being unable to resist the technological momentum gathered by the research process, will inevitably proliferate. Consequently, all nations will eventually cross the threshold from a latent capacity to the active manufacture of nuclear weapons. The facts give the lie to this assertion, however; despite the proliferation of nuclear options, proliferation of nuclear weapons has not taken place.

Technological Imperative 2 attempts to account for this weakness by postulating that "the overall manifestation of the technological imperative is spread out randomly over time." (18) Thus, while those states currently possessing nuclear options may be less sensitive to the dictates of the technological imperative, they will eventually all succumb. Once more, the "reasons" for the decision to produce nuclear weapons are largely peripheral; the latent capacity seems to loom so large in the decision-makers' collective psyche that nuclear weapons eventually justify themselves. Interpreted literally, the absence of a time-scale means that this theory is impossible to disprove. Conversely, this being the case, it does not seem to possess a great deal of predictive power.

Technological Imperative 3 relates the likelihood of proliferation to the level of a state's nuclear-related infrastructure. As the nuclear infrastructure becomes more advanced, so the anticipated burden of a nuclear weapons programme declines. Simultaneously, the cost-benefit calculus is affected in such a way as to psychologically minimise the costs and, in counterpoint, to inflate the perceived benefits. Thus, the ease with which nuclear weapons can be produced seems, in commensurate fashion, to shape the decision-making process.

Meyer's theoretical construct represents a comprehensive, but not exhaustive, distillation of technological explanations of proliferation. Other commentators, notably Wohstetter and Greenwood et. al., are fearful of the proliferation stimulus that the diffusion of nuclear technology entails, but do not accept the determinism of the technological imperative as presented by Meyer.(19) Wohlstetter in particular confirms the argument that lowering the economic and political price of nuclear weapons greatly increases the incentives to acquire them, but the codicil in both studies is that proliferation decisions are regarded as being taken with reference to political and strategic exigencies. This

more cautious endorsement of a technology-driven model of proliferation is best summed up by Wohlstetter in noting that:

"under the present rules, civilian nuclear energy programmes now under way assume that many new countries will have travelled a long distance down the path leading to a nuclear weapons capability. The distance remaining will be shorter, less arduous, and much more rapidly covered. It need take only a smaller impulse to carry them the rest of the way."(20)

This understanding of the problem of proliferation is a useful corrective to the tendency to regard these schools of thought as monolithic wholes, doctrinaire in clinging to observable law-like generalisations which are impervious to nuance or modification. That this is not the case is reflected by the varying degrees of adherence which technological models have attracted over the years. When Dennis Healey, former British Secretary of State for Defence, observed rather ominously in 1960 that "no country has resisted the temptation to make its own atomic weapons once it has acquired the physical ability to do so," he was basing his thoughts on the conventional wisdom of the time, which suggested that all states would grasp a nuclear option, and activate it, with some alacrity.(21) This comment was, however, fallacious when made, as Canada could by this time have produced nuclear weapons but chose not to. Indeed, history proceeded to confirm that such

fears were ill-founded, and consequently, the ranks of technological imperative acolytes dwindled in proportion to the accruing number of falsifying cases.

In recent years, however, the technological imperative has enjoyed something of an academic rehabilitation, as commercial competition between suppliers of nuclear goods has caused an acceleration in the rate at which "Nth" countries acquired nuclear options and produced fresh fears as to what they might decide to do with them. In the mid-1970s studies of the type referred to previously by Wohlstetter and Greenwood et. al. appeared, precipitating a new focus on technology as the key variable in the proliferation equation. Informed by such logic Kegley et. al. have suggested that the onset of market processes in nuclear technology means that indigenous capabilities are no longer immutable restraints which prevent states from going nuclear. Rather, low levels of scientific, technological and economic capability have become factors which can be overcome through international commerce.(22) Indeed, they proceed to identify the availability of nuclear technology as being the single most important factor explaining decisions to proliferate,(23) in so doing, bringing the issue full circle and imbuing the logic of the technological imperative with renewed credibility.



Nevertheless, in spite of the evident pertinacity of claims that technology is the ultimate source of proliferation, it is difficult to find an example to this effect amongst the existing cases of states that have openly "gone nuclear." Certainly, all five have converted their latent capacities into operational capabilities, but it would be facile to argue that this in itself provides validation of the technological imperative, and indeed, if one analyses the cases one finds that the issue of proliferation was always considered in a politico-security context. Superficially, however, the case of France would seem to be illustrative of the various arguments subsumed under the rubric of technological proliferation.

Scheinman, in discussing the evolution of France's military nuclear programme during the Fourth Republic, does, in fact, make quite a strong case for regarding the French proliferation process as being characterised by technological and bureaucratic momentum.(24) In the nuclear realm, the corollary of the chronic instability of Fourth Republic governments was the enlargement of the discretionary powers exercised by the Commissariat à l'Energie Atomique with regard to overseeing the French research effort, an aggrandisement which saw France acquire a nuclear option and proceed to the threshold of nuclear weapons with minimal executive direction.

According to Scheinman,

governments were not strong enough to underwrite a military atomic policy or courageous enough to stop the trend toward a French atomic bomb which originated as early as 1952. It is vain to argue that Mendes-France, or Faure or Mollet, adopted one position or another: in truth, each of them reserved decision for a future government while France steadily progressed toward the atomic bomb under the tutelage of the military-atomic cadre.(25)

Elsewhere, anticipating Chan's logic, Scheinman notes that "the question is not so much what induced France to take the nuclear plunge as it is a question of whether the eventual outcome could have been otherwise."(26)

To this point, Scheinman's description of the French nuclear programme seems to conform to a "nuclear drift" model consistent with the technological imperative hypothesis, but a crucial discrepancy arises with regard to the proliferation decision. The technological imperative does not address the manner in which a nuclear option is obtained, merely stating that once obtained it will inevitably be converted into an operational capability. Consequently, whether French proliferation conforms to the technological imperative is contingent solely upon the reasons behind the French decision to upgrade their nuclear option into an operational weapons capability. These reasons were not, however, of the rather vague, "because it is possible" variety; rather, they related to the loss of prestige suffered at Dien Bien

Phu and Suez, and to growing doubts about the reliability of the United States as an alliance partner.(27) The French case must, therefore, be regarded as an example of motivational proliferation.

### **Motivational Hypothesis**

The motivational hypothesis is conceptually less amorphous than the technological imperative, largely because the process through which it operates is clearly stated and also because there is an overwhelming consensus amongst its proponents as to the motivations involved.(28) From this perspective technology is a necessary, but not sufficient, condition of proliferation, being but one strand in a complex skein of security, political, economic and psychological concerns the interaction of which determines whether a proliferation decision occurs. The motivational hypothesis is thus probabilistic rather than deterministic and, unlike the technological imperative, takes seriously the possibility of disincentives outweighing incentives in the proliferation calculus. These incentives and disincentives are derived from the perceived effects of "going nuclear", effects which are generally considered in a broad foreign policy context although domestic issues are also occasionally pertinent. Being condition-dependent, the pros and cons in a state's

motivational profile do not represent fixed quantities: rather, the weights assigned to them fluctuate with the interplay of contextual factors. Accordingly, the balance between motive conditions is largely circumstantial, being a function of a state's changing foreign policy objectives and the nature of the international environment within which it seeks to give them effect.

With regard to the actual proliferation process, according to Meyer it is the convergence of latent capacity with significant proliferation-related motivations, or vice-versa, that results in decisions to acquire nuclear weapons.(29) Thus, a state possessing a nuclear option may choose to activate it in response, perhaps, to specific politico-security contingencies, or alternatively, existing nuclear propensities may define a need to develop a latent capacity, the acquisition of which, in such cases, is one step removed from proliferation. A refinement of this conceptualisation of the process is to integrate with Meyer's account what Potter and Dunn and Overholt call "trigger events", which are essentially political events sufficiently compelling to tip the balance between incentives and disincentives such as to produce a proliferation decision.(30) One can, perhaps, differentiate, then, between underlying precipitants which tend to dispose a state towards

proliferation, and "trigger events" which consummate the process. Rather than listing exhaustively those motive conditions identified by each relevant study, in so doing repeating myself *ad. nauseum*, I shall list the motivations which figure most prominently in the proliferation literature, and note that the list adopts Potter's taxonomy of incentives and disincentives, but is compiled also from the studies of Meyer, Dunn and Overholt, Bailey, Beaton and Maddox, Quester, Rosecrance, and Reiss.(31)

International Security Incentives - deterrence of adversaries; warfare advantage - redress conventional military asymmetry or seek military superiority; utility as weapons of last resort; insurance against waning great power support; buttress to threats while engaging in "crisis management".

International Security Disincentives - fear of estranging allies crucial for security guarantees; fear that adversaries may threaten preemptive military action or respond in kind, thus increasing sense of insecurity; problems of communicating a credible deterrent threat (is a reliable delivery system available, for example?); absence of perceived threat.

International Political Incentives - belief that status accrues from possession of nuclear weapons; increased intra-alliance influence; greater international freedom of action; ultimate guarantee and embodiment of independence; increased diplomatic ballast.

International Political Disincentives - stigma attached to breach of international norms (especially if signatories to NPT or members of IAEA); possibility of economic and political sanctions being imposed by other states; concern not to sully peaceful reputation.

Domestic Political Incentives - reduce economic defence burden ("more bang for the buck"); economic/industrial spin-offs of research; divert attention from policy failures; technological and bureaucratic momentum.

Domestic Political Disincentives - cost - expenditures and opportunity costs; public opinion - may not favour nuclear weapons; bureaucratic parochialism (eg. inter-service rivalry leading to opposition to the project).

Thus, the motivational model posits that proliferation decisions are systematically related to a discrete set of military and political variables. Of all

these variables, the international security and international political motive conditions appear to predominate, with deterrence of adversaries, warfare advantage and desire for increased status being the most powerful incentives, and fear of estranging protecting allies being far and away the most potent disincentive.(32) These findings are, in fact, readily corroborated by even a cursory look at the nuclear powers' proliferation decisions. The American, Soviet and British nuclear weapons programmes were all prompted, initially, by wartime exigencies, though only the United States actually realised its capability at a time of war. Subsequently, the Soviet Union and United Kingdom made what might be regarded as second proliferation decisions, the Soviets largely to project a deterrent threat to the United States, and the British mainly to buttress their diminishing influence in world councils in general and vis-a-vis the United States in particular. The French, as discussed previously, took their proliferation decision with reference to political prestige and international security concerns. The same can be said of the Chinese, who were on the receiving end of nuclear threats from the United States during the Korean War and in response to the French predicament in Indochina, and came also to view nuclear weapons as a vital source of prestige in the

competition with the Soviet Union for influence within the international communist movement.(33) To put the issue in terms of Meyer's characterisation of the proliferation process, all five cases, if a degree of latitude is conceded in the French case, reveal a process of capability converging with extant motivations.

### **Sui Generis**

This hypothesis is perhaps least well represented in the proliferation literature, probably because most studies of the problem of nuclear proliferation are implicitly based on an attempt to divine universally applicable proliferation precipitants, a proposition which is fundamentally at odds with the belief that there is, in fact, no pattern to proliferation decisions.(34) According to this view, the proliferation process is largely idiosyncratic, the proliferation decision itself arising from a peculiar confluence of particular individuals and events under specific conditions, a "snapshot", almost, of conjunctural elements frozen in time and never to be repeated. This is not to deny that certain underlying conditions need to be fulfilled in order for proliferation to occur. Technology, for example, is such a necessary condition, but the remaining factors "are neither identifiable, nor predictable *a priori*, nor



consistent."(35)

Epstein seems to hint at this coalition of imponderables when, having noted some of the attractions of nuclear weapons, he observes that,

whether and to what extent a given state will act on these views depends in part on its leaders perception of the international environment and on their assessment of the best ways to achieve national objectives in that environment. It depends also, however, on the results of bureaucratic competition and on the pressures of domestic politics. Thus, incentives and disincentives apply to different countries at different times, according to both external and internal developments.(36)

Kapur makes essentially the same point with less equivocation, noting that the decision-making apparatus and decision psychology of individual states must be added to the more common array of variables figuring in the proliferation calculus, a suggestion which leads him to conclude that "the circumstances underlying the acquisition of atomic weapons ... are unique and varied."(37)

The essence of the *sui generis* hypothesis, then, is that if one looks closely enough one discerns that no two cases are ever truly alike, partly because of the innumerable variables involved and partly because certain actions are intelligible only with reference to a discrete set of circumstances. A random trigger, for example, may activate only certain conditions, as is illustrated by

Meyer's historical analogy of the outbreak of World War One.(38) The assassination of Franz Ferdinand engulfed the world in war only because it triggered the chain of mutual guarantees enshrined in the alliance system, but such conditions, and their modern equivalents, are too arcane to yield conclusions valid to a broader constituency of cases.

Based on this discussion of the respective hypotheses, it is possible, by way of extrapolation, to adduce some observable generalisations from what are rather inchoate theories, the intention being to highlight the animating concepts of, and key differences between, the rival explanations. In this fashion, one hopes to glean certain key propositions which will form the criteria against which to assess the alleged proliferation of Israel and South Africa.

To begin with the technological model, one can posit that its main distinguishing feature is that it places least emphasis on rational, means-ends, affective-type behaviour. Proliferation occurs simply "because it is possible" and because decision-makers do not expressly foreclose such an outcome. The implication, then, is, firstly, that the proliferation decision is not taken to address a particular contingency and, secondly,

that executive control is not so close as to give decision-makers occasion to intervene and, in so doing, abjure nuclear status. There is, in a sense, a "drift" into proliferation caused by a combination of technological momentum and an absence of political oversight.

The motivational hypothesis represents the antithesis to such logic, stressing instead the extent to which proliferation decisions should be regarded as policy outcomes arrived at in response to specific contingencies, mainly to address a military threat or to enhance a state's international standing. The motivational hypothesis therefore suggests certain kinds of developments, in the sense that it is oriented toward certain kinds of enemies or certain kinds of uses (not necessarily physical uses) of nuclear weapons. Perhaps, then, the essential difference between the technological imperative and the motivational hypothesis concerns the intensity, content and specificity of nuclear weapons programmes and deployment? If this is the case, and this logic will inform the comparative process, then one could perhaps postulate that these rather generic theories are, in fact, comprised of more specific sub-hypotheses, in the details of which resides the fullest explanation of proliferation.

By definition, one cannot generalise about the implications of the *sui generis* hypothesis or highlight specific issues which seem to be indicative of its operation. Indeed, such is its nature that this model presents major epistemological problems with regard to testing its applicability. Despite its disaggregated premise, one would really need a series of case studies in order to confirm or refute the contention that all proliferation decisions are different in kind, although similarities between two cases would appear to cast doubts on its veracity. In fact, the exposition of the pariah concept given earlier presupposes just such a basic commonality, certainly in the sense that pariahs are subjected to similar pressures and will tend also to react similarly. There therefore seems to be a fundamental antinomy between a *sui generis* interpretation of proliferation and positing an identifiable link between pariahs and proliferation. This explanation will therefore be treated as a null hypothesis and will be dealt with retrospectively in order that the degree of similarity between or uniqueness of the two cases may be assessed. The proliferation of Israel and South Africa will be addressed in the terms of the technological and motivational hypotheses, specifically with reference to the key themes imputed to the theories.

### Methodology

The methodology of the study is very straightforward, being loosely based on what Verba has called the "disciplined-configurative" approach to case-studies.(39) Case-studies have been derided by Lijphart, Eckstein and Russett amongst others for being largely descriptive exercises which focus on the idiosyncratic elements of particular events at the expense of producing valid generalisations.(40) While there is a certain truth in this, it is pertinent to observe that the object of this study is not to generate new theories but to test existing ones, and in this respect these same authors concede considerable utility to case-studies which, provided they are conducted in a rigorous and exacting fashion, can invalidate theories or lead them to be refined or qualified.(41) In the comparative case-study method an appropriate degree of exactitude would seem to depend on specifying, restricting and organising the relevant factors in the study in order to produce a framework of analysis which draws out comparable information from each case, thus facilitating comparison of the cases and testing of the theories.(42)

In this regard, the previous heuristic exercise of highlighting the key themes of the contending hypotheses

assumes renewed significance, as these themes will form the basis of a series of related questions to be applied to both case-studies, thus ensuring standardised terms of reference and points of comparison. While the issues identified are regarded as crucial for the testing of the theories, it should be noted that the subjective element cannot be completely eliminated from such a process and that providing incontrovertible proof of a particular hypothesis is therefore well-nigh impossible. The following questions should therefore be regarded as "signposts" which direct one to the relevant information, thus simplifying the judgemental process:

Did the proliferation decision predate the acquisition of a nuclear option? If it is the case that a state sets out to acquire an operational nuclear capability rather than simply a nuclear option, this suggests that existing motivations have defined such a pressing need and would, therefore, have to be regarded as being indicative of motivational proliferation. If, however, a state acquired a nuclear option and subsequently operationalised it, then both technological and motivational explanations remain open.

If a state decided to acquire a nuclear option, why was the following proliferation decision taken? More

specifically, was the decision taken to address a clearly identifiable threat or to meet a specific contingency? Can underlying precipitants and "trigger events" be discerned? If nuclear weapons were seen as being an appropriate solution to a particular policy problem, then the process would seem to conform to the motivational hypothesis. If, however, there appears to be no distinct politico-security rationale peculiar to that state's circumstances, one could posit a "nuclear drift" and the operation of a technological imperative.

Was the decision-making process executive directed? Did the research programme acquire a momentum of its own, or was the direction and intensity of the nuclear programme conditioned by political variables?(43) This question follows logically from the previous one and is related to the observations of Chan and Scheinman about proliferation occurring because of the failure of policy-makers to intervene in the process in order to prevent it being consummated with nuclear weapons. The implication drawn here is that if there are compelling disincentives militating against proliferation, policy-makers will not sanction "going nuclear". If, then, a proliferation decision was taken without reference to particular policy problems, and if there is no evidence

of the executive intervening in or shaping the research effort, proliferation can be characterised as occurring simply "because it is possible" - i. e. technological proliferation. If, however, motivations enter into the equation, then this seems to provide evidence of motivational proliferation.

On a less theoretical level, are the characteristics of the relevant weapon systems suggestive of a particular use?

Given the geographical propinquity of Israel and South Africa's adversaries, and in Israel's case its small size, information regarding, for example, the yield of their nuclear warheads and the range of their delivery systems, may provide some clues as to their practical uses. In particular, such information may be suggestive of the ends to which they would be deployed (eg. battlefield role, weapons of last resort) and against whom. If these uses seem to corroborate hypothesised motivations, then this would seem to substantiate the motivational model of proliferation. This issue, can, however, provide little by way of confirmation for the technological imperative, as it is difficult to imagine what a non-specific, almost "aimless" nuclear posture would entail. Moreover, if the force characteristics do not seem tailored to a particular



use, this need not lend credence to a "nuclear drift" as it may equally be the case that the force as it stands is all that technology or resources permit. It would therefore be inappropriate to assume that no particular use is envisaged.

These, then, are the issues I shall focus on in attempting to ascertain which hypothesis best accounts for the proliferation of Israel and South Africa. If not all the answers provided are unchallengeable or entirely conclusive, then collectively they should at least indicate which theory is more adequate. It may well be the case that none of the theories applied provides an absolute fit but that each in its own way casts a distinctive light on a certain aspect of the problem. In focussing on these key issues, however, one will hopefully be better placed to account for such congruence or incommensurable disparity as may be found.

