

Decision-Making Theory Applied
to India's Explosion of
a Nuclear Device in May, 1974

by

Adam John Biscoe

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"Like all young men I set out to be a
genius, but mercifully, laughter intervened."

'Clea`L. Durrell

Abstract

This essay reviews the decision-making process that led to India exploding a nuclear device in May, 1974. An examination of the Analytic, Cybernetic and Cognitive Theories of decision, will enable a greater understanding of the events that led up to the 1974 test.

While each theory is seen to be only partially useful, it is only by synthesising the three theories that a comprehensive account of the 1974 test can be given.

To achieve this analysis, literature on decision-making in national security issues is reviewed, as well as the domestic and international environment in which involved decisionmakers operated. Finally, the rationale for the test in 1974 is examined.

The conclusion revealed is that the explosion of a nuclear device by India in 1974 was primarily related to improving Indian international prestige among Third World countries and uniting a rapidly disintegrating Indian societal consensus. In themselves, individual decision-making theories were found to be of little use, but a combination of the various elements allowed a greater comprehension of the events leading up to the test than might otherwise have been the case.

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Introduction

The essence of ultimate decision remains impenetrable to the observer--often, indeed, to the decider himself There will always be the dark and tangled stretches in the decision-making process--mysterious even to those who may be most intimately involved.

John Fitzgerald Kennedy

Individuals make decisions and are affected by other people's decisions every day. How these decisions are made, then "is a topic of the times" in which we live.¹ On May 18th, 1974 a culmination of many decisions taken over many years, India tested a nuclear device. Much debate has resulted concerning the peaceful and/or military implications of the test. This essay, by analysing the processes of decision that led up to the test, attempts to untangle the decision-making process that led to India exploding a nuclear² device in 1974.

There have been four major border conflicts in South Asia since World War II. All of these involved India, fighting Pakistan three times and China once. In 1964 China exploded a nuclear device and soon after began deploying nuclear weapons. Since that time there has been much discussion as to possible nuclear proliferation in South Asia. The Indian test in 1974 fuelled this debate, raising the spectre that India would also deploy nuclear weapons. In 1985 the debate on nuclear proliferation in South Asia has once again been the focus of global attention with rumours (probably unfounded) that Pakistan will soon be able to deploy nuclear weapons. Thus, nuclear proliferation in South Asia, for whatever purpose, remains a topic of concern for individuals interested in inter-

national affairs.

In attempting to explain India's decision to explode a nuclear device for non-military reasons in May, 1974 three principal theories of decision-making can be considered. While these theories are widely applied in many areas of scholarly study, their use in explaining issues of national security has been largely undertaken in relation to United States foreign policy. This has resulted mainly because decision-making theories centred on national security issues have been developed in the U.S.A. It is natural, therefore, that most models have been constructed and tested with examples of American foreign policy in mind.³ American expectations, goals, geographical location and way of life are not universally shared.

The literature review of the three major theories of decision-making immediately follows this introduction. Because each theory in part remedies the weaknesses of the others, no one theory alone offers a compelling explanation. However, the contradictory logic implicit in the Analytic, Cybernetic and Cognitive Theories does not allow for the three to be used together as an explanatory tool. It is with this in mind that Janice Stein and Raymond Tanter developed the Constrained Rationality Model.⁴ The Constrained Rationality Model's great strength is that it accepts that different degrees of synthesis of each model will be necessary, depending on the particular issue being examined.

If it is accepted that there is no blueprint for explaining decisions, it must be asked whether there is any useful gain to be had from further scholarly interest in decision-making processes. This author argues that there undoubtedly is--only by applying all three theories of decision can a comprehensive account of an issue emerge. The study of decision-making "will drive political analysis deeper than it would otherwise go."⁵

A brief and exaggerated example follows of how the three theories of decision may enable the reader to better understand the complicated process of decision-making. The purely analytic researcher of a thesis would be expected to know what his goals of research were before he began. He would be expected to analyse all material and facts relevant to his chosen subject. He would then be expected to integrate all relevant information into his research paper. The conclusion that he arrived at would be the result of weighing up the various arguments for and against. The final choice would be that argument which had the most documented support. Let it be said that this author has not been, and could not be purely analytic.

The cybernetic researcher would be constrained by the problem of defining which material was relevant. Further, he would be limited by the amount of information actually available--reliance upon various accessible sources and personnel would limit the amount of material available. Only this information could then be integrated into the research paper. There would also be some doubt as to the student's integration capabilities. Thus, because individuals do not have great powers of calculation needed to integrate the information, the final conclusions would be limited in scope.

The cognitive researcher, while still reliant upon the same sources of information as the cybernetic student, would limit his search to those articles he expected to be useful. He would have an approximation of his conclusion in mind before starting research, and would access only those sources that could be expected to support his initial thoughts. Other information would be excluded.

The researcher constrained by rationality would synthesise the above theories. Only that information he chose to access would be

included in the research paper. However, he would probably look for discrepant arguments in order to balance the paper. Finally, he would conclude on the side with the most documented support, but this would be based on the original sources he decided to access.

The pages that follow offer the reader the opportunity to gauge the pertinence of decision-making and this author's much more modest attempts of analysing it.

Chapter I

Literature Review

What is a decision? John Steinbruner claims "A decision ... is a choice made by either an individual or a group (and it matters which) in pursuit of some purpose."¹ The purpose or objective of a decision distinguishes it from casual occurrences. For every decision there is a present and a future and thus

Decision making is a process that selects a problem for decision (ie choice) and provides a limited number of alternatives, from among which a particular alternative is selected for implementation and execution.²

The decision-making process outlined above applied to the complex decision requires that two or more values are affected by the decision. This implies a value trade-off, and because pareto-optimality is illusory, greater return of one value can only be obtained at the loss to another. Secondly, uncertainty is part of the dynamic environment in which decisions are taken, causing the imperfect transmission and processing of information. Finally, the power of decision is not concentrated in a single individual or organisational unit.

National security issues undoubtedly fulfill the conditions of a complex decision process. While there are many definitions of national security in circulation, most would include the need for a state to maintain territorial, cultural and economic sovereignty over time. Since these are often inseparable, trade-offs must occur. For example, providing a credible military defense will inevitably cost considerable sums of money. This may adversely affect a country's economic stability. A

military alliance with a neighbour might reduce the financial cost, but possibly at the expense of complete military sovereignty.