## ISRAEL

### Introduction

Born of war and continuing to exist courtesy of the military prowess of its highly professional, highly motivated armed forces, Israel has had perhaps more cause to consider the benefits of nuclear weapons than any other state in the international system. Vastly outnumbered by its enemies in terms of manpower and rendered vulnerable by its narrow territorial configuration, Israel, despite its military successes, has been unable to assuage the seemingly inveterate antipathies of its Arab neighbours. Abiding animosity has become an almost structural condition of Israel's existence and has led, in turn, to an Israeli preoccupation with security and a proclivity for worst-case analysis in security matters. In its most elemental form, this tendency manifests itself in the widely held Israeli belief that military defeat is synonymous with the extinction of the State of Israel.(1) Compounding this sense of unremitting threat and imbuing it with an almost fatalistic sense of inevitability is the memory of centuries of persecution of European Jews, culminating, of course, in the genocidal paroxysm of the Holocaust. The Jewish experience, in the Diaspora and as

subsequently enacted in Israel, provides, therefore, the vital clue to the Israelis' primordial concern with security and their corresponding interest in the ultimate deterrent.(2)

### Nuclear Policy

Security, however, is a multi-faceted concept and the Israelis are acutely aware of the fact that a policy of overt nuclear deterrence may not be reconcilable with the other vital ingredient of Israeli security, namely, the diplomatic, economic, and military support of the United States.(3) The fundamental desire not to jeopardise the crucial American connection but to simultaneously assume ultimate responsibility for Israel's destiny resulted in Israel adopting, and pursuing very adroitly, a policy of "calculated ambiguity" with regard to its nuclear policies. "Calculated ambiguity" essentially denotes a propitiatory vagueness about Israel's nuclear status, plans, and intentions, this uncertainty being manipulated for political and strategic advantage. The many and varied contours of this policy have seen Israel stress the peaceful nature of its nuclear research, refuse to sign the NPT, oppose then support with prohibitive conditions a Nuclear Weapons Free Zone in the Middle East, and acknowledge that Israel has a nuclear option while

denying the actual possession of nuclear bombs.(4)

The official policy, as articulated by Yigal Allon and subsequently reiterated by other cabinet ministers, to the effect that "Israel will not be the first to introduce nuclear weapons into the Middle East, but neither will it be the second", (5) captures nicely the essence of this basically non-committal stance, while judiciously lending itself to several interpretations. What is the significance of this statement, for example, in the light of the fact that nuclear weapons are already present in the Middle East on the ships of the American and Soviet Mediterranean fleets? Moreover, when does a weapon become a weapon?: is an "unassembled bomb" or a "last-wire bomb" a nuclear weapon?(6) Given Israel's nuclear capabilities and security preoccupation, Quester regards this latter issue as of merely semantic importance, so perhaps the real significance of Allon's statement is that it connotes an "instant option" or "bomb-in-the-basement" posture.(7) The implication is that Israel could immediately respond to an Arab nuclear threat, and this is in every respect consistent with the acquisition of what I have termed an effectual nuclear capability.

With considerable diplomatic finesse, then, Israel, by means of leaks, rumours, and speculation, is able to communicate an insinuated deterrent threat while exempting

itself from the deleterious political effects of a declared nuclear posture. Curiously, Israel has been aided in this respect by a peculiar community of interest between the main parties to the Arab-Israeli dispute.(8) The Arabs, for example, would find resignation to Israel's permanence a rather humbling display of their impotence, one which, quite conceivably, would be interpreted as a betrayal of the pan-Arab/Islamic cause and therefore constitute a real threat to some of the more precarious Arab regimes; the United States, the progenitor of the non-proliferation regime, has no desire to see any country openly proliferate, far less to see its broad politico-security interests in the Middle East further jeopardised by the actions of its ally; and the Soviet Union, for its part, is aware that arms sales are its conduit to influence in the region, an influence which would diminish if the Arabs were to reluctantly acquiesce in Israel's permanence.

This unholy alliance has therefore had a vested interest in maintaining a strained taciturnity, if not complete silence, with regard to Israel's nuclear capabilities. Interestingly, it has been the Israelis who have done most in recent times to publicise their capabilities, partly in response to the revelations arising from the Vanunu affair, but mainly to address a

growing Arab chemical warfare capability.(9) The testimony and photographs provided to the *Sunday Times* by Mordechai Vanunu, a former technician at Israel's Dimona nuclear plant, seemed to constitute unambiguous confirmation of a highly advanced Israeli nuclear weapons programme, and had the corollary effect of making the standard Israeli disclaimer seem an ingratiating sophistry.(10)

In fact, the Vanunu affair has been of considerable utility to the Israelis, as it has enabled them to effect a subtle change of policy whereby Israel's nuclear capability has become more visible at a time when fears of possible Arab use of chemical weapons are growing.(11) Such use in the Gulf War and the developing ballistic missile capabilities of several Arab states have activated a barely sublimated Israeli fear, that of Israel's civilian population coming under direct attack from the country's enemies. Consequently, the Israelis seem to be trying to make the deterrent threat more explicit, as is reflected in the occasional oblique reference to nuclear weapons made by Israeli officials. In January 1987, for example, Gideon Raphael, former director-general of the Israeli Foreign Ministry, stated that Syria's chemical warfare capabilities "could mean that the next war between Syria and Israel will degenerate into a contest between

chemical and radiation weapons - with global implications".(12) Similarly, in early 1988, Defence Minister Yitzhak Rabin declared that "Israel not only has the deterrent power to face down the missiles held by Syria, Iraq and now also Saudi Arabia, and the temptation to attack our populated areas; we also have the ability to attack their populated areas to a degree that outstrips theirs many times over".(13)

Thus, in the past couple of years the delicate balance that Israel has sought to maintain between the demands of security and the dictates of political expediency has been somewhat disturbed by a pressing security fear. Though reaffirming adherence to the tenets of their official policy, the Israelis have felt obliged to reduce the ambiguity contained therein. If the established policy remains in place, one can discern a significant shift in emphasis in its recent evolution.

Before turning to the decision-rules which form the criteria against which to assess Israel's proliferation, it may first be appropriate to place the issue in a broader context by analysing Israel's nuclear capabilities, motivations, and the decision-making process related to them.

### Capabilities

The politico-strategic realities of Israel's situation have ensured that its nuclear capabilities and intentions have been a natural focus of academic and governmental attention. The secrecy attending Israel's nuclear posture, however, has resulted in there being a dearth of verifiable relevant information, a fact reflected by the prominence of speculation and informed guesswork in the on-going welter of debate. That Israel possesses an effectual nuclear capability is beyond all reasonable doubt, but any conclusions as to the physical status of that capability, or indeed how it came into being, must perforce remain tentative.

Since its birth Israel has shown a keen interest in nuclear research, the earliest manifestation of this interest being an Israeli Defence Ministry survey of the Negev desert for possible uranium-bearing phosphates in 1948.(14) Subsequently, a group of Israeli scientists acquired specialist training in different fields of nuclear science in the Netherlands, Switzerland, Britain, and the United States, training which was to rapidly pay dividends as by the early 1950s Israel had pioneered new processes for the extraction and refinement of uranium from phosphate deposits and for the production of "heavy water".(15) In 1952 the Israeli research effort was provided with a coordinating institutional base with the



establishment of the Israel Atomic Energy Commission (IAEC) under the aegis of the Defence Ministry. Within a year a major fillip was given to the IAEC's endeavours with the conclusion of a cooperative agreement in the atomic field with France.

### **The French Connection**

Throughout the 1950s and early 1960s France and Israel maintained a close collaborative relationship in nuclear research, their marriage of convenience being cemented by a common antipathy towards Nasser and a sense of urgency with regard to acquiring a nuclear option.(16) The actual details of the pragmatic alliance inaugurated by the 1953 agreement have never been made public, but it appears that via Israel France hoped to gain access to the latest U. S. computer technology as well as to acquire the newly discovered Israeli processes for extracting uranium from low-grade ores and for producing heavy water.(17) In return, France offered training and research facilities for Israeli scientists and an undertaking to provide Israel with a sizeable research reactor at a later date.(18) Agreement in principle to build the Dimona reactor seems to have been reached in September 1956, with the contract finally being signed in October 1957, the issue having acquired some urgency after the

unsatisfactory conclusion to the Suez campaign in November 1956.(19) France thereafter set about constructing a 25 megawatt heavy water moderated research reactor which was fuelled with natural uranium, a resource of which Israel possessed indigenous supplies. When Dimona was finally turned on in late 1963, then, Israel had in place the major component of a nuclear programme and, as the French applied no safeguards to Dimona, the Israelis could proceed towards a nuclear option entirely at their own discretion.(20)

Debate has raged, however, as to whether Israel possesses all the components of a weapons programme. The point of dissension concerns the existence or otherwise of a reprocessing plant necessary for producing weapons-grade plutonium.(21) The Israelis have always denied the existence of such a facility, but rumours to the contrary and Israel's own weapons-related activities have stimulated a farrago of claims and hypotheses on Israel's ability to "separate" fissile material.(22) Information from official French sources and the Vanunu testimony would seem to confirm, however, the existence of a separation plant. Francis Perrin, scientific head of the French Atomic Energy Commission from 1951-1970 has publicly acknowledged, for example, that "France participated in the building of a plutonium separation

plant", (23) and although work on the facility apparently ended in 1960 with the discovery of the true nature of Dimona, blueprints had already been provided to the Israelis, who reportedly completed the plant using French subcontractors. (24)

Exactly when the reprocessing facility was completed is difficult to ascertain. Reiss notes that it would have been technically feasible for Israel to have had an operational separation plant as early as 1959; (25) Spector cites a French source as claiming that the first plutonium separation took place in 1965; (26) the preponderant view, however, is that articulated by Pry, who lends credence to a much quoted *Time* article, based apparently on Western intelligence sources, in which it is claimed that the separation plant was completed in 1969 at the unilateral behest of Moshe Dayan. (27) This final version seems to be the most plausible, if only because it is consonant with what is known about the Israeli nuclear decision-making process.

More recently, Vanunu seemed credibly to close another lacuna when he revealed that Israel's reprocessing facility was located underground in an apparently labyrinthine Dimona, hence explaining how it had escaped detection for all these years. (28) While this thorny issue may now have been put to rest, it is nevertheless relevant

to observe that the importance attached to divining the existence of a dedicated separation plant has been somewhat overstated, as the "hot-labs" at Dimona could quite easily have been used for separating out weapons-grade plutonium, albeit on a limited scale.(29)

The French connection, as chiefly manifested in the provision of unsafeguarded Dimona, has therefore been of inestimable importance to Israel's nuclear programme. Yet the French connection may even have gone a step further than providing Israel with the wherewithal to develop a nuclear option. Francis Perrin has revealed that France and Israel collaborated on nuclear weapons design in the late 1950s, and there have been numerous reports that the French shared with Israel the results of their early atomic tests in the Sahara.(30) If these reports are true, and they are widely acknowledged as such, then the need for Israel to test its first-generation nuclear weapons would be entirely obviated.

### **The U. S. Connection**

The U. S. connection has not been quite the animating force constituted by the French association, but it has nevertheless been of considerable importance in Israel's nuclear development. The most visible aspects of American nuclear assistance to Israel have been the

provision of a small research reactor and the training of Israeli nuclear scientists under the auspices of the "Atoms for Peace" programme initiated by the Eisenhower administration. Under the terms of an agreement signed on 12 July, 1955, the U. S. provided Israel with a light-water research reactor with a capacity of 1 megawatt. Upon activation in 1960 it was subject to U. S. safeguards before being placed under IAEA jurisdiction in 1965.(31) A safeguarded reactor of this size could not be used for making nuclear weaponry, but the experience gained operating the Nahal Soreq reactor was nevertheless educational for Israeli scientists and therefore of considerable value in developing the expertise required to attain a nuclear option.

Paradoxically, while U. S. nuclear assistance in general has been constrained and informed by an overarching non-proliferation ethic, it may nevertheless have been the U. S. which inadvertently was the source of Israel's first fissile material. Alerted by the U. S. Atomic Energy Commission, which had discovered that over 200 pounds of enriched uranium were unaccounted for at the NUMEC plant in Apollo, Pennsylvania, U. S. intelligence agencies conducted an investigation and concluded that between 1957 and 1967 NUMEC president Zalman Shapiro had somehow spirited the missing material to Israel.(32)

Although repeated investigations could not legally prove Shapiro's complicity, the CIA evidently regarded this as established fact, former Deputy Director Carl Duckett noting that "the clear consensus in CIA... was that indeed, NUMEC material had been diverted and had been used by the Israelis in fabricating weapons." (33) Significantly, then, while the CIA concurs that Israel's nuclear weapons programme is based on plutonium from French-supplied Dimona, it also believes that Israel's first nuclear weapons were fuelled by enriched uranium emanating from the United States. (34)

The first official allusion to Israel's developing nuclear capabilities was that of Israel's former Prime Minister Levy Eshkol, who admitted in 1968 that his country possessed the requisite knowledge to manufacture nuclear weapons but was still a long way from the application of that knowledge in a weapons design. (35) Eshkol's comments seemed to indicate that a nuclear option had indeed been obtained, but that a proliferation decision had not yet been taken. This proposition was fundamentally at odds with the conventional wisdom held at the time within the American intelligence establishment, which had become particularly suspicious of Israeli intentions in the wake of the NUMEC affair. As early as

1968, the year in which Eshkol revealed Israel's nuclear option, the CIA prepared a National Intelligence Estimate which affirmed that Israel already had nuclear weapons. This conclusion was based on observations of Israeli jets engaging in "loft and toss" bombing practices, a technique which has no rationale other than to deliver a nuclear bomb, and the detection of significant quantities of highly-enriched uranium in air and soil samples taken from around Dimona.(36) On the basis of this damning but by no means conclusive evidence, the CIA judged that Israel had already activated its nuclear option and President Johnson was informed that Israel possessed nuclear weapons.(37)

The CIA continued to take a keen interest in Israel's nuclear activities and throughout the 1970s became increasingly convinced of, and specific about, Israel's nuclear capabilities. In July 1970, CIA Director Richard Helms testified before the Senate Foreign Relations Committee that the Israelis had in place the means to build an A-bomb,(38) and in 1974 a CIA study concluded that:

We believe that Israel already has produced nuclear weapons. Our judgement is based on Israel's acquisition of large quantities of uranium, partly by clandestine means; the ambiguous nature of Israeli efforts in the field of uranium enrichment; and Israel's large investment in a costly missile system designed to accommodate nuclear warheads. We do not expect the Israelis to provide confirmation of widespread suspicions of their capability, either by nuclear testing or by threats of use, short of a

grave threat to the nation's existence. Further emphasis is likely to be on improving weapons design, manufacturing missiles more capable in terms of distance and accuracy than the existing 260-mile *Jericho*, and acquiring, or perfecting weapons for aircraft delivery.(39)

Once again, the evidence upon which the conclusions were based was of a circumstantial nature, but weight was soon lent to them by an unlikely source. In December 1974, former Israeli President Ephraim Katzir observed that, "It has always been our intention to develop a nuclear potential. We now have that potential", adding further that the capability could be turned into fact "in a short time - even a few days. If we should have need of such arms, we would have them".(40) Katzir's much-regretted remark does not intimate deployed nuclear weapons as do the CIA's various prognostications but, significantly, does seem to acknowledge the existence of an "instant option". Given Israel's circumstances, this is, to all intents and purposes, the functional equivalent of proliferation.

Completing the liturgy of semi-official adumbrations towards an Israeli weapons capability are a couple of notable leaks in 1976, revelations behind which political design has been adduced.(41) The first of these leaks concerned a remark made by Carl Duckett at a private reception inside CIA headquarters to the effect that



Israel "has ten to twenty nuclear weapons ready and available for use", a comment which subsequently found its way into the *Washington Post*. (42) The following month *Time* magazine ran a special report on Israel's acquisition of nuclear weapons, the information contained in the report emanating, apparently, from Western (presumably American or Israeli) intelligence sources. According to this report "Israel possesses a nuclear arsenal of 13 atomic bombs, assembled, stored and ready to be dropped on enemy forces from specially equipped Kfir and Phantom fighters or Jericho missiles." (43) These bombs were reportedly assembled during the early stages of the Yom Kippur War when Israeli forces were being severely pressed both in Sinai and on the Golan Heights, but were returned to desert arsenals - where they remain today - when the battle on both fronts swung abruptly in Israel's favour. (44)

Until the Vanunu affair and the subsequent euphemistic references by Israeli officials, little else was heard from official sources with regard to Israel's nuclear capabilities. The Israelis, not surprisingly, will do no more than to confirm that they have a nuclear option and, as *prima facie* evidence is most unlikely to come to light, the exact status of Israel's nuclear capability is likely to remain uncertain. If, however,

one cannot be too specific about Israel's nuclear arsenal, it does not seem unreasonable, based on the comments of Katzir and the reports of the CIA in particular, to conclude, *a fortiori*, that Israel possesses an effectual nuclear capability, and may have done so since the late 1960s.(45)

### **Technical Characteristics**

The technical characteristics of Israel's nuclear arsenal are really not known, but a conservative estimate as to the size of a putative arsenal can be ventured on the basis of Dimona's capacity to produce plutonium. Dimona's alleged thermal capacity of 25 megawatts would glean approximately 8-10 Kgs of Pu-239 annually, which is enough to build one nuclear bomb per year.(46) It has been claimed, however, that the capacity of the Dimona reactor may have been increased to 70 megawatts, in which case Israel could produce three bombs annually.(47) Based on these figures, and factoring into the equation the technical parameters set by bomb design and construction, Pry concludes that by 1984 Israel could have possessed anywhere between 11 and 31 plutonium-based bombs.(48) The total arsenal rises to between 21 and 41 if the enriched uranium absent from the NUMEC plant is added to the calculation.(49) These bombs are presumed to be of the

10-20 kiloton yield, making them as powerful as the devices that obliterated Hiroshima and Nagasaki.(50)

Whether Israel has gone beyond fairly crude "city-busting" weapons is difficult to say, the issue resting largely on how one evaluates the mysterious "flash" in the South Atlantic in 1979 and the testimony of Vanunu. Pry, in the most rigorous analysis of Israel's nuclear capabilities to appear to date, casts doubts on Israel's miniaturisation capabilities and notes that plutonium bombs are based on an implosion device which is most suitable for large A-bombs and thermonuclear weapons.(51) Yet, if Israel does possess a quantity of enriched uranium it could detonate devices with a gun mechanism which is amenable to miniaturisation and thus to the construction of low-yield tactical nuclear weapons.

### **The Vela Incident**

This issue has some bearing on whether Israel can be held responsible for what may have been a test of a low-yield nuclear shell in the South Atlantic in 1979. On September 22, a U. S. Vela satellite positioned between South Africa and Antarctica detected a double pulse of light, the distinctive signature of a nuclear explosion. One month later, after news of the incident had leaked to the media, the State Department made the following

statement:

The United States government has an indication suggesting the possibility that a low-yield nuclear explosion occurred on September 22 in an area of the Indian Ocean and South Atlantic including portions of the Antarctic Continent, and the southern part of Africa. No corroborating evidence has been received to date. We are continuing to assess whether such an event took place.(52)

In fact corroborating circumstantial evidence soon came to light: U. S. scientists at the Arecibo Ionospheric Observatory in Puerto Rico observed a ripple moving through the ionosphere the direction and velocity of which suggested it may have been caused by a nuclear explosion in the South Atlantic;(53) on November 13, the New Zealand Institute of Nuclear Science reported detecting quantities of radioactive fallout in rainwater samples taken over the previous two months (this report was subsequently withdrawn); (54) subsequently South African involvement seemed to be established when the CIA revealed that a South African naval task force had been in the area from whence the double-flash emitted.(55) This suspicion gained added credibility when it was revealed that prior to the alleged test South African naval and defence attaches had made inquiries of the U. S. National Technical Information Service concerning the detection of nuclear explosions and the projected orbit of the Vela satellite.(56)

Israel was, however, implicated as co-author of the

putative test, the CIA concluding that the likely culprits were South Africa and Israel, perhaps in conjunction.(57) Israeli complicity was inferred because of previous military and nuclear cooperation with South Africa;(58) South Africa's previous offer to test an Israeli nuclear device;(59) and South Africa's recent clandestine acquisition of the nuclear capable G-5 howitzer system. Israel had previously acquired this system which is capable of delivering small, sophisticated tactical nuclear warheads, and was instrumental in securing it for the South Africans.(60) In this connection, Moore observes pointedly that the size and height of the double-flash detected by the Vela satellite was consistent with it having been produced by a warhead fired from the G-5 system.(61) Certainly, this was the conclusion of the U. S. defence and intelligence establishments; a Pentagon report to President Carter concluded that a small artillery launched nuclear device had been detonated above the Indian Ocean, and the CIA informed the National Security Council that the blast was a direct result of nuclear cooperation between Israel and South Africa.(62)

In spite of these indications that a nuclear test had been conducted, a specially convened U. S. panel concluded that the flash had probably been caused by the satellite being hit by a small meteorite or a piece of

space debris. This conclusion, however, has been interpreted by some as having been preselected by a Carter administration intent on preserving the integrity of the non-proliferation regime. This seems to be borne out by the comments of a U. S. government scientist who noted that "The crux of the matter is that the White House is afraid that if the [Vela Report] is true, its nonproliferation policy would be shot to hell. So they said, let's convene a panel and ask them to find a technically feasible explanation other than this, because we don't want to have to face it." (63) Definitive proof that Israel was involved does not exist, but if in fact it was associated with this event then the case for Israeli tactical nuclear weapons would effectively be proven.

Vanunu's revelations indicate that such a capability is well within Israel's technological ambit. As well as revealing that Dimona actually produced 40Kgs of plutonium annually, enough for 5-10 nuclear weapons per year, Vanunu's account also credited Israel with the possession of thermonuclear weapons. (64) If Vanunu gave a faithful account of Israel's nuclear technology (and the technical authenticity of his revelations was vouched for by British and American nuclear scientists), then Israel's capabilities are considerably more advanced than anyone

suspected and Israel may well possess a hierarchy of nuclear options ranging from tactical nuclear shells to thermonuclear weapons.

The Israelis also seem to possess a commensurately differentiated array of delivery systems for their nuclear weapons. While Israel's first-generation weapons were probably intended for delivery by *Skyhawk* and *Phantom* aircraft or by *Jericho* SRBM's, Israel now possesses a broadly-based configuration of potential delivery systems, the aforementioned systems having been supplemented by *Kfir*, *F-15* and *F-16* aircraft, *Gabriel* and *Lance* missiles, and nuclear capable howitzers.(65) To bring the issue completely up to date, in May 1987 the Israelis tested a nuclear-capable missile with a 900-mile range, potentially able to reach targets in the southern Soviet Union.(66) Further evidence of their ballistic missile expertise was provided in September 1988 when they used a version of their *Jericho-3* missile to launch a satellite.(67) Such recent innovations have, of course, no bearing on Israel's original decision to "go nuclear", but are nevertheless of interest because they are suggestive of the contingencies for which the Israelis have felt a need to plan. In the next section I shall discuss in general terms what these contingencies might be, before focussing more specifically on why the proliferation decision was actually taken.

### Motivation

A necessary preface to the discussion of the politico-security conditions which may motivate Israel towards the acquisition of nuclear weapons is a note on how the Israeli consciousness, in a psychological and cultural sense, shapes Israeli perceptions of their country's circumstances. This is relevant as decision-makers act not so much on the basis of objective analyses of a given situation as on their perceptions of that situation. In Israel's case these perceptions are filtered through the analytical prism of recent Jewish history, the result being an apprehensiveness with regard to foreign and defence policy which is both elemental and existential. The omnipresent sense of threat which characterises what Brecher has called the "holocaust syndrome" in turn produces an emphasis on self-reliance and a proclivity for worst-case planning based on the assumption that the price of military defeat is extinction.(68) Former Foreign Minister Abba Eban clearly expressed this fear even as his countrymen were celebrating what to many seemed to be a miraculous collective deliverance in the Six Day War:

You may be surprised if I tell you that in our country the dominant memory is not of military triumph, but the peril and solitude that preceded it (the Six Day War)...Nobody who lived those days in Israel will ever forget the air of foreboding that



hovered over our land...For let it be remembered that the Arab states could be defeated and still survive. For Israel there would be only one defeat. If the war had ended as those who launched it planned, there would be no discussion now of territories, population, negotiations, agreement, occupied areas or boundary settlements. There would be a ghostly sequel, leaving nothing to be discussed - an ending with no renewal and no consolation.(69)

Eban's almost elegiac prose clearly expresses a sense of being constantly imperilled, and the manifestation of this fear is the utmost priority given to security matters in Israel. Moshe Dayan's oft-repeated sardonic aphorism to the effect that "Israel has no foreign policy, only a defence policy", (70) may have been overstated, but it nevertheless is indicative of the mind-set which informs the actions of Israeli policy-makers. In assessing the various proliferation rationales postulated for Israel, it is perhaps germane to note that their plausibility or otherwise can be determined only from an Israeli perspective.

Not surprisingly, given the circumstances in which Israel has existed since 1948, there are a number of potential motivations for "going nuclear". These can be broadly categorised as security and political/diplomatic incentives.

## **Security**

1) Most researchers concur that the most credible rationale for the development of Israeli nuclear weapons is as a "last-resort" deterrent.(71) This argument is often couched in long-range terms, Israel's ultimate proliferation being predicated on its conventional military preponderance eventually being overturned. It is regarded as being somehow inevitable that the Arabs quantitative superiority in manpower and economic resources will increase while, simultaneously, Israel's qualitative edge in military technology will be eroded.(72) At this juncture the Israelis will turn to the threat of nuclear retaliation to prevent the Arabs from realising their dream of "driving the Jews into the sea". Israel's nuclear weapons thus become the ultimate guarantor of the state's survival, though a punitive aspect is obviously implied in this posture which is based on the premise that should the Arabs fail to be deterred, then the Israelis, faced with annihilation anyway, would indeed invoke their nuclear sanction. The appropriate metaphorical allusion for this final act of defiance is that of Samson rather than Masada, the Israelis preferring to pull the temple walls down on themselves and their enemies rather than to meekly accept their fate.(73) Having said this, Haselkorn appears to be correct in suggesting that an Israeli last-resort deterrent is

primarily intended to minimise risks for the Israelis rather than to maximise dangers for the Arabs.(74)

2) The natural aversion to nuclear war-fighting is exacerbated in Israel's case by its small size and limited number of population centres. Given these circumstances, Israel would be loath to have recourse to nuclear weapons within or near its borders, so the potential uses of even tactical nuclear weapons would seem to be circumscribed. Harkavy suggests that tactical weapons could be used to attack troop concentrations in Sinai, for example, but while this is intuitively plausible it is in practical terms inconceivable that the Israelis would not initially meet aggression using the armour and air power which has been so effective in the past.(75) This logic would be even more compelling if Israel was maintaining a "bomb-in-the-basement" posture and thus had an interest in not declaring the existence of nuclear weapons if at all possible. Paul Jabber feels that tactical weapons could be used to halt a breakthrough which threatens Israel's pre-1967 borders, or to allow the Israelis to concentrate their forces on one front thus avoiding a 1973-type scenario.(76) Once again, this is plausible, but one should note that the circumstances in which tactical use

is envisaged appear to be very close to what for Israel would be considered last-resort scenarios.

3) A final and compelling security incentive would be to address an Arab nuclear threat. In these circumstances the Israelis would definitely proliferate openly, but the prospect of an Arab nuclear capability would indeed have been a distant one when the Israelis were considering "going nuclear". Even if a proliferation decision were to be taken as a hedge against this possible eventuality, why would the Israelis take the decision before being forced to do so?

#### **Political/Diplomatic**

1) Israel could conceivably use a nuclear threat to give effect to its territorial and security aspirations. This argument has been made both ways, nuclear weapons being seen on the one hand as underpinning a policy of territorial expansion, and on the other as providing for security within truncated borders. Fuad Jabber adopts the former position, suggesting that the Israelis may see nuclear weapons as a means of freezing the post-1967 territorial status quo.(77) This argument is predicated, of course, on the belief that the object of Israeli policy when the proliferation decision was made was the retention

of the occupied territories, an assessment which is based on a rather selective interpretation of the historical facts. In contrast, Aronson and Feldman posit that possession of nuclear weapons would invalidate the argument that territorial buffers are necessary to provide for "secure and defensible borders", and suggest that Israel could safely return to its pre-1967 boundaries.(78) This policy has the added merit for them of combining security with the preservation of the Jewish and democratic nature of the Israeli state.

2) Nuclear weapons may also be of utility in Israel's dealings with the superpowers. Tucker has argued, for example, that a policy of nuclear deterrence would allow Israel to assert greater foreign policy independence vis-a-vis the United States and thus enable it to resist pressures to accede to unwanted political compromises.(79) Presumably this increased autonomy would prevent a repeat of a 1956-type situation when the U. S. forced a reluctant Israel to withdraw from the Sinai. Although not a major factor in 1956, the threat of withholding conventional arms supplies in particular would no longer constitute a threat to Israel's very existence, though one imagines that the nature of Israel-U. S. economic relations would still translate into considerable

influence for Washington. In a rather different vein, the Israelis may feel that projecting a deterrent threat to the Soviet Union may help to limit hostile external involvement in the region. While this enterprise would seem to betoken an overly-ambitious *folie de grandeur*, the Soviet factor may nevertheless be relevant as the Israelis apparently have felt that the real danger to their security is massive Soviet military assistance to the Arabs, extending, perhaps, to direct military intervention.(80) One feels that such an eventuality is very unlikely, though the fact that the Israelis have expended vast efforts in time and money in developing a missile capable of reaching the southern U. S. S. R. suggests that this is a contingency for which they have felt obliged to plan. Whether the Israelis could credibly deter the Soviet Union is a contentious issue, but the ability to target nuclear weapons on Odessa, Tbilisi, and the industries of the Baku region would seem to give the Soviets an interest in moderating the Arab-Israeli conflict and preventing the Israelis being pushed into a last-resort situation.(81)

3) Finally, the Israelis may see nuclear weapons as constituting the rampart against which ultimately to break Arab irredentism. Abba Eban's comments on the subject are

especially relevant: "Our policy of containment and deterrence...has two objectives. In the specific context of security it aims to protect our land and lives. In the political aspect it aims to induce new currents of thought in the Arab mind. We want to create doubt - and eventually resignation and despair - about the dream of eliminating Israel from the world's map." (82) Fuad Jabber, an Arab scholar, also lends credence to this line of thought, noting that:

Where conventional power has failed, weapons of mass destruction would be expected to succeed in convincing Arab populations first and their governments second of the futility of continuing their confrontation with Israel. With the realisation that Israel cannot be militarily defeated, the rationale behind the permanent state of war, the economic blockade, and the policy of non-acceptance and non-recognition might be expected to break down. Moreover, whatever tendencies towards recognition and negotiations may already exist in the Arab world would be enormously strengthened. Hitherto, governments willing to negotiate have not dared to act because their position at home would have become untenable. In a nuclear context, the survival imperative might provide enough justification to make such approaches possible. (83)

In the Israeli context it is, of course, relevant to ask whether these functions ascribed to nuclear weapons could be accomplished with a secret bomb. Certainly, with regard to the security incentives, it does seem to contradict a fundamental axiom of deterrence theory - i. e. that the punitive threat be unequivocally

communicated - to rely on an insinuated deterrent threat. Nevertheless, no doubt cognisant of the political considerations militating against overt proliferation, the Israelis do seem willing to place their faith in their ability to manipulate an adequate deterrent threat through unconfirmed reports, leaks, rumours, and so on. Shimon Peres, one of a small coterie of individuals responsible for initiating Israel's nuclear policies, has noted, for example, with regard to Arab suspicions of Israeli nuclear weapons, that "I know that this suspicion is a deterrent force. Why, then, should we allay these suspicions, why should we enlighten them?"(84) The efficacy of such a deterrent force is obviously open to question, but the key point is that the Israelis seem to have confidence in it. This being the case, a bomb-in-the-basement posture would, from the Israeli perspective, be a feasible strategy for deterring an Arab attack. Conceivably, then, last-resort deterrence and its corollary of forcing Arab resignation to Israel's permanence could be achieved through a policy of "calculated ambiguity".

What is perhaps more contentious is whether Israel could secure other crucial political/diplomatic objectives with an undisclosed bomb. The key imponderable in this regard is the attitude of the superpowers, as from the Israeli point of view the outcome to the territorial



question is contingent upon the degree of support provided to the respective antagonists by the superpowers.(85) Certainly, from a narrow security perspective, Israel would be in a position to resist U. S. pressures with a secret bomb; what matters in this connection is the Israeli awareness that they do have an alternative other than capitulation if pressurised by the U. S. Whether the Soviets could be deterred from intervening in the Arab-Israeli conflict really depends on how much knowledge they have of Israel's nuclear capabilities. If, when the Israelis took their proliferation decision, the Soviets had no conception of an Israeli weapons capability then the Israelis could not anticipate that they would be deterred by the "secret bomb". Alternatively, if the Soviets were in fact aware of the status of Israel's nuclear weapons programme, then one would have some grounds for postulating that the Soviets could be affected by the same debilitating uncertainty which is thought to inhibit the Arabs.

The significance of these matters is, of course, entirely contingent upon the extent to which they figured in the Israeli nuclear decision-making process. The proper context in which to assess the plausibility of the rival proliferation rationales is therefore to relate them to the developments of the day. This, then, is the next

stage of the process, the hope being that analysing the interplay between the objective conditions which dispose Israel towards the acquisition of nuclear weapons and the relevant contextual stimuli, will reveal the underlying rationale for a proliferation decision.

#### Nuclear Decision-Making Process

There is some debate as to when the Israelis took the decision to pursue a nuclear option. Weissman and Krosney suggest that they determined upon this course in September 1956, that is, before the Suez Crisis, whereas according to Bar-Joseph the crucial decision was taken as a direct result of the Suez experience and the post-bellum diplomatic situation arising from it.(86) Which version is correct is difficult to ascertain, but what is significant is that both accounts can be directly related to what the Israelis regarded as threatening politico-security developments. If the option decision pre-dated the Suez Crisis, then the growing Soviet influence in the Middle East, as manifested in particular by the August 1955 Egypt-Czechoslovakia arms deal, combined with a growing sense of unease caused by the charismatic appeal of Nasser and his pan-Arab ideology, were probably causal factors in leading the Israelis to pursue a nuclear option. These considerations would have remained extant in a post-Suez

environment, though in this case the additional shocks of being abandoned by their ally the United States and threatened by the Soviet Union were doubtless of incalculable importance in communicating to the Israelis just how straitened were the conditions in which their country existed.

Whatever the contextual impulse was, it seems that the object of the decision taken by Prime Minister Ben-Gurion, general manager of the Defence Ministry Shimon Peres, and Chief of Staff Moshe Dayan, was largely to redress the quantitative asymmetry which existed between Israel and the Arab states with regard to manpower and resources.(87) In the absence of a security guarantee the Israelis felt obliged to invest in a nuclear option as an insurance against such time as which the technological gap between themselves and the Arabs was narrowed, thereby threatening to overwhelm the IDF's qualitative advantage through sheer force of numbers.

A long-term perspective is implied by this account, a proposition contested by Spector who suggests that a proliferation decision, as opposed to an option decision, was taken during the Suez Crisis.(88) It is difficult, however, to support the contention that the Israelis, rather than simply seeking an option to be activated at their discretion, sought from the outset to proceed

immediately to the production of nuclear weapons. Admittedly, the fact that Dimona was always dedicated to the production of weapons-grade plutonium, allied to the fundamental caution which animates the Israeli approach to security matters, does seem to suggest that the prospect of operational nuclear weapons was never particularly latent in the minds of decision-makers.(89) However, there is evidence of the Israelis having deliberated about their nuclear option throughout the 1960s, these periodic evaluations indicating that a proliferation decision was still pending.

The first of such deliberations took place in 1962 and set the tone for Israel's nuclear policy at least until the Six Day War. A cabinet meeting chaired by Ben Gurion endorsed a proposal by Yigal Allon to the effect that Israel should concentrate on building up its conventional forces rather than seeking to introduce nuclear weapons into the Middle East.(90) Ben Gurion resigned in 1963 to be replaced by Levy Eshkol who continued to adhere to the policy recently established, giving priority to conventional weapons and downgrading the relative importance of the nuclear programme.(91) Eshkol, in fact, manipulated the situation rather astutely, assuring the United States in 1964 that Israel would not intensify its activities at Dimona provided it

was guaranteed sufficient conventional military wherewithal to maintain the military balance with the Arabs.(92) This ploy immediately bore fruit as Israel quickly became the grateful recipient of *Hawk* -SAM missiles, and was therefore invoked once again in 1966 in return for a commitment to freeze operations at Dimona at the existing level.(93) This same year, the IAEC was removed from the jurisdiction of the Defence Ministry and placed under the immediate control of the Prime Minister's Office, this transfer of authority seemingly ensuring that Israel's nuclear activities would henceforth be directed by the highest political authority.(94)

In practice, however, this does not appear to have been the case, as Israel's ultimate proliferation decision seems to have been taken unilaterally by Defence Minister Moshe Dayan in contravention of agreed cabinet policy. Notwithstanding the agreements with the United States, Israel had not abandoned its nuclear option; it continued nuclear research and development and made it clear to the U. S. that it retained the right to reexamine the nuclear option as circumstances demanded.(95) The aftermath of the Six Day War provided such an occasion, but in 1968, buoyed no doubt by Israel's resounding victory, Eshkol, Meir and Allon curtailed plans for nuclear weapons, the possession of which Dayan had strongly advocated.(96) Thus, while

Eshkol pointedly communicated to the world that Israel possessed a nuclear option but no weapons, Dayan, who in his capacity as Defence Minister seems still to have been in control of nuclear research, ordered the weapons project to continue without higher government approval.(97) The manner in which this maverick course of action was implemented is significant:

Dayan apparently followed a strategy of arriving at a decision through incremental steps in order to avoid a clear nuclear decision. When the cabinet was faced with the project half completed in 1969, it approved its continuation and Allon had to accept the decision to have a bomb in the basement.(98)

Why then, so soon after Israel's crushing defeat of its Arab enemies, did Dayan perceive a need to acquire nuclear weapons?(99) The key to answering this question seems to lie in Dayan's personal analysis of the political and diplomatic situation precipitated by the Six Day War. The massive Soviet resupply of military equipment to the Arabs, the renewal of hostilities with the onset of the War of Attrition along the Suez Canal in 1968, and the Arab states obdurate refusal to negotiate with or recognise Israel seem to have convinced Dayan that Israel's ability to secure its most basic foreign policy objectives was now contingent upon the relative levels of support accorded by the superpowers to their clients. The security threat to Israel, according to Dayan, was posed

not so much by the Arab states themselves as by massive Soviet military assistance to them, an eventuality which, ominously, seemed to be in the process of realisation in Egypt. Israel's ability to address this threat adequately, moreover, was potentially circumscribed by superpower constraints upon Israel's autonomy of action. In this connection, Dayan felt the Soviet Union, as an ambitious revolutionary power, to be much more willing to make strong commitments and assume risks in the Middle East than the Americans, whose support for Israel was dependent upon a coincidence of political interests.

This interpretation did indeed seem to be borne out by contemporary events. As the Soviet presence in Egypt grew, Henry Kissinger, then advisor to Governor Rockefeller, warned the Israelis that the United States was not going "to lift a finger for Israel" if the Russians chose to intervene directly. He continued that "the main aim of any American president is to prevent World War III. Second, that no American president would risk World War III because of territories occupied by Israel. Three, the Russians know this." (100) Dayan appears to have concluded, therefore, that nuclear weapons were the appropriate response to being confronted by a seemingly implacable enemy while supported by a potentially irresolute ally. If the threat projected to

the Soviet Union was minimal, Dayan was confident that it would at least add an element of uncertainty to the calculus with regard to large-scale military involvement against Israel, either directly or by proxy.

Compounding this basic security fear were political concerns arising from Dayan's perception of diplomatic caprice on behalf of the United States. In spite of great efforts to boost domestic production of armaments, the French arms embargo emplaced in 1967 unavoidably pushed Israel towards a dependent relationship with the United States. This occurred, furthermore, at a time at which the interests of the two countries did not naturally coincide. That this situation could be exploited by the U. S. was illustrated in 1968 when the Johnson administration attempted to tie the sale of *Phantom* and *Skyhawk* aircraft to Israel's accession to the NPT. The aircraft were, in fact, finally delivered, but only because the growing Soviet presence in Egypt was regarded as particularly menacing by the United States.

Of more fundamental importance to the Israelis was the prospect of the U. S. in conjunction with the U. S. S. R. imposing upon them a territorial settlement that did not adhere scrupulously to their own formula of "secure and defensible borders". Washington's attempts at the U. N. to engineer what was essentially a



"land-for-peace" deal, buttressed as it was by an arms embargo on the Middle East which primarily affected Israel, seemed to be especially ominous in this regard. Israel, for its part, was determined to hold on to the occupied territories until peace was negotiated and, even at that, regarded certain areas as non-negotiable. From Dayan's perspective, then, nuclear weapons seemed also to be an appropriate means of releasing Israel from its military, and thence foreign policy, dependence on the United States.

This is not to suggest that the Israelis sought to "freeze" their hold over the occupied territories with nuclear weapons. Indeed, in August 1967 Israel offered territorial concessions to Egypt and Syria in return for a political settlement. This offer was refused, as was the subsequent Allon plan for the West Bank.(101) A satisfactory territorial arrangement was nevertheless an essential part of any political settlement acceptable to Israel, the *sine qua non* being retention of east Jerusalem and the establishment of a natural "security border" on the Jordan River. Beyond this, the details were subject to negotiation, though this meant Israel retaining this political prerogative and not acquiescing in a U. S. -brokered deal.

In sum, then, political and security developments

arising from the Six Day War were perceived by Dayan to be both threatening and possibly tractable to solution through the development of nuclear weapons. A nuclear deterrent seemed to offer the prospect of simultaneously addressing discrete, though related, contingencies, whilst fulfilling Dayan's objective of "maximum security for Israel combined with maximum flexibility in Israeli foreign policy in order to achieve defensible borders." (102) The unanswered question is whether this objective could have been secured with an undisclosed bomb. In particular, given that the Soviet involvement in Egypt was felt to be premonitory of a last-resort scenario, would the Israelis have been willing to take the chance that the Soviets did in fact believe in the existence of an Israeli bomb-in-the-basement? (103) Yet, bearing in mind that Israel did not possess facilities for the large-scale separation of plutonium until its reprocessing plant was allegedly completed in 1969, an early announcement of a tiny nuclear force would have seemed imprudent. Conceivably, then, the amelioration of conflict along the Suez Canal in the summer of 1970, after the Israelis had downed four Mig-21's flown by the Soviet pilots, may well have forestalled overt Israeli proliferation. (104)

To highlight some of the key junctures in the

decision process, Israel took its option decision in 1956 with reference to military imperatives and may have realised its nuclear option in the early 1960s using enriched uranium acquired from the NUMEC plant. A sustainable nuclear option was attained in 1969 with the completion of a plutonium separation facility following a proliferation decision taken unilaterally by Moshe Dayan in 1968. Significantly, this decision was taken to address developing security and political threats.