The modern international system with over 160 states pursuing their own goals and avoiding identified calamities in a dynamic environment, causes a degree of uncertainty, if not anarchy. In order to operate efficiently in such a climate the decisionmaker requires perfect information. However, this is rarely possible in the real world. For example, if it is impossible for a country with the economic and military resources of the United States to collect all relevant information, or adequately process received information, the problems for a relatively inexperienced state with much more limited resources, such as India, are multiplied. There is built-in uncertainty in which national security decisionmakers act. They cannot be certain whether an unanticipated outcome will occur. Nor can they be sure that the rules of the game will remain the same. Steinbruner labels this phenomenon "structural uncertainty."³

Finally, the complex decision is compounded by the fact that there is rarely a single decision-making unit in matters of national security. The more likely scenario is a collection of individuals with competing interests. For example, a politician may perceive a field manoeuvre and its effects differently from a military person. Thus, a "poorly defined environment" in which "the pertinent options and their relevant consequences often are not identified"⁴ characterise the complex climate in which national security decisions are taken.

To overcome the complex and uncertain environment in which they operate, decisionmakers are said to use a 'five step typology'⁵ in their process of decision⁶:

1. Diagnosis

The first step is to diagnose their problem and determine what

is at issue. This defining of the boundary of the problem sets the scene for subsequent activity.

2. Search

Next comes the process of obtaining and sharing information and options which may have to be constructed to fit the problem.

3. Revision

In order to remain sensitive to a dynamic environment, revision is undertaken to update estimates in response to new information.

4. Evaluation

The examination of "relationships within the available information and assessing the appropriateness of alternative options"⁷ characterises the process of evaluation undertaken by the decisionmaker in order to simplify complexity.

5. Choice

"Through search revision and evaluation, policymakers structure and simplify the decisional environment as a prelude to choice."⁸

Decisionmakers need strategies and guidelines to make their final choice even after the processes of search, revision and evaluation have taken place. As a consequence, decision rules exist but vary from issue to issue. The British legal system requires jurors to "acquit if in doubt." There is no clear decision rule in matters of national security, but decisionmakers involved in this area often use "worst case" logic, as it is best to plan to meet the worst case scenario imaginable than run the risk of a breach in national security. It is better to be safe than sorry. This is often referred to as the conservative planning principle.

Attempting to explain the ways decisionmakers seek to reduce uncertainty and simplify the complex environment in which they operate, the analytic, cybernetic and cognitive theories employ a different process of

diagnosis: search, revision and evaluation. These different processes ultimately produce diverse decision rules leading to choice. As Table I shows these different processes are the essentially distinguishing characteristics of the models which will be discussed at length below.

Table I Explanations of the Process of Choice*

	Analytic Theory Model I	Cybernetic Theory Model II, Model III	Cognitive Theory Model IV	Constrained Rationality Model V
Diagnosis	Unspecified.	Preselected and validated indicators.	Indicators derived from belief system.	Indicators derived from belief system.
Search	Across all relevant options.	Programmed consideration of a preselected number of variables.	Within the parameters of belief system.	Within the parameters of belief system.
Revision	Optimal.	Incremental and conservative.	Deductive and categorical inferences, sharp oscillation from low probability to certainty.	Same as Model IV but undefined body of data will alter opinions.
Evaluation	Comparative calculation of cost, benefit, and likelihood of principal consequences of alternatives.	Limited; reliance on pre analysed s.o.p. or programs.	Limited; sequential along one or two dimensions.	Analytic cost, benefit calculation along one or two dimensions.
Choice	Optimising.	Satisficing	Single-value criterion, analogising, lexicographic calculus.	Optimising the goals of the decisionmaker ie constrained optimising.

* This table is largely based on Table 3:1 in J. Stein and R. Tanter (1980), p. 65.

There has been much debate, often resulting in confusion over the use of various terms within the scholarly treatment of decision-making.⁹ In order to simplify this debate the following discussion will be limited to the use of models and theories.

It is important to differentiate between models and theories. Models are a simplification of reality; they represent it imperfectly. A model can be generally defined as an analytic system "devised or constructed so that the logical relationships between its elements correspond in logical form to the relationships between a set of elements in the observable world."¹⁰ A theory, on the other hand, refers "to a system of socially related, empirically testable lawlike propositions."¹¹ It is often argued¹² that the distinction between models and theories is mere pedantics. However, the lack of empirical content does not allow models to directly generate explanation or prediction about the observable world, unlike theories. It is the predictive qualities of the Rational and Cybernetic Theories that distinguish them from their component models.¹³

One or more models may make up a theory. The analytic model (Model I on Table I) subscribes to the principles of rationality. Its origins are to be found in various natural and social science disciplines, but was first applied as a theory of foreign policy decision-making by Glenn Snyder, N.W. Bruck and B.M. Sapin.¹⁴

The Cybernetic Theory incorporates Models II, III and IV as shown on Table I. Model II which Graham Allison labels the Organisational Process model,¹⁵ emphasises the influence of organisational routines on decisions made by organisations (Government Ministries are in this sense, organisations). Organisations are expected to work efficiently and thus use analytic logic. In the real world this is not the case as causal learning and cybernetic information processing are not analytic.¹⁶ Model

II, then, is labelled Cybernetic. Model III, Bureaucratic or Governmental Politics,¹⁷ is Allison's account of how the leaders of government units compete with one another in policy formation and implementation.

Steinbruner claims to have supplemented Allison's Models II and III with the cognitive Model of decision (Model IV).¹⁸ Models II and III suggest issues of national security are dealt with in a "highly structured and appropriately arranged environment."¹⁹ Steinbruner rejects this, and "suggests a source of supplementation; namely a set of principles about the operation of the human mind Cybernetic theory thus supplemented ... offers a base paradigm for political analysis competitive with the rational position."²⁰

In adopting Thomas Kuhn's²¹ concept of a paradigm, Steinbruner makes it difficult to accept such a statement. Both Allison and Steinbruner used analytic logic in the construction of their respective models and accept that in certain circumstances the analytic model of decision is useful. For Kuhn, there can be no competing dominant paradigms: a new paradigm is incompatible with its predecessor.²²

Model V is drawn from Janice Stein and Raymond Tanter's²³ notion of constrained rationality, which attempts to synthesise the four previous models of decision as a realistic reflection of the environment in which national security decisionmakers operate. More specifically it attempts to reintroduce elements of the analytic model back into decisionmaking explanations.