#### Decision-Rules

Did the proliferation decision predate the acquisition of a latent capacity?

It would appear that the chronology of the Israeli nuclear decision-making process was such that an option decision preceded a proliferation decision. This finding is consonant with both motivational and technological models of proliferation, though it is perhaps significant in this regard that when Ben Gurion, Peres and Dayan took the option decision, they clearly envisaged a distinct use for nuclear weapons rather than regarding their deployment as a remote contingency. If, then, the decision to pursue a nuclear option was to some extent a hedge against an uncertain future, it was also taken to address a foreseeable eventuality.

Why was the proliferation decision taken? Was the decision taken to address a clearly identifiable threat or to meet a specific contingency? Can underlying precipitants and "trigger events" be discerned?

In this respect Israel's behaviour clearly conforms to that postulated by the motivational hypothesis of proliferation. Israel's proliferation decision had distinct foreign policy antecedents, the most prominent of these being the desire to deter greater Soviet military involvement in Egypt and to minimise the prospect of being coerced by the United States over the issue of the occupied territories. The underlying precipitants tending to dispose Israel towards the acquisition of nuclear weapons were manifold and varied: a basic security concern related to modern Jewish history; the inability to secure the fundamental objectives of statehood - security and recognition, for example, - despite repeated military successes; the French arms embargo, which dramatised the vulnerability of supplies to Israel of military hardware while exponentially increasing the leverage at the disposal of the U. S. with regard to Israel's foreign policy; and U. S. efforts in 1967 and 1968 to conclude a land-for-peace deal which did not fulfil Israel's requirements with regard to "secure and defensible borders".

"Trigger events", which may be thought of as activating this situation, would be diplomatic developments in 1968 relating to the superpowers. On the Soviet side, the arrival of Soviet military personnel in Egypt would have seemed especially menacing, evoking images of last-resort scenarios in the making. Simultaneously, Kissinger's warnings about Israel standing alone if attacked by the Soviets may have given additional credence to this possibility, whilst seemingly realising Israel's great fear of isolation. Given that Dayan believed Israel's security, and indeed the broader Middle Eastern situation, to be a function of superpower actions, one can see why these developments would tip the proliferation calculus so as to affirm the utility of "going nuclear".

Was the decision-making process executive directed? Did the research programme acquire a momentum and logic of its own, or was the direction and intensity of the nuclear programme conditioned by political variables?

The Israeli experience is a mixed one in this respect, the logic of the technological imperative intervening at the final and crucial moment to distort an overall picture of nuclear research responding to political impulses. Certainly, one can discern in the development of Israel's

nuclear decision-making process a clear correlation between political imperatives and the intensity with which nuclear research of a military nature was conducted. The decision taken by Ben Gurion's government in 1962 to place foremost emphasis on a conventional military posture is instructive in this regard, as even more so are Israel's actions during Eshkol's tenure as Prime Minister. Eshkol's overtures to the United States saw Israel regulate its nuclear activities according to American willingness to supply conventional weaponry. The calculated and adroit pursuit of this policy would seem to be indicative of close executive control over Israel's nuclear policies. Similarly, the decision taken in 1966 to remove the IAEC from the Ministry of Defence and attach it to the Prime Minister's Office is suggestive of the efforts taken, in this case unsuccessfully, to ensure intimate executive oversight.

Yet, having said this, the manner in which the critical proliferation decision was taken essentially represents the logic of the technological imperative writ large. Dayan took the proliferation decision on his own initiative, in abrogation of cabinet policy, and subsequently presented the cabinet with the *fait accompli* of a half-completed nuclear weapons programme. Confronted with this reality, the cabinet had little option but to

sanction that which had already been determined unilaterally by Dayan. Does this mean, therefore, that by definition, Israel's acquisition of nuclear "weapons" represents technological proliferation? Potter seems to endorse this conclusion in observing that "nuclear decisions have been made and will continue to be made less in response to specific and immediate security threats and more as consequence of a small number of individuals pursuing solutions to technical rather than political problems".(105) Yet nowhere is there evidence of technology affecting the decision-making process or of proliferation occurring simply "because it is possible". Rather, the obverse seems to be true; Israel's proliferation was the product of compelling politico-security motivations. One can perhaps postulate, then, that elements of both motivational and technological explanations coexisted in the Israeli proliferation process. Indeed this interpretation could be read into Harkavy's summation that Israel's nuclear decisions "were made gradually, even haphazardly, without a defined and permanent doctrine but in response to an ineluctable momentum and against a background of uncertainty and the fear of last-resort scenarios."(106) Significantly, the motivational aspects concerned *why* the proliferation

decision was taken, and the technological aspects *how* it was taken.

Are the characteristics of the relevant weapon systems suggestive of a particular use?

It is difficult in Israel's case to adduce a prospective deployment of nuclear weapons from their physical characteristics. Israel's first nuclear weapons appear to have been large, "city-busting" devices appropriate for last-resort usage, though this appears to have been the case through accident rather than design. Quite simply, these rather crude devices were a function of Israel's technical capabilities when the proliferation decision was taken; that they were suitable for wreaking devastation upon Cairo, Damascus, Baghdad and conceivably Odessa, was merely serendipitous. The vast amounts of money Israel has spent on extending the range of the *Jericho* until it can reach the southern U. S. S. R. is probably significant, however, while it is certainly fortuitous from the Israeli perspective that a strategic "reach" of this order also endows the capacity to strike at more distant Middle Eastern enemies such as Libya, Iran and Iraq. The effort which has gone into this programme does seem to suggest that deterring Soviet military involvement against Israel has been an abiding concern for Israeli



policy-makers, a conclusion which seems to substantiate the motives imputed to Israel's proliferation.

Less certain is the rationale for developing low-yield nuclear weapons. Weapons of this nature could conceivably be used on or within Israel's borders without subjecting Israel's population to the hazards of radioactive fallout, though in practical terms the scenarios in which their use could be envisaged seem to be limited. Admittedly, tactical nuclear weapons may be of potential value in preventing a breakthrough of enemy forces which threatens Israel's population centres, yet it is almost inconceivable that the Arabs, even in the context of a *jihad* would commit suicide by pushing Israel into a last-resort scenario. Might they think, however, that a devastating Israeli nuclear response to an Arab limited attack with the aim of "liberating" the West Bank or Gaza, is not credible?(107) If this perception were ever to become widely accredited, regardless of how well founded it is, then the Israelis might have cause to bolster the credibility of their deterrent through developing more "usable" tactical weapons. The dominant scenario remains, however, last-resort deterrence of a concerted Arab-Soviet offensive.

### Conclusion

Israel's proliferation broadly conforms to the motivational model, though a significant discrepancy arises with regard to the manner in which the proliferation decision was taken. It seems to be beyond reasonable doubt that security and foreign policy considerations were causal factors in Israel's proliferation decision. Technology was not a causal factor, but it is nevertheless equally valid to observe that nuclear weapons were presented to the highest political authority rather than requested by it. This antinomy suggests that the motivational and technological models need not be mutually exclusive; indeed an element of synchronism can readily be discerned, in that aspects of both models can be found simultaneously in the same decision-making process.

That this should be the case may be attributed to the fact that the logic of these models can operate at different levels. Both purport to explain why proliferation occurs, but the technological model also provides an insight as to how it occurs. The motivational model suggests, quite simply, that a proliferation decision is causally related to politico-security concerns, thus characterising proliferation as a deliberate foreign policy action. The technological imperative also operates at this level, positing that

proliferation can occur simply because it is technically feasible and because there appears to be no reason to disavow this course of action. Yet the deliberative aspect of the proliferation decision in the technological model tends to be subsumed to the concept of "drift"; in essence the technological model addresses less why proliferation occurs as how it comes to be effected. Thus, it was quite possible for Israel to take a motivation-based proliferation decision but take it in a manner consistent with a technological explanation of proliferation.

## **SOUTH AFRICA**

### Introduction

South Africa's interest in nuclear weapons is intelligible only within the context of its leadership's determination to preserve the system of apartheid as the organising principle of South African society. Since the National Party came to power in 1948 successive governments have been mandated to perpetuate a condition of separate racial development, the depth of their commitment to this ideological premise being of such an order that Afrikaners have come to regard national security and the integrity of the white redoubt as being essentially synonymous. It is, of course, the racial discrimination enshrined in her constitution and laws which accounts both for South Africa's diplomatic ostracism and the unflagging hostility of her black African neighbours. Therein lies white South Africa's insoluble security dilemma: security policy is dedicated to the preservation of apartheid, but it is precisely the apotheosis of this racist principle which galvanises opposition to the existing regime.(1)

The intractability of this logic suggests that South Africa's security problem is not susceptible to

political amelioration, a contention seemingly borne out by the unyielding, unchanging confrontation which has marked the Republic's recent history. The South African regime's capacity to continually resist what Macmillan called "the winds of change" has therefore been a function of its own strength and, derived from this, its ability to forestall a collective politico-military offensive by its regional and international enemies. In this regard, South Africa's foreign policy elite may have perceived the manipulation of the "nuclear laager" (2) threat as being the most efficacious response to a situation which, since the mid-1970s, has been characterised by an erosion of strategic advantages and increasingly cathartic political censure.

#### Nuclear Policy

Like Israel, South Africa pursues a policy of "calculated ambiguity" with regard to its nuclear status. The South Africans are quick to stress that their nuclear effort derives from an economic imperative, but a salutary coefficient of doubt is inevitably communicated through occasional allusions to a weapons capability and the country's persistent refusal to sign the NPT. This condition of uncertainty was essentially codified into policy in 1976 when, asked about the prospect of South

Africa developing nuclear weapons, Prime Minister Vorster gave the following cryptic expression to the country's nuclear intentions: "We are only interested in the peaceful applications of nuclear power. But we can enrich uranium, and we have the capability. And we did not sign the nuclear non-proliferation treaty."(3)

Since then the South Africans have manipulated the element of uncertainty according to circumstance, the weapons capability being used almost as a talisman whenever diplomatic and military developments seem likely to increase the pressure on the South African regime. Thus a record of generally anodyne statements about South Africa's nuclear intentions is interspersed with various indications of belligerent intent or pointed statements of capability. In 1965 Dr. Andries Visser, a member of the Atomic Energy Board (AEB), suggested in rather strident terms that "we should have [a nuclear] bomb to prevent aggression from loud-mouthed Afro-Asiatic states", (4) and in 1974 Dr. Louw Alberts, vice-president of the AEB, was equally candid, but rather more prosaic, in noting that "our technology and science have advanced sufficiently for us to produce [an atom bomb] if we have to." (5)

A cameo of this policy was provided in the diplomatic aftermath to South Africa's alleged preparations for a nuclear test in 1977. President Carter

announced that Prime Minister Vorster had assured him that South Africa had no intention of testing a nuclear explosive device either presently or in the future, but was subsequently "corrected" by South African officials who insisted that no "assurances" had been made.(6) Carter later revealed the text of the Vorster letter in question, which showed that South African denials were disingenuous. South Africa's behaviour during this episode, alternately reassuring then evasive, seems to conform to a desire to perpetuate a pregnant uncertainty with regard to her nuclear plans. It is evident, however, that this uncertainty concerns only the physical status of South Africa's nuclear option, as a resolve to activate it should circumstances demand has been unequivocally communicated. Connie Mulder, for example, noted very deliberately in 1977 while Minister of the Interior, that

if we are attacked, no rules apply at all if it comes to a question of our existence. We will use all means at our disposal, whatever they may be. It is true that we have just completed our own pilot plant that uses very advanced technology, and that we have major uranium resources.(7)

South Africa's inhibitions with regard to overt proliferation relate mainly to its desire not to jeopardise its few remaining and increasingly tenuous political, diplomatic, and economic links with the West.(8) Despite the occasional display of diplomatic

bravura, generally for domestic consumption, South Africa is under no illusion as to the vivifying nature of these links and continues to nurture the aim of eventually being welcomed back into the Western fold as a strategic ally in the struggle against communism.(9) Flaunting nuclear weapons (based on Western technology) would effectively foreclose this option and would conceivably lead the West to dissociate itself from the Republic, perhaps in so doing applying comprehensive trade, economic, and financial sanctions.(10) In addition, overt proliferation would eradicate any lingering prospects of detente with her black African neighbours.(11) The net effect, then, of openly "going nuclear" would be for South Africa to gain a small increment on the security afforded by an undisclosed bomb at prohibitive political expense.

This situation is likely to remain unchanged, especially if the policy of "constructive engagement" continues to inform the approach of the Western powers towards South Africa.(12) It is relevant to note, however, that should South Africa be pushed into a corner then there is little the West could do to temper its proliferation dilemma.(13) The United States would find it politically inexpedient to offer a suitable *quid pro quo* because the only feasible options - a security guarantee, offer of peaceful nuclear cooperation, or, conceivably, a



pledge to desist from imposing punitive sanctions - would be construed as support for apartheid.

This realisation accounts for the strenuous efforts expended by the Western powers in recent years to secure South African accession to the NPT. South Africa has always refused to sign the NPT, explaining that IAEA inspection would compromise its industrial secrets, notably its allegedly unique enrichment process. Accordingly, the most visible aspect of South African nuclear policy in recent years has been its ploy of raising the prospect of NPT signature in order to garner a degree of Western diplomatic support. Most blatantly, this manoeuvre has been used in 1984, 1987 and 1988 in order to preempt South Africa's suspension from the IAEA, one of the very few U. N. agencies of which South Africa remains a member.(14) Although the United States, United Kingdom and Soviet Union regularly respond to South Africa's overtures in an effort to bring all of the Republic's nuclear facilities within the IAEA's safeguards system, South Africa's practice of attaching unacceptable conditions to its signature of the NPT suggests that it really has no intention of signing.(15) For the foreseeable future, then, South Africa will continue to operate an unsafeguarded facility capable of producing fissile material.

### Capabilities

South Africa was initiated into the esoteric field of nuclear science in the late 1940s via an agreement with the United States and United Kingdom whereby South Africa supplied uranium for their weapons programmes and in return received technical and financial assistance in the development of its nuclear technology.(16) Although the country's early nuclear endeavours were dedicated to the exploitation of its vast uranium reserves, by the mid-1950s the South African government was showing a general interest in the broader applications of nuclear research. This was reflected in 1957 by the establishment of university nuclear research programmes and by South Africa's becoming a charter member of the IAEA.(17) In the same year South Africa signed a twenty year agreement with the United States under the Atoms for Peace programme, through which it received its first nuclear research reactor, the highly-enriched uranium to run it, and training for its nuclear scientists in the United States.(18)

Safari-1, a 20 megawatt research reactor fuelled by 93% enriched uranium (supplied by the U.S. and U.K. ), went critical in 1965 and throughout its operation has been covered first by U. S. , then IAEA safeguards.(19) In

and of itself it therefore constituted little proliferation risk, though construction and operation of the reactor did lay the scientific foundations for the development of South Africa's nuclear infrastructure. Further developments of this nature were however hindered in the mid-1970s when the United States abrogated its nuclear agreement with South Africa. In 1975 the Ford administration suspended the shipment of enriched uranium fuel out of concern for South Africa's nuclear intentions, and after the imputed test preparations of 1977 Carter tied their resumption to the Republic's accession to the NPT.(20) The general effect of the U. S. severing this connection was to present grave problems for South Africa with regard to fuelling its planned nuclear power stations, thus dramatising the efficacy of establishing nuclear independence.

According to the official history of the AEB efforts to enrich uranium began in 1961 when the senior AEB scientists returned from their overseas training.(21) Success was finally achieved in 1970, enabling Prime Minister Vorster to inform Parliament of the Board's success in developing an economic process for enriching uranium which was "unique in its concept"(22) and constituted an achievement "unequalled in the history of our country".(23) Vorster went on to announce plans to

construct a pilot enrichment plant at Valindaba with a view, ostensibly, to providing fuel for future South African power stations and to establishing a lucrative overseas trade in enriched uranium.(24) Whether the South African enrichment process was indeed unique became a matter of some debate as it transpired that the enrichment technique in question was very similar to the FRG's Becker-nozzle system. Significantly, several South African scientists had been trained in Professor Becker's laboratory, these scientific exchanges being part of a 1962 West German-South African cultural agreement.(25) It appears also that nuclear cooperation between the respective government-owned companies (UCOR of South Africa and STEAG of West Germany) continued until 1976 and included the export to South Africa of enrichment technology for the Valindaba plant.(26)

In April 1975 Vorster announced that the pilot plant was operating, but apparently it did not become fully operational until March 1977.(27) South Africa's possession of an unsafeguarded facility capable of producing weapons-grade fissile material brought it to the nuclear threshold, but a certain plausibility was lent to South African denials of any weapons intent by the fact that those aspects of its nuclear programme with military application were interwoven with an authentic economic

imperative.

In 1976 South Africa signed a contract with a French consortium for the supply of two 920 megawatt power reactors to be fuelled with low-enriched uranium. Fuelling the reactor became a problem, however: the U. S. had cut off the supply of enriched uranium fuel and the pilot enrichment plant did not have the capacity to supply two reactors of this size. There did exist, therefore, an economic rationale for South Africa's decision to build a commercial enrichment plant capable of both supplying fuel to Koeberg and allowing for the export of enriched uranium. This course of action was also strategically sound as the greater the degree of energy self-sufficiency South Africa could establish the less susceptible it was to politically motivated embargoes.(29) In the event the Republic was unable to attract overseas investment with which to finance the project and was forced to lower its sights to an enlarged enrichment plant capable of providing fuel for Koeberg.(30) As, however, the first Koeberg reactor was due to be completed in 1982 and the enlarged enrichment plant not until 1988, South Africa was faced with a hugely expensive lengthy shut-down period for the planned reactors.(31) The problem, however, was solved in 1981 when a Swiss-French-West German consortium agreed to supply the necessary low-enriched

uranium for the power reactors.(32)

Was, then, South Africa's acquisition of its latent capacity a natural, if felicitous, corollary of its nuclear programme, or was a weapons capability a goal in its own right? Moore feels that the acquisition of a nuclear capability has been a long-term objective of South Africa's rulers, a proposition which seems to be substantiated by Prime Minister Verwoerd's comments upon the inauguration of Safari-1: "It is the duty of South Africa not only to consider the military uses...but to do all in its power to direct its uses for peaceful purposes."(33) That the military applications of nuclear technology may have been accorded foremost priority is also suggested by South Africa's determination not to foreclose its nuclear option: in 1967, when financial constraints forced a choice between existing projects, South Africa chose to pursue its enrichment research rather than continue work on a power reactor; (34) in a similar vein, South Africa's plans for power plants came several years after her investment in the pilot enrichment plant, thus making the post facto economic justification seem like an exercise in subterfuge; (35) and finally, in an effort to attract investment for the planned commercial enrichment plant South Africa declared itself willing to submit the plant to IAEA safeguards, yet continued to

refuse to extend safeguards to its pilot plant. This was inconsistent given that the plants were to be based on the same enrichment technology, and bearing in mind also South Africa's almost liturgical refrain that it would not sign the NPT in case IAEA inspection infringed the secrecy of its enrichment technology.(36)

The implication, then, is that South Africa regards the military and economic applications of its nuclear programme as being separate spheres of activity; economic utility and military capability derive simultaneously from the same technology, but some military intent can certainly be discerned in the development of South Africa's nuclear capabilities. This conclusion seems also to be substantiated, if not quite verified, by two mysterious events in the late 1970s - the Kalahari test site in 1977 and the Vela "double-flash" in 1979.(37)

### **The Kalahari Test Site**

In August 1977 the Soviet Union informed the United States that satellite photographs indicated the construction of what appeared to be a nuclear test site in the Kalahari Desert. The United States verified this claim, officials being quoted as being "99 per cent certain" that the structures in question represented preparations for a nuclear test.(38) Thereafter, the

superpowers in conjunction with France, the U. K. and West Germany launched a diplomatic demarche intended to impress upon South Africa how seriously they regarded this development. This prompted Vorster's denial, later equivocated, that South Africa had any intention of testing a nuclear device. Subsequent comments by French and South African officials suggested, however, that the Republic was indeed about to conduct a test but, as India had done in 1974, was going to designate it as a "peaceful nuclear explosion" (PNE). Thus the French Foreign Minister, M. de Guiringaud revealed that:

we did indeed receive information that South Africa was preparing for an atomic explosion, which, according to the South African authorities, was for peaceful purposes. We know what a peaceful atomic explosion is; however, it is not possible to distinguish between a peaceful atomic explosion and an atomic explosion for purposes of military nuclear testing.(39)

Similarly, Donald Sole, South African ambassador to the U. S. , divulged in 1981 that "we were going to test something - but not a weapon", suggesting, once again, plans for a PNE.(40)

Whether South Africa's preparations for a peaceful nuclear explosion constitute evidence of proliferation will be addressed shortly. The point to note at this stage is that one element of the proliferation equation - possession of an effectual nuclear capability - seems to



be indicated by these test preparations.(41) If, moreover, one accepts the American intelligence establishment's interpretation of the Vela double-flash in 1979 (see previous chapter), then a South African weapons capability would seem to be conclusively established.