The Rational Actor Model²⁴ of Decision

The classical analytic model has long been regarded as portraying the method by which all decisions are arrived at. It is only in the last few decades that the incompleteness of the explanation of decision processes

expounded in the classical model, has encouraged the development of supplementary models.

+ In its purest form the model predicts that a decisionmaker will always choose the option which is rational,²⁵ that is the option that best achieves his set of hierarchically arranged goals. It assumes that decisionmakers possess perfect knowledge in the search, revision and evaluation stages, and that they will seek to maximise achievement of goals in the process of choice. However, this fails to take account of the complex and uncertain environment in which decisionmakers, particularly those concerned with issues of national security, operate. In order to give a more realistic account of decision-making, it is necessary to relax the central assumptions of the classic model. This is often referred to as the analytic model, as it accepts the problem of objective rationality during the process of decision. 'Analytic' also stresses the internal logic inherent to the Rational Actor Model (RAM) of decision.

A decision can only be considered analytic once analysis in retrospect has identified the consequences in relation to the expected goal attainment at the time of decision. The analytic model is a more useful method to evaluate standards of performance than as an explanation of choice. Accordingly, the process by which a problem is identified is unspecified by Model I. Search is expected to be carried out across all relevant options, yet it is not specified as to how extensive this should be. Minimal search across the consequences of only one option cannot realistically be labelled analytic. However, failure to limit search to relevant options will produce a delay in the evaluation of options already at hand. Because there are no set limits to the boundary of search in the analytic model, there is a tendency to concentrate on the processes of revision and evaluation.

The degree to which decisionmakers are sensitive over time to new

information, and their subsequent revision of estimates of likely outcomes is an important indicator of the analytic processing of choice.²⁶ It is important to remember that the environment in which decisionmakers operate is not only uncertain, but dynamic. It is therefore essential that decisionmakers be prepared to revise and update their estimates in response to incoming information: that is, to learn by causal inferences. However, it is difficult to specify the direction and scope of revision until a post-mortem can be undertaken. The level of revision required is highly context-dependent in matters of national security. The amount of incoming information will likely be immense and, as will become apparent below, there will be a need to "filter" much of this information and decide which new information has a direct bearing on the situation at hand.²⁷ It is important to point out that analytic decisionmakers should be "sensitive to ambiguity or contradiction in the evidence and consider more than one interpretation of the ambiguities they do identify."²⁸

Allison identifies this point well. During the Cuban missile crisis the Executive Committee of the National Security Council (Ex-Com) questioned the estimate provided by the United States Air Force (U.S.A.F.) that to remove the Soviet missiles by surgical air strike would require 500 sorties with only a 90 percent effectiveness in destroying them, and would cause extensive civilian destruction. Ex-Com members were bewildered by such estimates. It soon became apparent that the U.S.A.F. estimates were based on a massive air strike against Cuban targets previously considered to be threats to U.S. security, not just a surgical air strike to remove the bases only. As the crisis continued, the U.S.A.F., at the request of Ex-Com, drew up new estimates that took into account new information, and the surgical air strike became a live option that was to be implemented if the naval blockade failed.²⁹

While the processes of defining the problem, searching for information and revision are not clearly delimited, the evaluation process, by contrast, is simple for the analytic decisionmaker. Quite simply, the decisionmaker uses a form of cost benefit analysis in deciding which alternatives are useful. The benefits that are expected to accrue from one alternative are weighed against the expected costs. For example, failure by a country to sign the Nuclear Non-Proliferation Treaty (1970) may result in widespread international criticism, but allows them to increase their defence options.³⁰

As with all cost benefit analysis, there is a problem of value complexity. There is no common-denominator or yardstick with which to measure national security and international prestige. The analytic decisionmaker accepts, therefore, that value complexity exists and that there is a need for value trade-offs. It is assumed that the decisionmaker has a hierarchically arranged set of goals which he wishes to attain. Thus, by not signing the Nuclear Non-Proliferation Treaty, a country accepts the fact that such a non-action might reduce its international prestige. This tends to be seen as an acceptable loss of face because of the retained right to build a nuclear deterrent.

Attempting to calculate the costs and benefits of each option and its likely consequences will necessarily be limited because of time and financial cost. Such definition will be subjective, as will the decision as to how extensive the cost-benefit analysis should be. The initial hierarchical ordering of goals will be a similarly subjective process undertaken by the analytic decisionmaker. This loss of objectivity in the evaluation process is not considered seriously detrimental: it merely reflects the complex and uncertain environment in which the analytic decisionmaker operates.

The analytic decisionmaker is now ready to make a decision. The

decisionmaker is expected to follow the rule of discounting "the value of each option by the likelihood of its consequences and selecting the option which promises the highest expected value."³¹ The decisionmaker will choose the option which is the best possible one under the circumstances in attaining his hierachically determined set of goals. However, understanding, much less performing such a calculation, is regarded by many as beyond most decisionmaker's ability--especially at the national security level. Kelley³² suggests that decisionmakers possess the capacity of intuitive statisticians, while others suggest a capacity to successfully approximate value trade-offs.

The rational actor model of decision served as the dominant perspective in the discipline for many decades, despite its inherent weaknesses as a method of explanation. This was particularly true for national security issues. Because its key assumptions are questionable there is a need to develop different approaches that overcome the problems of the Rational Actor Model. The most obvious problem lies in the assumption that the state is characterised as a single, autonomous, unified decision-making body. The modern state is a complex conglomeration of interests rarely reflecting the characteristics of an individual person ascribed to it by the Model I analyst. As Allison notes "this simplification must not be allowed to conceal the fact that a government consists of a conglomeration of semi feudal loosely allied organisations, each with a substantial life of its own."³³

Secondly, it is difficult for an individual, let alone a state, to agree upon a hierachical set of goals and values that it aspires to attain.³⁴ If it could be agreed that national security is at the top of priorities for a state, is it possible to adequately delimit national security? Is this territorial, political or economic security? In an extreme example,

it may be preferable to accept foreign domination in order to avoid being annihilated by nuclear warfare.

Closely associated with this is the assumption that decisionmakers work to maximise goal attainment at the least cost: they optimise as a decision rule. This is usually a short sighted strategy as it fails to take account of the long term effects it might have.

The Cybernetic Models of Decision

Models II, III and IV comprise the Cybernetic Theory of decision as developed by John Steinbruner concerning issues of national security. Before analysing the models in detail, it is necessary to outline the cybernetic process of decision in a more general way.

Cybernetics was first developed by N. Wiener,³⁵ and was confirmed in the study of politics by Karl Deutsch.³⁶ Cybernetics is the science of effective organisation and the "information mechanisms associated with behavioral aspects of thinking."³⁷ The Cybernetic Theory of decisions aims to reduce uncertainty and simplify the environment in which decision-makers operate.

A problem is diagnosed by preselected and validated indicators. Revision is an incremental process and is accordingly limited. Evaluation is similarly limited, relying on pre-analysed standard operating procedures. The decision rule is one of 'satisficing':³⁸ adopting the option which first comes to light that satisfies the needs of the decisionmaker.

Model II

Model II is based on organisation theory--an area of study covering many social science disciplines that began ostensibly in the 1930's.³⁹ In principle, a change in the level of analysis from the individual to the collectivity does not change the form of analysis. An organisation

could conceivably possess a set of hierarchically ordered goals with a single decision-making centre. It is possible to think of an organisation as merely a more knowledgeable and consistent entity than the individual. However, in the real world organisations are only occasionally seen to be acting in an analytic manner.

Organisational theorists⁴⁰ have adopted Herbert Simon's concept of bounded rationality. Analytic choice requires the generation of all possible alternatives (Search: see Table I), the assessment of the probabilities of all consequences of each alternative (revision), and the evaluation of each set of consequences for all relevant goals (evaluation). This is no small order for an individual requiring "powers of prescience and capacities for computation resembling those we usually attribute to God."⁴¹ Thus, models that simplify reality are required. "The physical and psychological limits of man's capacity as alternative generator, information processor, and problem solver constrain the decision-making processes of individuals and organisations."⁴² Added to this are individuals' parochial outlook and personal ambitions within an organisation. Thus, organisational processes fundamentally alter the nature of decisions which come from organisations as opposed to those made by individuals.

Richard Cyert and James March⁴³ developed Simon's bounded rationality as a criticism of the classic theory of the firm in the study of Economics. They complemented existing criticism of the firm by focusing on the effect of organisational structure and conventional practise upon the development of goals, the formation of expectations, and the execution of choice.

Charles Lindblom's⁴⁴ notion of disjointed incrementations has also been transferred from the individual to the organisational level of decision.⁴⁵ Within an organisation there exist semi-autonomous departments

staffed by individuals. Each individual works to "clear his desk," often with no obvious idea of the organisation's goals, but knowing which disasters to avoid. The decisions made by each individual serve to assure the organisation continues to function, but in no certain direction. Thus incrementalism "change by small steps" in a disjointed manner characterises an organisation "muddling along" with no obvious direction or end to the process in sight ("not yet through").⁴⁶

It is from this basis that Allison explains Model II, the Organisational Processes Model, as a method of explaining government actions. Government action is not the result of choice as suggested by Model I, but of organisational output.

Foreign policy is the result of organisational processes in three important ways. Firstly, actual occurrences are the result of organisational actions. Allison highlights this point by referring to the Soviet decision to base missiles in Cuba in 1962. In order to undertake such an action there had to be in existence already a unit of the Soviet state apparatus capable of fulfilling such a task. Secondly, the "knowhow" to undertake such a mission was needed: by emplacing the missiles, the Soviet Air Defence Command merely applied standard operating procedures learned during previous work in the Soviet Union; the only difference being that the missile bases were to be outside the Soviet Union. Finally, once the "high politics" decision had been made to base missiles in Cuba, the Air Defence Command was unhindered by politicians in its method of carrying out the orders. The Soviet Air Command "did what it knew how to do" with little communication with other organisations, for example the GRU and KGB, involved in the missile deployment process.⁴⁷

From this example we can see how the outputs of government, especially with respect to foreign policy, may be the result of organisational

activity. Writing on American foreign policy, Theodore Sorenson noted that "Presidents rarely, if ever, make decisions particularly in foreign affairs, in the sense of writing their conclusions on a clean slate The basic decisions which confine their choices have all too often been previously made."⁴⁸

In order, therefore, better to comprehend the governance of modern societies by governments through bureaucratic organisations, it is necessary to more fully understand the methods used by organisations to arrive at a decision.

The method by which a problem is identified is relatively simple for the Model II analyst:

Analysis has been done long before the fact and decisionmakers are expected to monitor only a limited number of preselected variables. Only when change occurs in one of these indicators, when some failure is registered do they diagnose a problem.⁴⁹

Search is not extensive nor comprehensive. Because much organisational work is routine, it can be undertaken by referring to past procedures in dealing with an event. These are known as standard operating procedures (S.O.P.'s). If the existing repertoires or S.O.P.'s fail to deal with an event, these S.O.P.'s will be adjusted marginally so they are able to take account of the new situation. Thus a system of constrained learning is apparent throughout the Cybernetic Theory of decision. Search is undertaken by trial and error and will be precluded as soon as the anomaly is overcome.

The process of revision is similarly focused. The existing structure of the organisation screens new information by accepting only new inputs via its existing information channels. Relevant information that is not picked up by the existing information channels will not be processed in revising the estimates of likely outcomes. Integrating new information

with existing data is, therefore, limited and thus simplifies the decision-maker's calculations.