### **Technical Characteristics**

Estimates of the possible size of an alleged South African nuclear arsenal vary considerably, the key imponderables being the size and nature of South Africa's bombs and the capacity over time of the Valindaba enrichment plant. A U. N. study notes that prior to its expansion Valindaba could have produced approximately 50Kgs of high-enriched uranium annually, giving a potential arsenal of 15-20 Hiroshima type bombs by 1985.(42) By 1988, however, the expanded enrichment plant could have provided sufficient fissile material to make "several dozen fairly sophisticated fission bombs" per year.(43) Writing in 1987, Walters, without providing technical details, suggests a possible arsenal of forty nuclear devices.(44)

The characteristics attributed to the device allegedly tested in 1979 suggest, however, that the technical parameters of bomb design are no significant constraint on South Africa and that the composition of the

Republic's nuclear arsenal, such as it is, is really a function of South Africa's military requirements. The Vela incident suggests that South Africa has developed small, sophisticated, tactical nuclear devices, the inventory of which would therefore be larger than U. N. calculations indicate. Given this level of technology, South Africa could also have developed "city-busting" weapons, though no obvious military rationale for their use appears to exist. The fact that they have not tested such a device does not mean, however, that they do not possess them. Aside from the fact that one could anticipate successful detonation with near certainty, South Africa's need to test would seem to be further mitigated by its having worked with American, British and French authorities in monitoring their nuclear tests in the 1950s and 1960s.(45) In terms of weapons design capabilities, then, South Africa would seem to be sufficiently adept to possess a range of nuclear options.

Delivering these nuclear weapons presents no problem for the Republic, which could use *Mirage*, *Canberra* or *Buccaneer* aircraft for a nuclear strike on nearby African countries, conceivably the *Jericho* missile for a medium-range capability, and the *Cactus* missile or G-5 howitzer system for tactical use.(46) Especially interesting with regard to South Africa's nuclear

intentions have been its endeavours in the field of missile technology. In 1963, as part of the broader South African-FRG nuclear cooperation, a joint rocket research centre was established in Namibia and South Africa announced that it was "engaged in research to develop rockets of an unspecified nature".(47) In 1968 the South African Defence Department in cooperation with a West German firm constructed a missile range south of the Mozambique border and in 1969 began producing the *Cactus* missile system.(48) Further evidence of a deep interest in missile technology was provided in 1973 with the establishment of the Propulsion Division of the National Institute for Defence Research which, amongst other concerns, undertook research on warhead design.(49)

Given South Africa's proven willingness to combat the perceived threat to its security through military operations beyond its borders, and its general record of success in doing so, it is difficult to discern a need for conventional medium and short-range missiles. Why develop a missile to perform a task which the armed forces could, indeed subsequently did, perform? The most credible answer to this question is entailed in the extra security insurance represented by nuclear-capable missiles. If the military threat to South Africa essentially reduces to a disparity in numbers between itself and its enemies, then

tactical and short-range nuclear missiles would conceivably be of some utility in breaking up troop concentrations on the Republic's borders. The implication, then, is that South Africa's missile programme has had a nuclear rationale, an assertion which lends further credence to the thesis that South Africa has, as a matter of policy, sought to put itself in a position whereby it could deploy nuclear weapons should it need them.

To place these issues in sharper focus, the main point to emerge from this discussion of capabilities is that from the early 1960s South Africa moved steadily towards acquiring a latent capacity, finally attaining this capacity in approximately 1977. A latent capacity is not, however, in and of itself evidence of proliferation; the necessary reagent in this context is the political decision to activate the capability. The Kalahari test site and the Vela incident provide persuasive, if not conclusive, evidence that a proliferation decision had in fact been taken, but it is significant that even before these events the United States and France had concluded that South Africa had decided to "go nuclear". Washington, apparently, had intelligence information at least as early as 1976 indicating that South Africa had initiated a nuclear weapons programme,(50) and a year

later French Prime Minister Raymond Barre, justifying the sale of the Koeberg reactors, stated quite bluntly that "South Africa already has nuclear military capability".(51) Although South Africa probably saw nuclear weapons as a long-term goal there is no evidence of a great sense of urgency animating her nuclear programme, so it seems most likely that the crucial proliferation decision came at some point after the pilot enrichment plant began operating in April 1975 and before the discovery of the Kalahari test site in August 1977. Before assessing exactly why the fateful decision was taken, it is perhaps appropriate to place the issue in some context by first looking at some of the postulated uses for South African nuclear weapons.

### Motivations

Like their Israeli counterparts, South Africa's leaders are imbued with a distinctive psychology which shapes their perceptions of and responses to international developments. The most basic, intrinsic feature of their cognitive outlook is the belief that it is entirely proper, indeed natural, for the whites in South Africa to maintain their privileged position in society. That this attitude brooks no compromise is attested to by the following statement by former Prime Minister D. F. Malan,

which quite explicitly describes white rule as being divinely ordained:

It is through the will of God that the Afikaner People exists at all. In His wisdom He determined that on the southern point of Africa... a People should be born who would be the bearer of Christian culture and civilisation. He surrounded this People by great dangers... God also willed that the Afrikaans People should be continually threatened by other Peoples. There was the ferocious barbarian who resisted the intruding Christian civilisation and caused the Afikaner's blood to flow in streams. There were times when as a result of this the Afikaner was deeply despairing, but God at the same time prevented the swamping of the young Afikaner People in the sea of barbarianism.(52)

Malan's comments, made in 1942 but their sentiments little modified since by the National Party, place in stark relief the "manichean" tendencies of the South African ruling elite.(53) Afrikaners like to depict themselves as a beleaguered minority, righteous, but abandoned by a perfidious West. Similarly, malevolent intent, generally communist inspired, is readily discerned in regional developments whose relevance to South Africa's security is tangential. This psychological frame of reference has caused the South African regime to perceive a concerted, communist-sponsored "Total Onslaught" directed against the Republic underlying the accession to power of Marxist regimes in Angola, Mozambique and Zimbabwe.(54) The obverse of this proclivity for worst-case analysis is the so-called "laager mentality", which denotes a defiant

resolve on behalf of Afrikaners to stand alone if necessary against the strictures of the international community.(55) A good illustration of this diplomatic hubris was Vorster's reaction to the pressure exerted upon South Africa by the West and the Soviet Union after the discovery of the Kalahari test site: "If these things continue and do not stop, the time will arrive when South Africa will have no option - small as it is - but to say to the world : So far and no further. Do your damndest if you wish."(56) Thus the brittle Afrikaner psyche gave rise to the "Total Onslaught" analogy which, in turn, created its own equipoise in the "Total National Strategy", the government's attempt to mobilise society so as to combat the perceived threat.(57)

In short, Afrikaner history, culture, and psychology tend to produce in the minds of South African policy-makers what may be regarded as a somewhat distorted image of objective reality.(58) A lack of perspective is especially evident with regard to assessing the intentions of enemies and the corresponding threat posed to South Africa. South Africa's behaviour in this respect is almost quixotic: an inflated menace is read into a situation and extravagant preparations are made to address it.(59) Although, then, the Republic has not faced a credible external threat to its security, the country's

defence policies since the mid-1970s in particular indicate that her leaders have indeed been preoccupied with just such a concern. Thus the objective reality of South Africa's regional military preponderance should not be construed to indicate that South Africa has had no need to consider the development of nuclear weapons. What matters in this connection is that the South Africans' particular outlook may have caused them to perceive such a need.(60)

### Rationales

Conventional wisdom has generally held that the most credible rationales for South Africa's acquisition of nuclear weapons were of a political/diplomatic rather than strategic nature.(61) The military threat to South Africa is essentially an internal one aggravated by low-intensity cross-border guerrilla warfare, contingencies which the South African police and armed forces could comfortably deal with and for which nuclear weapons would be of no conceivable value. Since the mid-1970s, however, impelled more by evidence of South Africa's preoccupation with a conventional threat than by a shared assessment of its imminence, attention has increasingly been devoted to the possible military utility of nuclear weapons if South Africa were to be faced with a full-scale conventional



assault. This scenario is generally predicated on the unlikely eventuality of direct Soviet-bloc military intervention in support of a united black African offensive.(62) An internal dimension to the security threat is important to note also: South Africa's great fear is of multi-front war, and in this connection nuclear weapons may be perceived as useful in holding off a conventional assault while the Republic's manpower attempts to quell domestic revolt.

### **Security**

1) Last-resort scenarios in the South African context are associated with the incipient demise of white rule, Adelman and Knight positing that in such egregious circumstances nuclear weapons would be deployed "either to render a measure of hope, buy time or destroy some of the opposition as the Afrikaners themselves go down. Targets might consist of (a) areas of severest combat within or on the border of the republic, (b) camps or bases of enemy forces in neighbouring states, or (c) capitals of those countries providing important sanctuaries or forces for the war against South Africa."(63) The objective, of course, is to prevent such a situation arising, deterrence of Soviet military intervention being regarded as crucial in this respect. That this has been a real concern was

indicated in 1972 when the SADF's commander-general suggested that nuclear weapons were a "prerequisite" for deterrence and defence against communist aggression, in so doing, linking proliferation to the Afrikaner's paranoia about communist onslaught.(64) In this connection, Reiss suggests that deterrence could be effected by holding the black population of southern Africa hostage to nuclear retaliation.(65)

Recently, Archbishop Tutu added a possible internal dimension to the last-resort scenario, envisaging the use of nuclear weapons inside South Africa as a final act of desperation or white revenge:

I myself actually fear that in the end, because they [the South African whites] are so irrational, they seem to have a Samson complex... They are going to pull down the pillars and everybody must go down with them... If as most of us believe, they have a nuclear capability, I don't put it past them to have their own version of a scorched earth policy.(66)

The implication, then, is that if deterrence were to break down South Africa would use nuclear weapons in a final attempt to preserve the sanctity of white rule or, failing this, to exact retribution upon its enemies. In this regard, Betts' summation strikes a sombre note, but is nevertheless prescient: "If the moral and political aim of most of the rest of the world - genuine majority rule in South Africa - comes close to realisation, so also will the nuclear threat."(67)

2) The South Africans would naturally take measures to obviate the need for last-resort desperation or defiance, and these would probably entail the deployment of short-range weapons against concentrations of enemy troops or the use of tactical nuclear weapons in battlefield situations.(68) Flournoy and Campbell suggest that this is the scenario which animates Pretoria's strategists, nuclear weapons being cast in the role of "great equalisers" when juxtaposed against the possibility of outnumbered South African forces fighting a multi-front war.(69) As with the Israeli case, such "tactical" usage would appear to the South Africans to be a disconcertingly close approximation to that postulated by the last-resort rationale.

#### **Political/Diplomatic**

1) In this context the main utility of nuclear weapons derives from their deterrence value and the concomitant symbolism of Afrikaner resolve and of the long-term survivability of the white redoubt. As Soviet involvement is generally envisaged as being in support of a black African offensive, the psychological impact of South African proliferation upon African states and the Republic's blacks should not be understated. The dramatic revelation of South Africa's apparent military

impregnability would, it is alleged, intimidate and demoralise the regime's opponents by "bestowing on the South African regime an aura of permanency and invincibility." (70) It is perhaps not insignificant either that this action, in bringing welcome succour to the Afrikaner faithful, would conceivably redress the enervation of white morale and thus prove electorally popular for the National Party.

Furthermore, South Africa's "going nuclear" would profoundly alter the calculus for Western states in particular, with regard to applying diplomatic and economic pressure for change within South Africa. Betts' comments on the Kalahari incident are perspicacious in this regard: "A nuclear shock may have seemed the appropriate counter to mounting pressure, a way of highlighting Afrikaner power and determination, a demonstration that apartheid is here to stay and that the world would have to deal gingerly with Pretoria." (71) In sum, it would seem that proliferation could simultaneously send desired political signals to different audiences, in so doing addressing a number of contingencies. According to Moore, South Africa

may thus have developed nuclear weapons for the same purpose as she had developed a seemingly unnecessary overwhelming conventional superiority: to convey the impression, both to her own people and the outside world, that in spite of the odds against her, the

South African regime can survive indefinitely in a nuclear "laager" ".(72)

2) A final rationale, one which defies categorisation, is a worst-case scenario produced by the conjunction of several of the above proliferation incentives. Flournoy and Cambell note that:

In Pretoria's worst-case scenario, the total onslaught becomes a multi-front war: comprehensive economic sanctions are widely imposed by the international community; outside governments provide advisers, arms, equipment, and perhaps troops to enemy forces; multinational conventional forces attack the republic; guerrilla's infiltrate South Africa's borders; and the townships explode in civil unrest.(73)

Given that South African nuclear weapons are designed to have a deterrent function it is, in practical terms, difficult to see how such a scenario could unfold, but at least in abstract terms there would seem to be a high probability of both war-fighting and last-resort usage of nuclear weapons in such circumstances.

As the South Africans have not openly "gone nuclear" the extent to which these rationales could have figured in the proliferation calculus depends on whether the ends sought could be attained with a "bomb-in-the-basement". Yet the problem of securing politico-security advantage from such a posture would seem to be very much attenuated in South Africa's case due to the certainty which exists both with regard to

capabilities and the willingness to use them. Unlike the situation with regard to Israel, there is no doubt surrounding South Africa's ability to produce weapons-grade fissile material; whereas the Israelis refuse to confirm the existence of a plutonium separation facility, the South Africans announced their corresponding uranium enrichment capability with considerable fanfare. Thereafter, a weapons capability was somewhat audaciously intimated by preparations for a nuclear test in 1977, and possibly confirmed by such a test in 1979. Therefore any residual uncertainty concerning South Africa's capabilities after its proliferation decision had been taken would have been quickly dissipated. Thus, although the South Africans have refrained from open disclosure, their actions, embellished by various bellicose statements, have tended to amplify the insinuated nuclear threat probably to the extent that deterrence can be effected and the behaviour of potential adversaries modified. Which of these factors, then, figured in the proliferation decision?

#### Nuclear Decision-Making Process

Unfortunately, a detailed, coherent account of the South African nuclear decision-making process is not contained in the comparatively small corpus of literature

concerned with the country's nuclear capabilities, policies and intentions. Perhaps because South Africa, unlike Israel, has not been physically engaged in a fight for its very existence, there have been no leaks indicating deliberation over the deployment of nuclear weapons. Alternatively, it could be argued that the South Africans have chosen to give visible indications of a proliferation decision rather than contrived intimations to this effect. For whatever reason, essentially what is lacking is a proper weighing of the significance of key developments - a highlighting of critical junctures and an assessment of why crucial decisions were taken. What follows, therefore, is an admittedly inductive attempt to superimpose an appropriate frame of reference on what is, without the connecting logic of motive, simply a congeries of facts and implications.

The basic premise of this account, presented previously, is that South Africa has had a long-term interest in acquiring a nuclear capability. Initially, this goal would have seemed a prudent hedge against an uncertain future, but as the excoriation to which the Republic was subjected became compounded by calls for action, so nuclear weapons found their rationale as guarantors and symbols of white rule. The South African perspective on the threat posed to white rule by the

increasingly vitriolic international opposition to apartheid has, characteristically, been informed by worst-case scenarios. William Gutteridge notes, for example, that "successive Defence White Papers in 1977, 1978 and 1979 have demonstrated that planning is being based on the "worst case" in which the Republic would be subjected to a violent assault from inside and outside at the same time." (74) Thus, consideration of the internal security threat is essential in order to make sense of South Africa's security dilemma.

In this connection it is interesting to note that the key developments in South Africa's nuclear programme followed immediately instances of severe civil unrest at home. The inference is not that nuclear weapons would be used to address this perceived threat, but rather that widespread domestic upheaval in diminishing South Africa's ability to simultaneously defend its borders provides a rationale for the deployment of nuclear weapons. Multi-front war, then, is the great fear of South Africa's leaders and its imminence the litmus-test for proliferation; if the manpower of the armed forces is consumed with the task of maintaining internal order, then the task of preventing or holding off a supportive cross-border invasion, would be delegated to nuclear weapons.



From this perspective, the decision taken in 1961 - one year after the Sharpeville massacre - to begin research on uranium enrichment, can be seen as constituting an option decision. From this point, South Africa set about acquiring a latent capacity, a contention which seems to be substantiated by the fact that soon thereafter, in 1963, South Africa began research on rocketry and missiles which could most credibly be deployed in a nuclear mode.(75) That South Africa's original decisions with regard to acquiring nuclear weapons were motive-related has been officially attested to, as "when the Rocket Research Institute was established...Professor A. J. A. Le Roux [Chairman of the AEB] said that South Africa had been *forced by events in Africa* to enter the missile field."(76)(emphasis in original) These comments were made in 1964 and probably refer to "events" such as Sharpeville and the formation in 1963 of the Organisation of African Unity, the membership of which was united by an anti-apartheid ethic.(77) A further deterioration in South Africa's overall politico-security situation was simultaneously manifested by the growing anti-apartheid clamour and the increasing isolation of the South African regime, both of which found their most notable expressions in the United Nations' endorsement of a voluntary arms embargo against South

Africa. It appears, then, that South Africa's option decision and consequent efforts to give effect to that option were derived from a constellation of domestic, regional, and international imperatives, though it is significant that the regional and international considerations flow from a domestic source.(78)

The Lisbon coup of April 1974 was a watershed event in the history of southern Africa, producing, in geopolitical terms, an entirely new configuration of power which was deemed to be profoundly threatening by South Africa's leaders. The result was a gradual reorientation in South African foreign policy, the "outward" policy of "movement" being finally and unequivocally repudiated in the invasion of Angola.(79) Having seen the Portuguese hand over power in Mozambique to Samora Machel's Marxist liberation movement FRELIMO, the South Africans resolved to intervene in Angola to prevent further communist gains. Hence, as of August 1975 the Republic's armed forces were drawn in ever greater numbers into the Angolan imbroglio, supporting UNITA and the FNLA in their efforts to prevent the Soviet and Cuban-backed MPLA from coming to power.(80) The venture proved, however, to be a foreign policy disaster and, in January 1976, one month after the United States ended its logistical support for forces fighting the MPLA, a somewhat chastened South Africa withdrew to

the Angola-Namibia border.(81)

A sense of being betrayed by the U. S. was keenly felt by the South Africans, and its significance was not lost on them, accounting, perhaps, for Prime Minister Vorster's comments in his 1977 New Year's Day address:"If therefore a Communist onslaught should be made against South Africa, directly or under camouflage, South Africa will have to face it alone, and certain countries which profess to be anti-Communist will even refuse to sell us arms...This is the reality of our situation."(82) While the realisation that South Africa would indeed stand alone if such a communist onslaught materialised was undoubtedly discomfiting, perhaps the most profound consequence of South Africa's involvement in Angola was that it provided the Soviets and Cubans with a pretext for a massive Cuban military presence. Far from combatting the spread of communism, then, the Angolan adventure realised South Africa's worst security fears as she thereafter was confronted across the border from Namibia by a well-armed conventional communist military presence in the shape of 20,000 Cuban troops.(83)

As indicated by Vorster's remarks, the Republic's leaders discerned in these developments portents of what was characterised as a "Total Onslaught" against South Africa. According to Defence Minister Magnus Malan this

onslaught was "Communist inspired, Communist planned, and Communist supported.[The aim is] to gain control over southern Africa. On their way [to world domination] Russian leaders have selected certain interim objectives, and southern Africa is one." (84) Foreign Minister R. F. Botha was more explicit, describing the Soviet plan as "first Namibia, then Botswana, Lesotho and Swaziland, followed by the final attack on South Africa. The government can't ignore this reality." (85)

Defence Minister Botha seems to have been especially sensitive to this new threat, warning parliament in early 1976 that the presence of Cuban troops and sophisticated weaponry in Angola had "introduced a completely new factor...virtually overnight", continuing that it was necessary to "have a deterrent to be able to resist a fairly heavy *conventional attack* on South Africa." (86) (emphasis in original) Botha then convinced Prime Minister Vorster of the efficacy of publicly articulating the concept of South Africa being subjected to a "Total Onslaught" and of the need to respond with a "Total National Strategy". (87) In this connection, Jaster observes of the "Total National Strategy" that "the siege mentality has been refined by the leadership into an official ideology of threat and survival." (88) Characterising the issue in these rather stark terms was

unquestionably sound domestic politics; by dramatising the security threat public acceptance of higher military budgets, greater demands on civilian manpower and longer military service periods could more easily be secured, while the very activism of the policy was bound to be generally well received by the white electorate.(89) This has led Coker to question whether the South Africans genuinely perceived a danger of a full-scale offensive or simply manipulated the fear for political advantage.(90) Yet, while it is true that the leadership's public concern was self-serving, their subsequent actions do suggest that they took seriously the prospect of South Africa coming under conventional attack: in 1977 defence spending rose 21.3 per cent, much of the outlay being accounted for by the purchase of systems most suitable for conventional as opposed to counter-insurgency warfare;(91) in the same year South Africa held its first large-scale conventional warfare exercise, Operation Blitz simulating South Africa's response to an invasion through Namibia;(92) and, in a rather different vein, the military became increasingly involved in foreign policy making, the State Security Council becoming the preeminent foreign policy organ.(93) These developments would seem to indicate that the threat perception was indeed genuine.