Because the process of search is not extensive, the process of evaluation also tends to be simplistic for the cybernetic decisionmaker: "Evaluation is limited to the consideration of the next option in the response set."⁵⁰ The decision rule is, therefore, equally uncomplicated. If the standard operating procedures do not adequately deal with a problem, then these procedures will be modified until they satisfy the decisionmakers' minimum needs. Satisficing, rather than optimising, is the trade mark of the Model II analyst, a distinguishing feature from the analytic decision-maker. If the stew is too thick, the chef adds a little more water, if it is too thin he adds more flour. The cybernetic decisionmaker may not understand (or care for) the reason for his process of choice, because "it is not the reason but the result that counts."⁵¹

Developing a previously referred to example amplifies the satisficing decision rule inherent in the Cybernetic Theory of decision. The U.S.A.F. was requested by the Executive Committee of the National Security Council (Ex-Com) to provide an estimate for a surgical air strike against Soviet nuclear missile bases in Cuba in 1962.

It later became apparent that the process of search by the U.S.A.F. consisted of consulting its files and pulling out a pre-conceived plan which incorporated the Air Forces' role in any full scale American invasion of its island neighbour. To this was added the new information of the Soviet missile bases, and a revised estimate of 500 sorties with only a 90 percent likely success rate. Reliance upon U.S.A.F. S.O.P.'s in the process of search limited the process of evaluation by Ex-Com resulting in the surgical air strike no longer being

a live option at that time. The U.S.A.F. had merely adapted a previous repertoire to include new information; it had not undertaken a wider search, but had been prepared to choose the first option which satisfied the requirements, as they perceived them, of the Ex-Com.

Model II has been successfully applied in many areas of the Social Sciences--but mainly in areas of administrative studies. There have been some attempts to analyse organisational theory in studies of government,⁵² but Allison's was one of the first to apply organisational theory to matters of foreign policy decision-making. The deployment of Soviet missiles in Cuba in a manner in which they could hardly fail to be observed, and the imposition of a U.S. Naval blockade in a manner contrary to that ordered by President Kennedy suggest that "the compelling cognitive and cybernetic perspectives explain quite naturally and directly those events which are most puzzling when understood within a rational framework."⁵³

Government actions as a result of organisational outputs represented little that was new in organisation theory when Allison's book was published in 1971, except that it was applied to the Cuban missile crisis. However, Model II was only a prelude for Allison to the development of Model III. While Model II accounts for the routine workings of governmental bodies, it fails to take into consideration the influence of politicians in the diagnosis and evaluation processes of decision.

Model III

Government is made up of many organisations (ministries, departments, etc.):

The leaders who sit on top of organisations are not a monolithic group. Rather, each individual in this group is, in his own right, a player in a central competitive game. The name of the game is Politics; bargaining along regularised circuits among players positioned hierarchically within the government.⁵⁴

Model III uses Model II as a building block in that it accepts many of the procedures of organisational processes, but attempts to bring it into the 'real' world where governmental actions are political resultants.

This is a time of large change whereby "the introduction through public policy of what is considered to be a new and important element (in the combination of elements to which people refer in explaining important social change)."⁵⁵ Braybrooke and Lindblom stress that such high political decisions result in uncertain outcomes.⁵⁶

It is those who sit on top of organisations that decide which information channels must be monitored, and thus define the preselected variables from which problems may be diagnosed. When an issue is confronted, politicians delegate the processes of search and revision to those governmental organisations they believe have a part to play: they factor the problem.

Model II processes of search and revision occur. It is stage IV, evaluation, that emphasises the working of governments as different from normal organisational processes outlined in Model II.

The process of evaluation for the Model III analyst occurs when senior bureaucrats and politicians clash. Groupings and coalitions may subsequently emerge.

The people and groups are players who focus not on strategic issues but on many diverse intra-national problems as well; players who act in terms of no consistent set of strategic objectives but rather according to various conceptions of national, organisational and personal goals.⁵⁷

As to how a decision emerges, R. Hilsman explains: "the relative power of these different groups and people included is as relevant to the final decision as the group of goals they seek or the cogency and wisdom of their arguments."⁵⁸

In the United States, Model III can be seen as particularly applic-

able where "separate institutions sharing power" characterise the political system rather than a separation of powers among institutions, according to Richard Neustadt. The perennial interservice rivalry over the U.S. defence budget is legendary and illustrates the point well. The Army, the Navy and the Air Force each fights at least to maintain, if not increase their percentage of the annual defence budget. The virulent debate over the B36 bomber with Admiral Radford testifying to congressional hearings it was a "bad gamble with national security" and Air Force Secretary Symington declaring the use of "a B36 and an A bomb could save a lot of time and lives in the destroying of a distant target"⁵⁹ serves as a prominent example. President Eisenhower, acknowledging the conflict, described Radford and Symington as "distinguished Americans who have their country's good at heart."⁶⁰

There can be little doubt that the axiom "where you stand depends on where you sit" reflects inter-governmental bargaining and gives poignancy to then Secretary of State, J. Forrestal's remark ... "I have always been amused by those who say they are quite willing to go into government but they are not willing to go into politics. My answer ... is that you can no more divorce government from politics than you can separate sex from creation."⁶¹

Graham Allison accepts that the basis for Model III came from Richard Neustadt's Presidential Power. While Allison agrees with Neustadt that "government leaders have competitive, not homogenous interests" Allison is incorrect in claiming that their "priorities and perceptions are shaped by positions" alone.⁶² Model II and Model III, a cognitive theorist would argue, especially at the highest levels of government, leaves out the ability of the individual to make inferential decisions without any apparent prompting. This ability is shaped by the individual's belief system:

"Fortunately for purposes of analysis, the structure of human beliefs is far less varied over individuals and cultures than is the fantastically diverse content of those beliefs."⁶

Model IV

Neustadt explained how it came to be that President Eisenhower's Secretary of the Treasury in 1957 warned of a "depression that will curl your hair" if the Congress did not cut the Administration's budget proposals it had received that day.⁶⁴ While Secretary of the Treasury is a powerful position from which to shape the administration's budget, George M. Humphrey was unable to exert this power. Neustadt's explanation of this apparent contradiction, and also his account of General MacArthur's dismissal by President Truman at the height of the General's popularity, form the basis of the cognitive decision-making model. However, the underlying assumptions were first formulated into a model a decade later by John Steinbruner.⁶⁵

Steinbruner praises Models II and III because they are simple and effective if used in the correct environment. However, he notes that public policy formulation, and particularly foreign policy formulation, does not occur in "a highly structured appropriately arranged environment."⁶⁶ Further,

the Cybernetic Paradigm projects a view of the human mind (clearly the ultimate locus of decision-making) which does not account for one of its most critical faculties--the ability to make inductive inferences on its own initiative.⁶⁷

Cognitive Theory analyses how human beings structure their beliefs; and as a supplement to Cybernetic Theory offers a major alternative to the rational theory of decision. Stein and Tanter take a different view, claiming that only by relaxing central assumptions of analytic and

cybernetic theory can cognitive theory be taken into account.⁶⁸

It is the structure of the mind and its apparent resolve to overcome ambiguity by inference that forms the basis of Model IV. Some of the cognitive theorists' underlying assumptions are debatable,⁶⁹ but because its approach is "bold" in the Popperian sense and does appear to be useful in certain circumstances, it is worthy of further discussion.

Steinbruner argues that the mind's apparent ability to construct relationships between beliefs and organise the manner in which information is processed in reference to existing beliefs "essentially promise to explain how decisions under complexity become structured."⁷⁰

A belief system then is "a configuration of ideas and attitudes in which elements are bound together by some form of constraint or functional interdependence."⁷¹ Cognitive theorists argue that "there are regularities in cognitive operations, known to a significant extent through laboratory experiments, which powerfully condition the decision process."⁷² From this, Steinbruner argues, we can identify principles shaping the belief system of individuals.

Firstly, there are both hierarchical and lateral relationships in memory. People tend to remember the overall concept of something or some event, but are not certain of the details. For example, if asked to recall Adolf Hitler's part in history, an individual will likely detail Hitler as leader of the German people in the 1930's before stating his actions causing World War II. Lateral associations between hierarchically organised concepts within memory also exist, but are not well understood.

The second principle of cognitive theory is that of cognitive consistency. Adelbert Ames demonstrated how human beings work to overcome an anomaly in their beliefs. The now famous experiment of an individual walking across a trapezoidal room, and apparently changing in height to

an unfamiliar observer, emphasises how an observer will perceive the subject's height to change, rather than identifying the otherwise square room as the anomaly.⁷³ When the observer is a close friend of the subject, a greater effort is made to understand the shape of the room as the anomaly. Cognitive psychologists have suggested existing attitudes will change so as to remove or reduce the inconsistent information, or an alternative explanation will be given.⁷⁴

The third principle, reality, simply asserts that the human mind is in contact with its environment; that stable, important features of the environment impose themselves on the mind.⁷⁵ Reality, therefore, in important ways constrains the operations of the mind.

The final two principles, simplicity and stability, underlie much of cognitive theory. Simplicity is achieved by keeping thought processes as simple as possible--almost a tunnel vision. Stability is achieved by resisting "changes in the core structure of belief,"⁷⁶ much as Lakatos argued that it is acceptable to alter the surrounding body of hypothesis, but the hard core assumptions of a theory cannot be altered.⁷⁷

From this basis we can clearly identify the distinguishing features of Model IV from its predecessors. "Decisionmakers are not trial-and-error learners as the behaviouralists would have it, but active participants in problem construction and problem solving."⁷⁸ Cognitive psychologists go further and question the logic of argument and the rationality of estimation and underline their boundaries. Decisionmakers organise and interpret available information through their belief systems. The process of diagnosing a problem is thus located in their belief system. A problem becomes apparent when a conflict between individuals arises. Essentially, two or more belief systems clash. Thereafter, a process of search will be undertaken, but this will be limited not only by the

number and quality of information channels, but also by the parameters of the searcher's belief system. The decisionmaker will only search for options in areas that he has already accepted as relevant.

The revision of estimates is similarly limited. New information will be screened by the decisionmaker to see if it supports his belief system. If incoming information increases uncertainty by being anomalous to the decisionmaker's belief system, it will likely be excluded. This allows for deductive inferences on the part of the decisionmaker leading to sharp oscillation from low probability to certainty if new information supports original beliefs. The calculating of likely consequences will thus be simple. There will usually be only one or two live options which are built up through the processes of limited search and revision and are not contradictory to the decisionmaker's belief system. In the process of evaluation there is a tendency to underestimate the likelihood of undesirable consequences and overestimate the likelihood of valued outcomes--that is, wishful thinking.

We have noted the cognitive thinker's ability to screen out unwanted information, while there is room for alteration in the belief system if incoming information is overwhelmingly contradictory, although this is rarely the case. For example, the normal intelligence gathering organs used by the U.S. State Department suggested in September 1962 that the Soviets may be emplacing missiles in Cuba. General opinion at the time was that the Soviet Union would not dare to undertake such a provocative and difficult operation. Thus, the contrary reports were either excluded or explained away as buildings for other purposes. It was the explicit reconnaissance pictures taken by U.S. spy planes in mid-October that caused senior members of the Kennedy Administration to alter their belief that the Soviet Union would indeed emplace missiles

in Cuba.⁷⁹

Unlike the analytic or cybernetic models of decision there is no single decision rule implicit to Model IV. There may be a lexicographic elimination of options related to dimensions of value ranking previously prepared. If there remains more than one live option after this, a resort to decisions by analogy may be undertaken. This involves choosing the option that has worked in the past and had results which reinforced the dominant belief system. If a decision appears to be too complicated for choice, the decisionmaker may just avoid or postpone the decision.

The Constrained Rationality Model. Model V.

The four previous models developed from criticisms of their forerunners, have essentially been contrasts to other explanations of choice. The emphasis has been on difference. Stein and Tanter concentrate on synthesising the three principle explanations of choice: rational, cybernetic and cognitive. While this initially appears a step backwards, on closer examination it is not. Allison and Steinbruner emphasised the importance of the analytic model in the construction of cybernetic and cognitive models of decision, respectively. Thus, Stein and Tanter follow this line of reasoning and expand on the similarities rather than emphasising the differences of all four previous models.

The concept of constrained rationality, though not the only synthesis of the various models, suggest a belief system is initially extensively used in diagnosing a problem and providing options. Decisionmakers, particularly political leaders, tend to use modified analytic processes of revision, evaluation and choice.