A South African proliferation decision at this time

would seem to be consonant with the general thrust of its nascent "Total National Strategy". Spence notes that "the spectre of Soviet/Cuban conventional support for guerrilla struggle in South Africa might constitute a quickening incentive to acquire a tactical weapon", a conclusion with which Betts concurs.(94) Both, however, suggest, correctly, that such Soviet/Cuban involvement was unlikely. Yet, as Jaster trenchantly observes, the key factor in assessing the need for and suitability of nuclear weapons is not a dispassionate assessment of the regional strategic situation, but rather South Africa's assessment of the threat to its security.(95) The reorientation of South Africa's defence plans towards combatting conventional attack seems to argue persuasively that the South Africans were in fact preparing for precisely the sort of "remote contingency" which Spence and Betts regard as constituting a rationale for proliferation.(96)

Arguably, this situation may have been sufficient in itself to prompt a proliferation decision, but if not, then the explosion of unrest in the black townships would almost certainly have tipped the balance in favour of "going nuclear". The Soweto riots constituted the most serious racial strife in this century, accounting for some 600 lives (all but four of them black) between June and

November 1976.(97) Disturbances were not just restricted to Soweto but affected almost every non-white township in the country, this fact and the prolonged nature of unrest producing a considerable internal security problem for the South African regime.(98) Although a massive security clamp-down finally quelled disturbances, it was apparent that the problem had not been solved and that the militant expression of black disaffection was merely in abeyance.(99) Thus in late 1976 a festering and combustible internal situation combined with an apparently acute external threat to realise South Africa's worst fear of a prospective multi-front offensive against white rule. It was therefore to effect deterrence and to alternately bolster white and demoralise black morale that South Africa then took the decision to develop a bomb-in-the-basement.

Unfortunately, nothing is known of how the decision came to be taken, though what little related information there is provides no grounds for suspecting Dayan-type unilateralism. The AEB's activities seem to have been directly overseen and encouraged by the highest political authorities: the official history of the AEB describes Prime Minister Verwoerd - "a staunch protagonist of the enrichment project"(100) - as expediting the necessary funding and arrangements required in order to undertake

the research, while his successor Vorster also apparently "clearly saw the importance and implications of the enrichment project." (101) Moreover, given that South Africa's nuclear programme was formulated with a considerable degree of military intent, there would seem to have been no need for precipitate actions on behalf of the military-scientific elite; once a nuclear option had been acquired they could have harboured few doubts that the government would endorse an undisclosed bomb-in-the-basement.

Moore does suggest, however, that South Africa's developing nuclear capabilities may have had an impact on the decision-making process, postulating that as its capabilities improved so its intentions became more ambitious. (102) Thus, within an overall context of motive-related proliferation, as the requisite capability drew closer so decision-makers became more sensitive to the arguments for the development of weapons. Essentially, the effect of technology, according to Moore, was to turn the long-term objective of acquiring nuclear weapons into a short-term objective. Moore suggests that this alteration of short-term objectives "coincided" with the deterioration of South Africa's politico-security situation, but it would perhaps be more accurate to say that it was precisely this strategic environment which



sensitised South Africa's leaders in the first place to the implications of its nuclear progress. One can perhaps argue, then, that the role played by technology in accounting for South Africa's proliferation decision was to reinforce an existing disposition towards acquiring nuclear weapons.

### Decision-Rules

Did the proliferation decision predate the acquisition of a latent capacity?

South Africa's proliferation decision seems to have predated its acquisition of a latent capacity by approximately one year, though it should be noted that the proliferation decision was taken in anticipation of the pilot plant beginning full operation. What is significant about the chronology of the South African decision-making process is that a decision was first taken to acquire a nuclear option which, once acquired, was subsequently activated by a proliferation decision. This sequence of events is open to both motivational and technological interpretations of proliferation, though it is significant that when South Africa took its option decision in 1961, it did so with an awareness of the future prospect of having to simultaneously combat both external and internal threats to white rule.

Why was the proliferation decision taken? Was the decision taken to address a clearly identifiable threat or to meet a specific contingency? Can underlying precipitants and "trigger events" be discerned?

The crucial factors influencing South Africa's proliferation decision were of a politico-security nature, though some concession may be made to the role of technology in the sense that it may have affected the decision process in such a way as to reinforce the desirability of "going nuclear". The main contingency which proliferation addressed was that of South Africa having to simultaneously deal with a full-scale Soviet and Cuban-backed conventional assault while trying to suppress widespread domestic revolt. Underlying precipitants tending to dispose South Africa towards the acquisition of nuclear weapons included: a determination to maintain apartheid in defiance of regional and international opinion; a tendency to exaggerate the security threat posed to South Africa; and the Lisbon coup, which established conditions for the realisation of South Africa's worst security fears.

"Trigger events" which tipped the balance in favour of proliferation were the introduction of large numbers of Cuban troops to Angola and the explosion of civil unrest in the black townships. The presence of Cuban troops in

the region gave full rein to South Africa's paranoia about a communist onslaught, while the black anger manifested in the Soweto riots dramatised the possibility of external and internal offensives against white rule being launched concurrently. Perhaps more appositely, the South African government may have been concerned that prolonged domestic black militancy could provide a pretext for a supportive conventional attack on the Republic. Conceivably also, and in a rather different vein, the imminence of a nuclear option may be regarded as a "trigger event" of secondary importance, having apparently exerted some positive influence upon decision-making with regard to the acquisition of nuclear weapons.

Was the decision-making process executive directed? Did the research programme acquire a momentum and logic of its own, or was the direction and intensity of the nuclear programme conditioned by political variables?

In this regard South Africa's experience would appear to be a mixed one, though it should be noted that due to a paucity of relevant information conclusions drawn in this respect can at best be tentative. There is evidence, however, of close executive oversight, both Verwoerd and Vorster having been intimately involved in decisions relating to South Africa's acquisition of an effectual

nuclear capability. Verwoerd, for example, from the outset gave personal backing to the enrichment project, and in the late 1960s the effect of the South African government's decision to pursue enrichment rather than power plant technology was to facilitate the attainment of a weapons capability. In fact the South African case, unlike the Israeli, shows a constancy of purpose with regard to nuclear plans, and the fact that there is no evidence of these plans altering over time should not be construed to denote technological momentum unfettered by political variables. Rather, the political impulse was constant throughout the 1960s and early 1970s - the prudence of acquiring a nuclear capability just in case opposition to apartheid became totally enflamed and events took an unpredictable course. When in the mid-1970s the political impulse became more urgent and more specific in nature, the South Africans responded with a proliferation decision.

Having said this, however, there is some evidence of a less than insistent technological imperative operating within a broader motivational scheme. South Africa had the long-term intention of acquiring a nuclear capability, but the initial motivational dynamic thus established, and subsequently quickened by events in the mid-1970s, was to some extent affected by the intervening

variable of technology. In this connection it is difficult to ascertain how much independent influence technology exercised upon decision-makers: Moore suggests that South Africa's developing nuclear capabilities affected its nuclear intentions in such a way as to attach greater priority to weapons acquisition; this is not the same thing, however, as identifying technology as the cause of proliferation, and certainly in this regard South Africa's motivational profile would be of overarching importance. One is tempted to conclude that technology was important *because* of South Africa's politico-security situation, but if one accepts that through some ill-defined psychological process technology had some autonomous effect, then one could postulate that technology eased and contributed to the proliferation decision.

Are the characteristics of the relevant weapon systems suggestive of a particular use?

Circumstantial evidence surrounding the Vela incident of 1979 suggests that after taking its proliferation decision South Africa moved with some haste towards the development of low-yield, tactical nuclear weapons. This seems to indicate that, aside from their deterrence value, South Africa conceives of nuclear weapons as having a potential

battlefield role, probably in the sense of breaking up troop concentrations on the Republic's borders. This in turn lends credence to the assertion that South Africa has developed nuclear weapons in order to help it combat a concerted conventional offensive, an eventuality which is predicated on active Soviet-bloc intervention. In this respect, proliferation is consonant both with South Africa's perception of a communist-inspired "Total Onslaught" and its determination to respond with a "Total National Strategy".

#### Conclusion

South Africa's proliferation can be directly ascribed to motivational impulses, though there are perhaps some grounds for conceding a token role for the technological imperative. It seems reasonable to conclude, however, that given the politico-security situation which South Africa perceived itself to be confronted with in the mid-1970s it would have proliferated anyway, regardless of any importunity on behalf of its evolving nuclear capability. In contrast, it is inconceivable that South Africa's proliferation decision was taken in response to a technological imperative and without reference to pressing politico-security concerns. It may be the case that

technology did exercise some degree of independent influence on decision-makers, but such is the dominance of motivational concerns in the South African proliferation calculus that the technological imperative may be thought of, at best, as only reinforcing an established disposition towards acquiring nuclear weapons.

The difficulty of ascertaining the influence of the technological imperative derives from its somewhat imprecise conceptualisation. Even if one treats technology as a motivating force in its own right, it is difficult to see the processes involved whereby a decision-maker reaches the conclusion that because proliferation is possible it ought therefore to be undertaken. Some connecting logic is available if one conceives of technological proliferation as occurring because, in the absence of compelling disincentives, decision-makers see no need to veto the acquisition of the new-found and hard-won capability. In a sense, proliferation is sanctioned rather than overwhelmingly endorsed. But even with this scheme, capability is seen to have a driving effect on motivation, an assertion which becomes increasingly difficult to support the more prominently independent motivations figure in the proliferation calculus. This is obviously especially true of pariah states, which are proliferation risks precisely

because their motivational profiles are so vivid. The problem, then, is one of distinguishing technological from motivational effects when the motives alone are probably sufficient to produce proliferation. If one were to be particularly sanguine about the appropriateness of a technological perspective as applied to cases such as South Africa, one could argue that technological capability provides a distinct, albeit minor additional incentive for proliferation. It is equally valid to note, however, that the South African case leaves the impression that the effects of technology may well be mediated through a broader motivational impulse.



## CONCLUSION

The proliferation process in Israel and South Africa would seem to broadly conform to the process postulated by the motivational model, though in both cases - most distinctly, however, with regard to Israel - aspects of the technological imperative can be seen to operate within the general motivational scheme. Interestingly, the technological imperative operated to different effect in the case studies:

a) Israel's proliferation process was motive-driven from start to finish, though the overall impression of motivational proliferation is somewhat distorted by a last-gasp intervention on behalf of aspects of the technological imperative. An option decision was taken by Israel in late 1956 out of concern that it could not rely indefinitely on a conventional technical edge to ensure military superiority over the Arabs. Given that military defeat was regarded as synonymous with the extinction of the State of Israel, nuclear weapons were regarded as being the ultimate guarantors of the permanency of the Jewish homeland. Israel may be thought of as possessing a very rudimentary nuclear option in the early 1960s based on enriched uranium acquired clandestinely from the United

States, the sustainability of this option being extended throughout the 1960s by the operation of "hot-labs" at Dimona and, subsequently it appears, the completion of a separation plant in 1969. It was Moshe Dayan, apparently, who took the decision to build a separation facility which may be thought of as giving effect to the proliferation decision which was taken in 1968.

The proliferation decision was the product of Dayan's personal analysis of the politico-security situation which confronted Israel in the wake of the Six Day War. Specifically, Dayan hoped to deter Soviet involvement in a further war against Israel and to prevent Israel's growing military dependence on the United States from forcing it to accept a prospective land-for-peace deal which did not necessarily adhere to its "secure and defensible borders" formula. Dayan's cabinet colleagues appear not to have shared his conviction of the need to develop nuclear weapons, so he acted unilaterally and ordered the initiation of a nuclear weapons programme which was only retrospectively sanctioned by the Israeli cabinet. Thus the reasons for Israel's proliferation were explicitly motivational in nature, but the manner in which the proliferation decision was taken was consistent with a technological imperative-type construction of proliferation.

Technology itself, however, was not a factor in the Israeli proliferation process; rather, the logic presumed by the technological imperative - that of political authorities being "presented" with nuclear weapons - was evident in the manner in which Dayan took the decision to "go nuclear". In this respect the technological imperative coexisted with, but was subsumed to, the motivational model; politico-security concerns explained *why* the proliferation decision was taken and the logic of the technological imperative *how* it was taken.

b) South Africa's nuclear decision-making has been animated by a concern about the white regime having to simultaneously confront internal and external offensives and has thus been causally related to motivations. In 1961, one year after the Sharpeville massacre dramatised the South African authorities' sensitivity to a potential internal security threat, South Africa took its option decision as represented by the initiation of research on uranium enrichment. The latent capacity was finally attained in 1977 when the completion of the Valindaba pilot enrichment plant gave the Republic an on-going capability to produce fissile material. It appears that the crucial proliferation decision was taken in late 1976, the strategic outlook from Pretoria having worsened

dramatically with the introduction of large numbers of Cuban troops to Angola and militant unrest simmering in the black townships. The Cuban presence in Angola was felt to presage a communist-sponsored "Total Onslaught" against South Africa, an eventuality which the Republic with its limited manpower would find it very difficult to combat should widespread internal unrest break out at the same time. The Soweto riots gave tangible evidence of such a possibility, South Africa's subsequent proliferation being tacit recognition of the fact that the white regime would need to use nuclear weapons to defend the country against invasion if concerted and pervasive violent opposition to the apartheid system were to break out at home.

The technological imperative did not intrude upon the South African decision-process quite as dramatically as in the Israeli case, its effects being rather more difficult to identify because of this. It may be the case, however, that the availability of the requisite technology did exercise some positive influence upon decision-makers with regard to "going nuclear". In this respect, one sees technology affecting the *why* side of the equation. Significantly, though, this influence was not of crucial importance and, arguably, what importance it did have was derived from contextual factors. In other

words, it was because South Africa felt itself to be threatened that it was sensitive to the "pull" of nuclear weapons.

The implication, then, is that technology is of decidedly secondary importance in the proliferation process of pariah states. It can account for how proliferation decisions are taken, but the decision is ultimately related to motivational concerns; alternatively, it can be an additional incentive for proliferation, but is in no way crucial in this regard. Thus the cases of Israel and South Africa indicate that the technological imperative can operate at two levels in the decision process, relating, in somewhat crude terms, to "how" and "why" proliferation occurs. Yet this ability must be thought of as manifesting itself within a more generalised motive-related decision-making process. Politico-security concerns provide the dynamics of proliferation, with technology assuming the role of necessary but not sufficient condition.

Indeed, the nature of the technological imperative causes one to assert that not only does it fail to adequately account for the proliferation of Israel and South Africa, but also it provides an entirely inappropriate perspective with which to assess the

proliferation of any state with compelling motivations. The notion that capability drives motivation can only be supported, if indeed it has any cogency, in circumstances in which the object state does not have a potent mix of incentives and disincentives in its proliferation calculus. The more prominently motivations figure in the calculus, the less applicable the concept of "drift" becomes. This is true to such an extent of pariah states that motivations drive capability, which may in turn exercise some symbiotic but residual influence on motivation. Crucially, however, it is motivations which define and give shape to the proliferation process.

What though of the *sui generis* hypothesis? It will be recalled that it was to be dealt with retrospectively and as a null hypothesis because treating pariahs as an identifiable group seemed to vitiate the logic of holding that all instances of proliferation were unique. Whether the null hypothesis has in fact been proven is perhaps a matter of interpretation. Certainly, there are similarities between the cases of Israel and South Africa, the fact that both took their proliferation decisions with reference to broadly-defined politico-security incentives suggesting that these instances are not discrete types. Yet the details of the cases are different, so different in fact that one cannot make sense of Israel or South

Africa's proliferation without considering certain unique factors. Jewish history and its effect on the perceptions of the Israeli foreign policy elite and Dayan's mercurial qualities, for example, are absolutely fundamental to an understanding of Israel's proliferation. Likewise the "laager mentality" of the South Africans and their determination to perpetuate a system of rule which simultaneously provokes both external and internal opposition to the regime.

This dilemma is perhaps best resolved if one adheres to the conceptualisation of the proliferation theories given previously, whereby the technological imperative and *sui generis* hypotheses are but variations on a motivational theme. Thus the dominant paradigm is that of motive-related proliferation, informed, to a greater or lesser degree, by elements of the technological imperative and *sui generis* models. Thus, in the same way as the technological imperative casts some light on the proliferation process, so the *sui generis* hypothesis, without providing a comprehensive account of why proliferation occurred, is informative in that it allows due weight to be attached to idiosyncratic but nevertheless crucial elements normally submerged in the search for patterns. In sum, the proliferation dynamic established within pariah states is a motivational one,

though this may to some extent be modified and propelled by intervening technological and idiosyncratic variables.

Characterising proliferation in these terms leads one to question the efficacy of a non-proliferation regime with an exclusive supply-side focus as it pertains to states with distinct motivational profiles. The implication is that once the technological hurdles have been overcome, motivations (which of course pointed up the need to tackle the technical problems in the first place) will ensure that the proliferation process is consummated with nuclear weapons. As long as incentives remain acute it is just a matter of time before those states which feel themselves to be in some way threatened "go nuclear".

Accordingly, while Wohlstetter and Greenwood *et. al.*, amongst others, are right to be concerned about the proliferation implications of trade in nuclear materials, it should be noted that the dissemination of nuclear technologies is not the central problem in itself, but rather is representative of, a response to, the problem. Motivations define a need to acquire nuclear technology, a formulation which policy-makers and analysts alike must grasp if the proliferation process is to be properly understood. Relating this finding to the present non-proliferation regime gives cause for both hope and despondency. Despondency because the fact that so many



states have invested in nuclear options indicates that the motivational dynamic is already widely established. Yet the gloom is dissipated somewhat by the realisation that proliferation, at least as it concerns the most likely candidates, is not the deterministic process posited by technological models, but rather is probabilistic. The fact that these states have sought the insurance of nuclear options does not mean, *ipso facto*, that they will inevitably realise their options by deploying nuclear weapons. Proliferation will not occur provided the disincentives outweigh the incentives. Non-proliferation policies amounting in sum to the attempt to restrict the dissemination of sensitive technologies are therefore based on a misconceptualisation of the proliferation process, one in which a genuine concern is rendered into a somewhat hapless crusade. Constraints on the dissemination of nuclear technology and materials may delay the process, but the outcome itself can only be altered if the relevant motivations are mitigated.

Thus the dangers of proliferation presented by pariah states and, logically, any state with a distinct motivational profile, cannot be adequately addressed within the existing institutional framework of the non-proliferation regime. Rather, any hope of averting future proliferation problems concerning pariah states

lies in the realm of international politics. The institutional framework must of course be retained, but over and above this the superpowers in particular must be willing to treat cases on an individual basis and, cognisant of the peculiarities of these cases, tailor policies accordingly. Even then success is by no means assured. The mitigation of acute security incentives essentially presupposes provision of a security guarantee, something which is occasionally politically inexpedient. The United States, for example, would not countenance this course of action with regard to South Africa in the mid-1970s, thereby revealing that its commitment to non-proliferation was of secondary importance to its desire not to be seen to be supporting apartheid. The Israeli case is also interesting, for a security guarantee in and of itself would have been accepted with some alacrity, but only if the Israelis did not have to provide a territorial *quid pro quo* with regard to the West Bank or Jerusalem in order to get it. One could argue that an alliance with the United States would have obviated the need for the territorial buffer of the West Bank, but it ought to be remembered that Israel sought political benefit through its occupation of these territories and an express intention of its proliferation was to prevent it being coerced politically over this issue by the United

States.

Thus, while international politics seem to hold the key to modifying the desire of pariah states to "go nuclear", political considerations can also militate against the success of such an approach. In cases where a source of leverage or a pressure point cannot be found then the gloomy, but realistic forecast is that the development of undisclosed bombs is probably inevitable. This is particularly the case because, as the experiences of Israel and South Africa show, a bomb in the basement permits a state to develop a devastating military capability while escaping the wrath of the international community. Nevertheless, the only prospect of success in discouraging pariah states from proliferation is to engage the issue on a political level; to do otherwise is to treat the symptoms of the problem rather than its cause. The fact that South Korea and Taiwan, for example, have been constrained from "going nuclear" by U. S. security guarantees shows that the proliferation cost-benefit analysis is susceptible to political manipulation where conditions permit. Where contextual factors are not as accommodating, the policy, like any misapplied foreign policy, will not be successful. Approaching the issue on the correct level, however, at least gives the policy the opportunity of occasional success, a prospect not

necessarily held out over time by a policy exclusively based on the attempt to keep sensitive technologies from those most anxious to acquire them.

## NOTES

Introduction

1. Quoted in Mitchell Reiss, Without the Bomb: The Politics of Nuclear Non-Proliferation. (New York: Columbia University Press, 1988) p.16.

2. The essence of the nuclear bargain codified in the NPT is that the nuclear powers pledged to give the non-nuclear weapon states every assistance in exploiting the potentialities of nuclear energy in return for their abnegation of any desire to acquire nuclear weapons and for their acceptance of IAEA safeguards on their nuclear facilities. These safeguards are designed to prevent the diversion of fissionable materials from civilian to military purposes. The Nuclear Suppliers Group is a multilateral body comprised of the major suppliers of nuclear materials and equipment established in 1974 to endorse a uniform code of conduct relating to the supply conditions attached to nuclear contracts. Central to its activities is a "trigger list" of sensitive materials and technologies which are supplied subject only to strict safeguards if the recipient is not a signatory of the NPT. INFCE was President Carter's idea, arising from concerns about the proliferation implications of fast-breeder reactors and plutonium fuel-cycles. Essentially the idea was to have both supplier and consumer countries come together to study the technical and institutional problems of organising the nuclear fuel-cycle in such a way as to provide energy without providing weaponry. Its findings, however, were inconclusive. For a discussion of the background to the NPT and the evolution of the non-proliferation regime see ibid, Ch. 1.

3. See Stephen M. Meyer, The Dynamics of Nuclear Proliferation. (Chicago: University of Chicago Press, 1984) Table 2, p.41.

4. The fullest statement of this argument, and its obverse - proliferation as technological-motivational convergence - is to be found in Meyer, Chapter 6. The difference here is not merely semantic; both formulations denote motivational proliferation, but the proliferation processes are significantly different. Technology converging with motivation indicates a pressing need to perfect, specifically, weapons technology, while the

obverse formulation merely suggests that a state invested in the insurance of a "nuclear option."

5. Ibid,passim.

6. Robert E. Harkavy, "The Pariah State Syndrome". Orbis. 21: 3, Fall 1977, p.627.

7. It should be noted that "pariahitude" is, to some extent, a question of degree. The pariah status of South Korea and, conceivably, Israel, would appear, for example, to be diminishing. Conversely, in recent years states such as Chile, Pakistan, and Iran may be thought of as being akin, in certain respects, to pariahs. Quester has noted an interesting paradox in the relationship between pariahs and proliferation to the effect that pariahs' beleaguered situations cause them to perceive the benefits of "going nuclear", while doing so "redeems" them of their pariah status. In effect, because a state can no longer credibly be threatened with extinction, its adversaries are forced to come to terms with it. Thus, "Israel may have to surrender the West Bank to the Palestinians, but in the end it will be relieved of the threat that it must surrender all of the old Palestine Mandate. The white South African regime will similarly probably have to surrender much more land to black rule than its current nominal offer of some "Bantustans", but it may not have to consider being pushed into the sea, forced to return to Europe." George Quester, "Preventing Proliferation: The Impact of International Politics", International Organisation, 35, 1, Winter 1981, p. 225.

8. One has some doubts, for example, about South Africa being "a rather small and weak nation" or about Israel or South Africa being "too small or underdeveloped to provide a significant proportion of its arms needs through indigenous production". Both in fact do this. Harkavy's rather "catch-all" definition is, however, probably not intended to apply exhaustively to each pariah. In the terms of his definition, condition (2) - disputation of legitimacy - is perhaps of greatest significance for Israeli and South African "pariahitude".

9. Richard K. Betts, "Paranooids, Pygmies, Pariahs and Nonproliferation". Foreign Policy. Spring 1977, p.166.

10. With regard to South Korea and Taiwan being constrained from "going nuclear" by U. S. security guarantees see William C. Potter, Nuclear Power and

Nonproliferation: An Interdisciplinary Perspective, (Cambridge: Oelgeschlager, Gunn and Hair, 1982), pp. 170-173, Meyer, pp. 124-127, 132-134, and Betts, pp. 179-183. Israel has of course enjoyed a close association with its benefactor the United States, but has never been able to attain a security guarantee. The U. S. is committed to the existence of the State of Israel within secure, recognised borders, (though it judiciously refrains from specifying those borders) but in deference to its other political and strategic interests in the Middle East has repeatedly denied Israel an explicit guarantee. A commitment which sanctifies Israel's territorial integrity may appear to operate as such - akin, perhaps, to a *de facto* alliance - but, crucially, it has not been perceived as such by Israeli policy-makers who have been sceptical of U. S. resolve with regard to using military force against the Arabs. See Robert W. Tucker, "Israel and the United States: From Dependence to Nuclear Weapons?", Commentary, November 1975. South Africa has nurtured for years the prospect of a strategic alliance with the West, but such is the obloquy with which the Republic is generally regarded that there has been no possibility of the United States extending a security guarantee to the apartheid state. For a brief discussion of South African efforts in this regard see J. E. Spence, "South Africa and the Defence of the West", The Round Table, January 1971.

11. Steve Chan, "Incentives for Nuclear Proliferation: The Case of International Pariahs", Journal of Strategic Studies, 3: 1, May 1980, p. 40.

12. Alan Dowty, "Going Public With the Bomb: The Israeli Calculus", in Louis Rene Beres (ed. ), Security or Armageddon: Israel's Nuclear Strategy, (Lexington, Mass: Lexington Books, 1986), p. 26.

## Chapter 1

1. This is not to deny a possible link between the two types of proliferation. For a discussion of this issue see Ashok Kapur, International Nuclear Proliferation: Multilateral Diplomacy and Regional Aspects, (New York: Praeger, 1979) especially Chapter 6. For a briefer discussion see William Epstein, "Why States Go - And Don't Go - Nuclear", The Annals of the American Academy of Political and Social Science, March 1977, pp. 28-30.

2. See, for example, Reiss, Introduction p. XX.

3. Whether they have or have not conducted a nuclear test depends on how one interprets the mysterious flash in the south Atlantic in October 1979.

4. This is how Thomas C. Schelling characterises the act of conducting a nuclear test. See Thomas C. Schelling, "Who Will Have the Bomb?", International Security, Vol. 1, No. 1, Summer 1976, p. 78.

5. Ibid, p. 79.

6. Potter, Figure 5. 3, p. 182.

7. Meyer, p. 5.

8. Ibid, p. 6.

9. Ibid, p. 10.

10. Amory B. Lovins and L. Hunter Lovins, Energy/War: Breaking the Nuclear Link, (San Francisco: Friends of the Earth, 1980) p. 11.

11. Quoted in Ernest W. Lefever, Nuclear Arms in the Third World: U. S. Policy Dilemma, Washington D. C. : The Brookings Institution, 1979) p. 21.

12. Ibid, p. 21. See also Chan, pp. 37-38.

13. Chan, p. 137

14. Ibid, p. 37.

15. Ibid, p. 37. Essentially the same point is made by William Van Cleave though in this case it is meant to apply generally and not just to the specific circumstances of pariah states. See William Van Cleave, "Nuclear Technology and Weapons", in Robert M. Lawrence and Joel Larus (eds. ), Nuclear Proliferation Phase II, (Lawrence: University Press of Kansas for National Security Education Program, 1974), p. 59

16. Meyer, p. 10.

17. For a fuller discussion see Meyer, Chapter 2.

18. Ibid, p. 11.

19. See Ted Greenwood et. al., "Nuclear Power and Weapons Proliferation", Adelphi Papers,



(London: International Institute for Strategic Studies) No. 130, Winter 1976, and Albert Wohlstetter, "Spreading the Bomb Without Quite Breaking the Rules", Foreign Policy, No. 25 Winter 1976-77.

20. Wohlstetter, p. 149.

21. Quoted in R. N. Rosecrance (ed. ) The Dispersion of Nuclear Weapons: Strategy and Politics, (New York and London: Columbia University Press, 1964) p. 300.

22. See C. W. Kegley et. al., "A Comparative analysis of Nuclear Armament" in Pat McGowan and Charles W. Kegley, Jr. (eds. ), Threats, Weapons, and Foreign Policy, (Beverly Hills and London: Sage Publications, 1980) pp. 233-240.

23. Kegley et. al., run a computer test on proliferation stimuli and conclude that access to nuclear technology is the most salient feature in the proliferation calculus. Significantly, the tests are conducted on a series of countries selected as being the most likely proliferators. The implications of these countries having proliferation motives are taken as given, and are not explored at all.

24. Lawrence Scheinman, Atomic Energy Policy in France Under The Fourth Republic, (Princeton: Princeton University Press, 1965), passim.

25. Ibid, p. 210.

26. Ibid, pp. 215-216.

27. See Ibid, especially Chapters 4 and 6, and Potter, pp. 150-151.

28. For a full discussion of this hypothesis see Meyer, Chapter 3.

29. Ibid, Chapter 6.

30. See Potter, pp. 143-144, and Lewis A. Dunn and William H. Overholt, "The Next Phase in Nuclear Proliferation Research", Orbis, Vol. 20, No. 2, Summer 1976, pp. 505-507.

31. In addition to sources to previously noted, see Kathleen Bailey, "When and Why Weapons", Bulletin of the Atomic Scientists, April 1980, Leonard Beaton and John

Maddox, The Spread of Nuclear Weapons, (London: Chatto and Windus, 1962), Mitchell Reiss, and George Quester, The Politics of Nuclear Proliferation, (Baltimore: The John Hopkins University Press, 1973).

32. See, for example, Meyer, p. 103, Potter, p. 171, and Beaton and Maddox, pp. 195-196.

33. For brief discussions of these proliferation decisions see Meyer, Chapter 6, and Potter, pp. 145-176.

34. For a fuller account of this hypothesis see Meyer, pp. 17-18.

35. Ibid, p. 17.

36. Epstein, pp. 16-17.

37. Kapur, p. 54.

38. See Meyer, p. 17.

39. See S. Verba, "Some Dilemmas in Comparative Research", World Politics, Vol. 20, No. 1, October 1967.

40. See A. Lijphart, "Comparative Politics and the Comparative Method", American Political Science Review, Vol. 65, No. 3, September 1971; H. Eckstein, "Case Study and Theory in Political Science" in F. I. Greenstein and N. W. Polsby (eds.) Handbook of Political Science, Volume 7: Strategies of Inquiry, (Reading: Addison-Wesley Publishing Co. 1975); B. M. Russett, "International Behaviour Research: Case Studies and Cumulation" in M. Haas and H. S. Kariel (eds.) Approaches to the Study of Political Science, (Scranton: Chandler Publishing Co. 1970).

41. See Eckstein, pp. 99-104, and Russett, p. 429.

42. See J. F. Keeley, "Comparative Case Studies and Theory Building", Paper presented to the International Studies Association, 1976, pp. 10-11.

43. The proliferation decision is the critical aspect in distinguishing between motivational and technological proliferation, as was intimated in the French example. Due importance will be accorded to the proliferation decision, but I shall also analyse the evolution of the decision-making process. If the question of executive control is a matter of degree - ie. the logic of both

motivational and technological models is evident - then tracing the development of the decision-making process may help one account for the final outcome.

## Chapter 2

1. For a fuller exposition of this view see Robert Harkavy, "The Imperative to Survive" in Louis Rene Beres (ed.), pp. 99-102.

2. With regard to the Israelis' preoccupation with security see Dan Horowitz, "The Israeli Concept of National Security and the Prospects of Peace in the Middle East", in Gabriel Sheffer (ed.) Dynamics of a Conflict: A Re-examination of the Arab-Israeli Conflict, (Atlantic Highlands, N. J. : Humanities Press, 1975) pp. 236, 255.

3. See Lawrence Freedman, "Israel's Nuclear Policy", Survival, 17, (3), May-June 1975. Freedman argues that overt nuclearisation would be inimical to Israeli security. He believes it would estrange the United States, lead to a cut-off in conventional military supplies and thus diminish Israel's ability to meet credibility the most likely threat to its security, limited conventional war.

4. With regard to the pursuit and objectives of deliberate ambiguity see Yair Evron, "Israel and the Atom: The Uses and Misuses of Ambiguity, 1957-1967", Orbis, 17, (4), 1974. Also Gerald M. Steinberg, "Deliberate Ambiguity: Evolution and Evaluation", in Beres (ed.). For a brief discussion of Israel's attitude towards the NPT and a Nuclear Weapons Free Zone in the Middle East see Reiss, pp. 150-152.

5. Quoted in Yair Evron, "Israel and Nuclear Weapons", in Jae Kyu Park (ed.) Nuclear Proliferation in Developing Countries, IFES Research Series No. 14, The Institute for Far Eastern Studies, Kyungnam University, Seoul, Korea, 1979, p. 124.

6. These issues are raised in Steven J. Rosen, "Nuclearisation and Stability in the Middle East", The Jerusalem Journal of International Relations, Vol. 1, No. 3, Spring 1976, p. 26.

7. Quester, pp. 98-99. Paul Jabber's comments are also relevant: "Distinctions usually made between a technological option and a political decision are meaningful for states not involved in ongoing military

confrontations or active political disputes. Governments that are thus involved will invariably tend to see in adversary capabilities a true measure of intentions, and react accordingly." Paul Jabber, "A Nuclear Middle East: Infrastructure, Likely Military Postures and Prospects for Strategic Stability", ACIS Working Paper No. 6, Center for Arms Control and International Security, University of California, Los Angeles, September 1977, p. 6.

8. See Reiss, pp. 171-172.

9. Leonard S. Spector, The Undeclared Bomb, (Cambridge, Mass: Ballinger Publishing Company, 1988), pp. 185-188.

10. The original account of the Vanunu affair is to be found in the Sunday Times, (London), October 5, 1986. Doubts have been expressed about Vanunu's credibility, sceptics expressing the belief that Vanunu was deliberately "set-up" by the Israelis to leak the information. See, for example, The Economist, September 24, 1988. His abduction and a conviction which carried a sentence of eighteen years would seem, on the face of it, to establish his claims to be genuine. Yet, even if Vanunu was a "plant", this does not necessarily mean that the details he provided about Israel's nuclear capabilities were false. Israel may have no need to falsify this information.

11. Spector, pp. 185-188. See also "A Deadly New Missile Game", Time, July 4, 1988, p. 39.

12. Quoted in Spector, p. 180.

13. Quoted, Ibid, pp. 186-187.

14. F. Jabber, Israel and Nuclear Weapons: Present Options and Future Strategies, (London: Chatto and Windus for The International Institute for Strategic Studies, 1971), p. 15.

15. Ibid, p. 17.

16. For a full analysis of the diplomatic background to the French-Israeli agreement see Sylvia K. Crosbie, A Tacit Alliance: France and Israel From Suez to the Six Day War, (Princeton, N. J. : Princeton University Press, 1974) especially Chs. 1-4.

17. Pry, p. 10 and Jabber, pp. 21-22.

18. F. Jabber, p. 22.

19. This is the chronology of Steve Weissman and Herbert Krosney, The Islamic Bomb: The Nuclear Threat to Israel and the Middle East, (New York: Times Books, 1981), pp. 111-112. Spector gives a rather different account, describing the agreement to build Dimona as having been signed on September 17, 1956. See Spector p. 167.

20. Pry, p. 16.

21. This assumes that Israel's weapons, such as they are, are based on plutonium rather than enriched uranium. As Pry points out, this would seem to be a valid conclusion as Pu-239 is a natural product of Dimona's operation and Israel's uranium enrichment prowess seems to be limited. See Pry, pp. 49-59.

22. For sceptical accounts see Alan Dowty, "Nuclear Proliferation: The Israeli Case", International Studies Quarterly, Vol. 22, No. 1, March 1978, p. 109, and Jabber, p. 77. In contrast, see Spector, pp. 165, 166, 171, 173-175, Weissman and Krosney, pp. 113, 117-118, Pry, p. 29, and Marianne Van Leeuwen and Ben Soetendorp, "Israel", in Harald Muller (ed.) A European Non Proliferation Policy: Prospects and Problems, (Oxford: Clarendon Press, 1987), p. 232.

23. Quoted in Weissman and Krosney, p. 113.

24. See Spector, pp. 170-173, and Reiss, p. 149. De Gaulle had apparently tried to quash the separation plant project prior to American suspicions of its existence. In his memoirs he notes that "I put a stop to irregular dealings which had developed between Tel Aviv and Paris on the military plane...In particular, French construction of a factory near Beersheba for the transformation of uranium into plutonium - from which, one fine day, atomic bombs might emerge - was brought to an end." Quoted in Study on Israeli Nuclear Armament, Department of Political and Security Council Affairs, United Nations Centre for Disarmament, Report of the Secretary-General, 1982, p. 9, footnote 16. According to Spector the General's intentions were thwarted by French officials. See Spector, p. 169.

25. Reiss, p. 150.

26. Spector, p. 164.

27. Pry, pp. 22, 26.

28. Sunday Times, October 5, 1986.

29. See Pry p. 54 and Freedman p. 115. It is perhaps relevant to note also, with regard to reprocessing facilities, that there have been claims that included in the French-Israeli deal was a French commitment to reprocess the plutonium produced at Dimona and return it to Israel. See Weissman and Krosney, p. 117. There is, however, no evidence of this having occurred and Jabber, for instance, feels it would effectively have been precluded by de Gaulle's *volte face* on French-Israeli relations. See Jabber, p. 78.

30. Ernest W. Lefever, Nuclear Arms in the Third World: U. S. Policy Dilemma, (Washington D. C. : The Brookings Institution, 1979), pp. 65-66 and Weissman and Krosney, pp. 114. Lefever claims that a bomb of French-Israeli design may have been tested by the French in the Sahara in the early 1960s, but acknowledges that there is no public evidence of this.

31. U. N. Study on Israeli Nuclear Armament, p. 9. Pry lists the reactors capacity as 5 megawatts. Pry, p. 6.

32. See Pry, p. 28, and Weissman and Krosney, pp. 123-124.

33. Quoted in Weissman and Krosney, p. 124.

34. Ibid, p. 108.

35. Freedman, p. 115.

36. Weissman and Krosney, p. 107.

37. Ibid, p. 108.

38. Pry, p. 28.

39. CIA, "Prospects for Further Proliferation of Nuclear Weapons", DCI NIO 1945-74, September 4, 1974, quoted in Reiss p. 155. This CIA memorandum was not released until 1978 and then, apparently, as a mistake. Suspicions of a rather contrived leak linger on.

40. Quoted, U. N. Study on Israeli Nuclear Armament p. 4, footnote 3.

41. Harkavy, for example, claims that these leaks were deliberate on the part of the Ford administration and were designed to put pressure on Israel to make territorial concessions. It was felt that with a nuclear deterrent such concessions would not jeopardise Israel's security. See Robert E. Harkavy, "Spectre of a Middle Eastern Holocaust: The Strategic and Diplomatic Implications of the Israeli Nuclear Weapons Program", Monograph Series in World Affairs, Vol. 14, (University of Denver, 1977), p. 17. Weissman and Krosney, however, feel that the story leaked to Time emanated from official sources close to Moshe Dayan. See Weissman and Krosney, p. 107. Conceivably, this could have been done to communicate Israel's resolve to pursue an independent foreign policy.

42. Weissman and Krosney, p. 107.

43. "How Israel Got the Bomb", Time April 12, 1976.

44. Ibid,

45. The U. N. study summarised Israel's status thus: "Taking into account its nuclear facilities, the availability of nuclear materials required for their operation, the existence of scientific and technical knowledge and the presence of an adequate number of trained and experienced staff, the Group of Experts wishes to emphasise that they do not doubt that Israel, if it has not already crossed [the nuclear] threshold, has the capability to manufacture nuclear weapons within a very short time." Study on Israel's Nuclear Armament p. 22.

46. Ibid, p. 10.

47. Ibid, p. 11.

48. Pry, p. 75.

49. Ibid, p. 76.

50. Ibid, p. 79.

51. Ibid, p. 64.

52. Quoted in Ronald W. Walters, South Africa and the Bomb: Responsibility and Deterrence, (Lexington, Mass: Lexington Books, 1987), p. 42.

53. Walters, p. 44, James Adams, Israel and South Africa: The Unnatural Alliance, (London: Quartet Books, 1984), p. 191, J. D. L. Moore, South Africa and Nuclear Proliferation, (London: Macmillan Press, 1987), p. 116.