"Decisionmakers begin their process of choice by referring to prevailing beliefs. They have no other basis."⁸⁰ The stimulus for

decision is filtered through the decisionmaker's belief system--only he can perceive when a decision is required. The process of search is also dependent on the individual's belief system--it may cover a set of obvious alternatives that are compatible to beliefs, while rejecting out of hand alternatives which are inconsistent with the dominant belief system. Curtailing the process of revision will be delimited for the same reason. Evidence shows that a steady flow of contrary data to the prevalent belief system will cause opinions to be modified.⁸¹ Moderate cognitive theorists accept this but considerable disagreement continues as to how much data is required to alter a strongly held opinion.

Because the process of search is shaped by prevalent beliefs, the process of evaluation will be similarly limited. The belief system has not vanished, it is still apparent and will evaluate likely outcomes in a similar method to that outlined in the cognitive model.

But, because there are a number of options, it is highly probably that an analytic cost benefit evaluation of the remaining options will occur, especially in national security decision. The final process of choice will be similarly limited to the options available, that which optimises the goals of the decisionmaker will prevail. Hence, a form of constrained optimising occurs, constrained by the previous decisional processes.

The constrained rationality model combines elements of the cognitive and analytic processes of decision. Accepting the human mind as the ultimate locus of decision and its ability to make inductive inferences on its own initiative, together with the individual's need to be consistent and rational as that is the criterion of a normal being, we can see how prevalent beliefs are constrained by the operating environment and how the perceived environment is shaped by each individual.

Stein and Tanter make another important observation. While a

mixture of the various theories may be applicable for a particular decision, it will not necessarily be applied again. Decisionmakers may adapt their processes of choice to suit their environment and the task at hand. The question must be asked, what now for decision-making theory as a discipline if there is no comprehensive paradigm upon which to build? That is beyond the scope of this study!

Chapter II

This chapter analyses the environment in which Indian nuclear decision-making occurred up to 1974. It attempts to reach an understanding of India's national security perceptions and how these were influenced by the domestic political system and Indian society. Secondly, it reviews the level of technology required to undertake a nuclear test, and the peaceful and military uses of nuclear explosives engineering (NEE). Finally it tests various hypothesis as to why India exploded a nuclear device in May, 1974.

Like all states in the contemporary international system, India interacts with other states. If we surmise part of the reasoning behind the nuclear test was to enhance India's national security, we must understand the regional and global environment in which it acted at the time.

Indian foreign policy formulators regard India as a regional power in South Asia, but it does have equals in the guise of the Peoples Republic of China (P.R.C.) and possibly Indonesia. Pakistan remains a potential adversary.¹ A closer analysis of India's regional security problems since Independence follows this introduction.

The modern term "super power" is often defined as a state that is able to influence events in any region of the world. South Asia, as a region, is no exception. In a world system where regional conflicts can spread to other regions or lead to superpower involvement, and possibly world war, it becomes necessary to understand India and South Asia as integral participants in global affairs since World War II.

The second section of this chapter analyses Indian society and the

unique political system, especially the foreign and defence policy processes, required to govern the world's most populous democracy. It was a political decision to explode a nuclear device and it is, therefore, important to understand the political system that shaped the decision.

The final section traces the history of nuclear energy and nuclear explosions, and their uses. The potential uses of nuclear explosions are then applied to India's test in order to analyse the reasoning that led to the detonation of a nuclear device on May 18, 1974.

India in South Asia

In the modern world it is inevitable for India to be the centre of Asia, and in that term I would include Australia and New Zealand, or even East Africa.²

J.P. Nehru

India and Pakistan

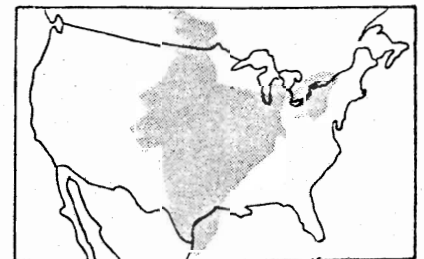
The same year Nehru made this claim the Indian sub-continent was partitioned and became independent of its British colonial rulers. The predominantly Hindu state of India and the mainly Moslem population of Pakistan, early and almost inevitably adversaries, were born into a world gripped by super-power cold war which became acutely hostile during the Korean war. While India and Pakistan both became members of the British Commonwealth, they could not expect much economic or military aid from their war torn former coloniser. Economic aid from Asian neighbours was unlikely due to the general poverty of the area; local military alliances outside of super power blocs could only be with each other, or with a China that was in the throes of civil war.

Within a year of Independence the uncertain status of Kashmir led to the first "Indo-Pak" border war. The war was caused by Pakistani

WORLD LOCATION



- 1 Peoples Republic of China (P.R.C.)
- 2 Pakistan
- 3 Bangladesh (formerly E. Pakistan)
- 4 Burma
- 5 Afghanistan
- 6 Nepal
- 7 *Bhutan*
- 8 Sri Lanka



Adapted from A.K. Dutt, S.P. Chatterjee, and M.M. Geib, India in Maps (1976), p. 3.

inspired rebels fighting against the plan of Kashmiri political leaders to accede to the All India Union. Indian troops intervened, which in turn led to a response of mobilisation by Pakistan. Both countries occupied parts of Kashmir, a situation that has remained since 1950 when a cease fire between the two was agreed to.

India's relations with Pakistan generally improved during the 1950's, but minor border clashes continued. The Sino-Indian war of 1962 left India in a weak military position. While Pakistan could have joined China in this war, her adequate relations with India at the time (except for disagreement over Kashmir), reliance upon the west for military hardware and economic support precluded any alliance with the P.R.C.³ whose intentions Pakistan was far from certain of. Closer relations between China and Pakistan did occur in the mid 1960's with Heads of State exchanging visits. Pakistan was anxious to augment its membership of Central Treaty Organisation and South East Asian Treaty Organisation with an understanding with China concerning their mutual neighbour, India. The lack of American support during the Indo-Pak war of 1965 forced Pakistan "to go to China to find a means of defence against aggression."⁴ Relations between Pakistan and China continued to improve in the late 1960's in cultural and economic matters. On the international level China offered support for Pakistan's claims on Kashmir and during the 1971 Indo-Pak war. In return Pakistan promoted the P.R.C.'s claim for the China seat at the United Nations, and was instrumental in arranging Henry Kissinger's secret visits to Peking in 1971.