54. Walters, p. 44, Adams, p. 191.

55. Walters, p. 45, Moore, p. 116, Adams, p. 185.

56. Walters, p. 58.

57. Walters, p. 58, Adams, pp. 195-196.

58. See Benjamin Beit-Hallahmi, The Israeli Connection: Who Israel Arms and Why, (New York: Pantheon Books, 1987), Ch. 5, Adams, passim, David Taylor, "Israel-South Africa Nuclear Link Exposed", The Middle East, April 1981, Robert Manning and Stephen Talbot, "American Cover-Up on the Israeli Bomb", The Middle East, June 1980, and Walters, pp. 138-141.

59. Walters, p. 45, Adams, p. 180.

60. See Taylor, pp. 27-30, and Adams, Ch. 4.

61. Moore, p. 125.

62. Adams, pp. 194-195. Also Roger F. Pajak, "Nuclear Status and Policies of the Middle-East Countries", International Affairs, Vol. 59, No. 4, 1983, p. 594. Walters reports that the CIA speculated that the alleged test was a test of a neutron bomb. See Walters, p. 139.

63. Walters, pp. 54-55.

64. Sunday Times, October 5, 1986. The details provided by Vanunu suggested that Israel could theoretically possess over 100 nuclear weapons. Based on the same information, Spector feels that 50-60 is more likely. Spector, p. 166.

65. See A. Ehteshami, "Israel, Nuclear Weapons and the Middle East" in Peter Worsley and Kofi Buenor Hadjor, (eds.) On The Brink: Nuclear Proliferation in the Third World, (London: Third World Communications, 1987), p. 148.



Pry disagrees that Israel has the miniaturisation capabilities to use Gabriel missiles or howitzers as nuclear delivery systems. See Pry, pp. 87-97. The date at which Israel acquired its first nuclear delivery systems is perhaps significant. Agreement was reached with the U. S. in February 1966 for the sale of 48 Skyhawks and in December 1968 for the sale of 50 Phantom fighter-bombers. See Jabber, pp. 97-98. Israel acquired its first Jericho missiles in 1968 also. See Reiss, p. 152.

66. Spector, p. 164.

67. The Economist, September 24, 1988, pp. 50-51. The Israelis apparently intend to use the satellite to detect preparations for attack amongst their Arab neighbours.

68. With regard to the "holocaust syndrome" see Michael Brecher, Decisions in Israel's Foreign Policy, (London: Oxford University Press, 1974), pp. 333-334, 514. Also, Conor Cruise O'Brien, The Siege: The Story of Israel and Zionism, (London: Paladin Books, 1988), Ch. 6.

69. Quoted in Michael Brecher, The Foreign Policy System of Israel: Setting, Images, Process (New Haven: Yale University Press, 1972), p. 93.

70. Quoted in O'Brien, p. 508.

71. See, for example, Harkavy, "Spectre of a Middle Eastern Holocaust", pp. 59-64, Dowty, "Nuclear Proliferation", pp. 88, 96, Quester, p. 101, and Avigdor Haselkorn, "Israel: From an Option to a Bomb in the Basement?", in Lawrence and Larus, (eds.), p. 151.

72. This opinion seems to have been shared by the Israeli leadership, especially Ben Gurion and Peres. See S. Flapan, "Israel's Attitude Towards the NPT", in Nuclear Proliferation Problems (Cambridge, Mass: MIT Press for SIPRI, 1974), p. 275.

73. Harkavy, "Spectre of a Middle Eastern Holocaust", p. 59. Samson, of course, pulled down the Philistine's temple, in so doing killing himself and his tormentors. Masada was the last outpost of Jewish zealots in the war against Rome, the inhabitants of which committed suicide rather than be captured and enslaved. The implication here is that in analagous circumstances

the Jews may once again fall upon their swords but in the process would deliver retribution upon their enemies.

74. Haselkorn, p. 151.

75. Harkavy, "Spectre of a Middle Eastern Holocaust", pp. 65-67.

76. P. Jabber, pp. 30-31.

77. Jabber, pp. 131-133.

78. See Shlomo Aronson, "Israel's Nuclear Options", CISA Working Paper No. 7, Center for International and Strategic Affairs, University of California, Los Angeles, pp. 28-30. Also Shai Feldman, Israeli Nuclear Deterrence: A Strategy for the 1980s (New York: Columbia University Press, 1982), Ch. 1.

79. Tucker, pp. 38-43.

80. This was Dayan's interpretation of Israel's security dilemma. See Aronson, "Israel's Nuclear Options", pp. 5-6. Significantly, Dayan was Minister of Defence in the late 1960s when Israel was considering proliferation.

81. The issue of Soviet support for the Arabs and the likelihood of their actually intervening against Israel is the subject of some debate. Some authors feel that the major threat to Israeli security is the Soviet Union and suggest that Israeli proliferation may have been chiefly directed against the U. S. S. R. See Haselkorn, pp. 165-174, and J. Bowyer Bell, "Israel's Nuclear Option", Middle East Journal, 26, (4), Autumn 1972, pp. 385-389. Others note that the Soviet assistance to the Arabs has been of a largely defensive nature, doubt the Soviet commitment to the Arabs, and feel that the U. S. S. R. is, or should be, a secondary concern of Israeli defence policy. See Feldman, pp. 177-190, Flapan, p. 287, and Tucker, p. 40. The Soviets, for their part, have maintained a deafening silence on the subject of Israeli nuclear weapons. This silence was broken recently, however, when a Hebrew language commentary by Radio Moscow announced that upgrading the capabilities of Israel's Jericho missile "will force the Soviet Union to carry out defensive and political steps." Cited in Warren H. Donnelly, "Israel and Nuclear Weapons", Congressional Research Service, Issue Brief, January 1988, p. 7.

82. Quoted in Jabber, p. 104.
83. Ibid, p. 146.
84. Quoted in Dowty, "Nuclear Proliferation", p. 83.
85. Once again, this conceptualisation belongs to Dayan. See Aronson, "Israel's Nuclear Options", pp. 5-6.
86. Weissman and Krosney, pp. 111-112, and Uri Bar-Joseph, "The Hidden Debate: The Formation of Nuclear Doctrines in the Middle East", The Journal of Strategic Studies, Vol. 5, 1982, p. 211.
87. Bar-Joseph, p. 212.
88. Spector, pp. 167-168.
89. It may or may not be relevant in this regard that when the Dimona agreement with France was reached, 6 of the 7 members of the IAEC resigned. Two of them became founder members of the Committee for the Denuclearisation of the Arab-Israeli Conflict. See Van Leeuwen and Soetendorp, p. 235.
90. Evron, "The Uses and Misuses of Ambiguity", p. 1330.
91. Aronson, "Israel's Nuclear Options", p. 1.
92. Freedman, p. 116.
93. Ibid, p. 116.
94. Van Leeuwen and Soetendorp, pp. 235-236.
95. Freedman, p. 115.
96. Pajak, p. 592.
97. Ibid, p. 592.
98. Van Leeuwen and Soetendorp, p. 236.
99. Very little has been written on Israel's proliferation decision. Unless otherwise indicated, the following account comes from Shlomo Aronson, Conflict and Bargaining in the Middle East: An Israeli Perspective, (Baltimore and London: The John Hopkins University Press,

1978), pp. 95-99. See also Bar-Joseph, pp. 214-216. This account, however, is largely based on Aronson's.

100. Quoted in Aronson, Conflict and Bargaining in the Middle East, p. 95. This perhaps should not be taken too literally. The U. S. would certainly not accept with equanimity the destruction of its ally by the U. S. S. R. Kissinger may have been indicating, however, that the U. S. would not go to war over the occupied territories.

101. The Allon plan envisaged most of the populated areas of the West Bank being placed under Jordanian sovereignty, with most of the unpopulated and strategically important areas, as well as east Jerusalem, remaining in Israeli hands. This was offered in exchange for a political settlement.

102. Bar-Joseph, p. 216.

103. Dayan was not alone in his assessment of the gravity of the situation precipitated by the Soviet presence in Egypt. In July 1968, after the Soviets began flying combat patrols in the Suez Canal area and following the introduction of Soviet SAM missiles, Golda Meir declared that, "today, and I mean literally today, Israel is facing a struggle more critical than we have ever faced before". Quoted in Howard M. Sachar, A History of Israel: From the Rise of Zionism to Our Time, (New York: Alfred A. Knopf, 1976), p. 694.

104. Haselkorn also feels that the Soviet were the key factors in producing a proliferation decision, though he dates the decision as being taken in 1970. He notes that "all the available evidence indicates that in mid-1970 Israeli leaders deemed the threshold to the realisation of last-resort futures to have been crossed, and the critical "holocaust syndrome" started to gain momentum." Haselkorn, p. 167. Other factors not listed in the account of the proliferation decision given may also have entered into the proliferation calculus. Harkavy suggests that the experience of isolation in the weeks preceding June 1967 may have been the most compelling reason of all. A partial explanation may see proliferation as a reaction to the threat of nerve gas attacks, the Israelis having apparently come across stores of these weapons in the Sinai during the Six Day War. See Harkavy, "Spectre of a Middle Eastern Holocaust", p. 9.

105. Potter, p. 173.

106. Harkavy, "Spectre of a Middle Eastern Holocaust", p. 84.

107. Egyptian and Syrian behaviour in the Yom Kippur War may lend credence to this assertion. It has been claimed that their failure to press home their early advantage was due to the fact that they believed Israel's heartland (ie. pre-1967 borders) to be covered by the threat of nuclear retaliation. Evidently, they did not believe this could credibly apply to the occupied territories. See Aronson, Israel's Nuclear Options, pp. 12-13.

### Chapter 3

1. For a brief evaluation of apartheid as the source of South Africa's security problems see Robert S. Jaster, "South Africa's Narrowing Security Options", Adelphi Papers, No. 159, Spring 1980, pp. 1-2. See also "South Africa's Plan and Capability in the Nuclear Field", Department of Political and Security Council Affairs, United Nations Centre for Disarmament, Report of the Secretary-General, New York, 1981, pp. 24-26. The U. N. study quotes South Africa's 1977 White Paper on defence which asserted that "the principle of the right of the white nation to self-determination is not subject to discussion." Quoted p. 24.

2. This term is used by Richard K. Betts, "A Diplomatic Bomb for South Africa", International Security, Vol. 4, No. 2, Fall 1979, p. 91.

3. Quoted in Betts, p. 92.

4. Quoted in Moore, p. 123.

5. Quoted in Edouard Bustin, "South Africa's Foreign Policy Alternatives and Deterrence Needs", in Onkar Marwah and Ann Schulz (eds.) Nuclear Proliferation and the Near-Nuclear Countries (Cambridge, Mass: Ballinger Publishing Company, 1975), p. 220.

6. Moore, p. 112.

7. Quoted in Jaster, "Politics and the 'Afrikaner Bomb'", Orbis, Vol. 27, No. 4, Winter 1984.

8. Spence, "South Africa: The Nuclear Option", African Affairs 80, October 1981, pp. 447-449, Betts, pp. 91, 104.

9. For several years South Africa has tried to ingratiate itself with the West by emphasising its strategic location with regard to the Cape sea lanes and its value as a military bastion and supplier of minerals. For a cogent analysis of the various arguments pertaining to South Africa's strategic value to the West see Spence, "South Africa and the Defence of the West".

10. See Reiss, p. 195, Spence, "South Africa: The Nuclear Option", p. 448. Spence does raise the prospect of the West offering a degree of military cooperation to a "nuclear" South Africa in order to exercise some constraining influence over it, but feels such an eventuality is unlikely.

11. Spence, "South Africa: The Nuclear Option", p. 447.

12. Moore, p. 139. In contrast, Spector feels an open test may be on the cards as it would boost Afrikaner morale and appease ultra-conservative critics of the government. See Spector, p. 287.

13. Betts, pp. 108-115.

14. For an example of the relevant IAEA discussions see "South Africa's Nuclear Capabilities", Report by the Board of Governors and the Director General, International Atomic Energy Agency General Conference, GC(XXIX)/758. September 1985. For a discussion of the benefits South Africa derives from membership of the IAEA and of attempts to expel it from the organisation see Abdul S. Minty, "South Africa's Nuclear Capability: The Apartheid Bomb", in Worsley and Hajor (eds. ), p. 166-172.

15. Fuller accounts of South Africa's attitude towards the NPT are found in Moore, pp. 18-22, Spector, pp. 296-300, and David Fischer, "South Africa" in H. Muller (ed. ), pp. 307-310. For a South African perspective see A. J. Luttig, "South Africa and the Treaty on the Non-Proliferation of Nuclear Weapons" in South Africa Yearbook of International Law, Volume 3, 1977.

16. Moore, p. 70.

17. Jaster, "Politics and the "Afrikaner Bomb"", p. 827, "South Africa's Plan and Capability in the Nuclear Field", U. N. , pp. 4-5.

18. Jaster, "Politics and the "Afrikaner Bomb", p. 827.

19. Moore, p. 83, "South Africa's Plan and Capability in the Nuclear Field", U. N. , p. 11.

20. "South Africa's Plan and Capability in the Nuclear Field", U. N. , pp. 11-12.

21. A. R. Newby-Fraser, Chain Reaction: Twenty years of nuclear research and development in South Africa, (Pretoria: Atomic Energy Board, 1979), p. 95.

22. Ibid, p. 93.

23. Ibid, p. 92. Moore suggests South Africa may have attained a basic ability to enrich uranium in 1965 and that the 1970 announcement was made only because it could no longer be kept secret. Moore, p. 85.

24. Newby-Fraser, pp. 92, 95.

25. Moore, p. 87, Dan Smith, South Africa's Nuclear Capability, (London: World Campaign Against Military and Nuclear Cooperation with South Africa, 1980), pp. 15-17, and Minty, p. 163.

26. Moore, pp. 87-90, Smith, pp. 15-17.

27. Kenneth L. Adelman and Albion W. Knight, "Can South Africa Go Nuclear?", Orbis, No. 3, Fall 1979, p. 637, Newby-Fraser, p. 111.

28. Moore, p. 96.

29. Ibid, p. 137.

30. Ibid, pp. 90-93, "South Africa's Plan and Capability in the Nuclear Field", U. N. , pp. 10-11.

31. In the event Koeberg 1 finally began operation in 1984, delay having been caused by an ANC bomb attack on the reactor. Koeberg 2 began operation in 1985. See Moore, p. 97.

32. Reiss, p. 190, Moore, p. 100.

33. Moore, p. 140

34. Newby-Fraser, pp. 58, 124-125. South Africa had built itself a small experimental power reactor known as Pelinduna-Zero in 1967. It was decommissioned in 1970.

35. Peter Lomas, "Valindaba: Lessons From South Africa's Nuclear Policy", The World Today, June 1987, p. 95.

36. Moore, p. 92.

37. For the alternative viewpoint - that South Africa's nuclear option was "a spin-off from a commercial project" - see Fischer, p. 291, 295. Fischer does not address any of the above arguments.

38. Cited, Jaster, "Politics and the "Afrikaner Bomb"", p. 831.

39. Quoted in "South Africa's Plan and Capability in the Nuclear Field", U. N. , p. 40.

40. Quoted in Reiss, p. 201.

41. Spector suggests that South Africa did not possess enough enriched uranium at this time with which to conduct a nuclear test and would, therefore, contest this conclusion. On a purely political level, however, it seems implausible that South Africa would accept the diplomatic flak attendant upon this action if it could not collect the reward of nuclear weapons.

42. "South Africa's Plan and Capability in the Nuclear Field", U. N. , p. 20.

43. Ibid, p. 21.

44. Walters, p. 30.

45. Moore, p. 116, Adams, p. 175.

46. Moore, pp. 124-125, Walters, pp. 34-36.

47. Quoted in Walters, p. 35.

48. Ibid, p. 35.

49. Ibid, p. 35.

50. Spector, pp. 287-288.



51. Quoted in Walters, p. 2. For a South African account which contradicts this assertion see Denis Venter, "South Africa and the International Controversy Surrounding its Nuclear Capability", Politikon, Vol. 5, No. 1, June 1978.

52. Quoted in Jaster, "South Africa's Narrowing Security Options", p. 1.

53. See Bustin, p. 217.

54. See Jaster, "Politics and the "Afrikaner Bomb"", pp. 834-836

55. Michele A. Flournoy and Kurt M. Campbell, "South Africa's Bomb: A Military Option?", Orbis, Vol. 32, No. 3, Summer 1988, pp. 394, 396, and Moore, p. XIV.

56. Quoted, Moore, p. 112.

57. See Jaster, "Politics and the "Afrikaner Bomb"", pp. 834-841.

58. Spence, "South Africa: The Nuclear Option", p. 451.

59. Moore, p. 129

60. This issue of perception is raised by Betts, p. 91.

61. See, for example, Betts, pp. 96-105, Spence, "South Africa: The Nuclear Option", pp. 444-452.

62. With regard to Soviet-bloc intervention as a rationale for proliferation see Spence, "South Africa: The Nuclear Option", p. 446, Moore, pp. 129-130, Reiss, pp. 94-95, Jaster, "Politics and the "Afrikaner Bomb"", p. 847, Betts, p. 101. Spence, Moore and Betts are particularly sceptical of the likelihood of such Soviet adventurism.

63. Adelman and Knight, p. 643.

64. Reiss, p. 195.

65. Ibid, pp. 194-195.

66. Quoted in Flournoy and Campbell, p. 400.

67. Betts, p. 108.
68. Adelman and Knight, p. 643, Reiss, p. 193, Walters, p. 193, Flournoy and Campbell, p. 399.
69. Flournoy and Campbell, p. 399.
70. Ibid, p. 398
71. Betts, p. 106.
72. Moore, p. 129.
73. Flournoy and Campbell, p. 395.
74. William Gutteridge, "South Africa's Defence Posture", World Today, 36, January 1980, p. 28.
75. Walters, pp. 35-36.
76. Quoted, ibid, p. 35.
77. Ibid, pp. 35-36.
78. Jaster notes that a new defence posture evolved in the years 1960-1963 in response to the *internal* threat. See "South Africa's Narrowing Security Options", pp. 10-11.
79. For a brief discussion of the detente issue and its relation to proliferation see Spence, "The Republic of South Africa: Proliferation and the Politics of "Outward Movement", in Lawrence and Larus (eds.)
80. Jaster, "South Africa's Narrowing Security Options", p. 23, Deon Geldenhuys, The Diplomacy of Isolation: South African Foreign Policy Making, (New York: St. Martins Press, 1984), pp. 78-79.
81. Geldenhuys, p. 80, Jaster, "South Africa and its Neighbours: the Dynamics of Regional Conflict", Adelphi Papers, No. 209, Summer 1986, pp. 7-8.
82. Quoted, Jaster, "Politics and the "Afrikaner Bomb"", p. 837.
83. Jaster, "South Africa's Narrowing Security Options", p. 25.

84. Quoted, Jaster, "Politics and the "Afrikaner Bomb"", p. 835.

85. Quoted, ibid, p. 836. These comments by Malan and Botha were actually made in 1981 and 1982 respectively, but are nevertheless representative of government policy from approximately 1976. Compare, for example, with Vorster's remarks on January 1, 1977.

86. Quoted in Robert S. Jaster, "South African Defence Strategy and the Growing Influence of the Military", in William J. Foltz and Henry S. Bienen (eds.), Arms and the African: Military Influences on Africa's International Relations (New Haven and London: Yale University Press, 1985), p. 131.

87. Jaster, "South Africa and its Neighbours: the Dynamics of Regional Conflict", p. 8.

88. Jaster, "Politics and the "Afrikaner Bomb"", p. 835.

89. Ibid, pp. 837, 838, 841.

90. Christopher Coker, South Africa's Security Dilemmas, Washington Papers/126, (New York: Praeger, with the Center for Strategic and International Studies, Washington, D. C. , 1987), p. 27.

91. Betts, p. 97, Jaster, "South Africa's Narrowing Security Options", pp. 27-28.

92. Jaster, "South Africa's Narrowing Security Options", p. 28.

93. For a discussion of the enlarged foreign policy responsibilities of the State Security Council see Geldenhuys, pp. 91-96. Also Kenneth W. Grundy, "The New Role of South Africa's Security Establishment", Munger Africana Library Notes, March 1985.

94. Spence, "South Africa: The Nuclear Option", p. 446, Betts, p. 101.

95. Jaster, "Politics and the "Afrikaner Bomb"", p. 847.

96. Ibid, p. 847.

97. Jaster, "South Africa's Narrowing Security Options", pp. 25-26.

98. Ibid, pp. 25-26.

99. Jaster, "South African Defence Strategy and the Growing Influence of the Military", p. 130.

100. Newby-Fraser, p. 98.

101. Ibid, p. 101-102.

102. Moore, p. 139.

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