By early 1964 India felt militarily able to repel a conventional attack from either Pakistan or China.⁵ Renewed border troubles in mid 1965 over Kashmir led to India invading sections of Kashmir which had been occupied by Pakistan since 1948. A month later, in September 1965, India invaded West Pakistan. However, the ill-prepared and poorly equipped

Indian defence forces encountered a determined and well armed Pakistan. The outcome was inconclusive, but India's failure to strike a decisive blow against her much smaller neighbour caused great alarm to the informed Indian.

The Tashkent Agreement signed by India and Pakistan in January 1966 was deemed honourable by demoralised Indian leaders. The Agreement had been sponsored by the Soviet Union, but the United States' suspicion of arms shipments to the sub-continent in general, and Pakistan in particular, suggested a degree of super-power parallelism in their policies towards South Asia. The late 1960's saw a thaw in relations between Pakistan and India, particularly as economic prospects were steadily rising.⁶

Relations between the two nations did not deteriorate further during the late 1960's, but conflicting claims over Kashmir still impeded serious progress to closer links between India and Pakistan. However, in 1971 the third Indo-Pak war occurred.

At Independence, Pakistan included the predominantly Moslem population on India's western border and the predominantly Bengali Moslems cocooned in India's East. West and East Pakistan were not geographically contiguous, separated by a thousand miles of Indian territory. The economic potential of the East was far behind that of West Pakistan, where most development had taken place. Economic disequilibrium compounded by political and social unrest in East Pakistan eventually flared into civil war.⁷ Predominantly Punjabi Moslem troops were flown in from West Pakistan to contain the civil unrest in East Pakistan. These soldiers soon came into conflict with their Bengali Moslem East Pakistani comrades. Serious fighting broke out forcing up to ten million Bengalis to flee over the border into India. The relief effort needed to feed the refugees soon began to put a serious strain on the already overstretched Indian economy, particularly

in states bordering East Pakistan. These states resented the Delhi rescue efforts and called for action by Mrs. Gandhi to halt the flow of refugees.

Mrs. Gandhi's options were largely being defined by events around her. On December 6, 1971, Indian troops intervened in the fighting in East Pakistan. Troop numbers in Pakistan had been seriously depleted by their stationing in East Pakistan, and thus a threat to India from her western border was precluded. Within twelve days Bangladesh, as East Pakistan is now known, was "liberated" and India became the first country to officially recognise one of the world's poorest states. India had won a decisive military victory and had forever eradicated the possibility of a two-front conflict with Pakistan.

Commenting on the outcome of India's intervention in the Bangladesh civil war, Mrs. Gandhi noted "We seem to have gotten what we wanted without the bomb."⁸ Pakistan was no longer considered by senior Indian defence policy experts as a mortal enemy, merely a potentially serious thorn in her side.⁹ There was, however, a nuclear factor in this relationship. Despite the intentions of India to detonate a nuclear device, as publicly declared in Parliament in 1972 and again in 1973, Pakistan did not undertake a crash nuclear development programme. Possible reasons for this delay before 1974 might include doubting Mrs. Gandhi's rhetoric and intense pressure from Pakistan's western allies, particularly the United States, to abstain from nuclear development.

President Ali Bhutto's declaration following the test that it was "nuclear blackmail," however, did not spur the initiation of a crash nuclear development programme by Pakistan, principally for the same reasons it had not gone nuclear before the ^{Indian} test. The United States resumption of arms shipments to Pakistan in late 1974, enabled the latter to construct a credible conventional defence force. The lack of subsequent

nuclear weapons development by India, and Pakistan's renewed close relationship with the U.S.A.,¹⁰ cemented by the Soviet invasion of Afghanistan, has apparently ushered in a degree of greater stability in Indo-Pak relations.

India and China

At Independence Nehru viewed the Soviet Union as ideologically sound, the United States as a much needed aid donor and China as a country in whose civil war India needed to remain non aligned. Nehru welcomed the victory of Mao's Chinese Communists, hoping that a peaceful united China would bring peace and prosperity to Asia in general.

The ancient Chinese and Indian Empires had often clashed throughout their history. India had long feared a unified hostile China. The early 1950's reinforced her fear. One year after securing power, Mao threatened to occupy Tibet. Threatened by a population two hundred times greater than its own, Tibet surrendered in the hope of achieving a degree of autonomy in October 1950. One month later, U.N. forces led by American General MacArthur encountered heavy concentrations of Chinese Red Army troops opposing their march up the Korean peninsula. In an attempt to remain neutral, Nehru opposed U.N. involvement in Korea and offered to mediate between U.N. and Chinese leaders. As a perennial enemy, India had reason to fear an apparently resurgent China that had little regard for the existing international system. In a further attempt to allay Chinese perceptions of India's intentions, Nehru rejected the Truman Doctrine and J.F. Dulles' plan to contain China by encircling military alliances in the early 1950's.

During the late 1950's and early 1960's there were regular reports of border friction on India's northern border with China. The disputed border areas exemplify the problems of applying Western ideas to regions

of the world where no obvious border exists. India was willing to refer the dispute to the International Court of Justice, even though she had little regard for the organisation (as can be seen by her unilateral repossessing of Goa from Portugal in late 1962) but the P.R.C. showed no interest in the proposal.

Increasing friction was apparent on the Sino-Indian border in September 1962. War broke out between the two regional powers on October 20, 1962, with little interest being shown by the rest of the world which was pre-occupied by the Cuban Missile Crisis. (Indeed, Nehru believed the distractions of the Cuban Missile Crisis to be a major component in Chinese strategic decision-making to launch an attack on India.) India suffered such severe military reverses that an urgent request for fighter aircraft was sent to Washington in the latter part of the war. The request was never responded to partly because of a unilateral ceasefire and pull-back announced by the Chinese on November 21, 1962.

The official Chinese explanation for their unilateral troop withdrawal was that India had caused the war with continual attacks against Chinese border posts, and had to be "punished"¹¹ for these. The decisive Chinese "counter-attacks" had adequately punished India, and there was no need to continue with the war. While this is plausible it must be considered in conjunction with China's need to assert her autonomy, especially in light of the failure of the "Great Leap Forward" and the super powers' successes in building military alliances¹² to contain China. The P.R.C. also succeeded in diminishing India's international stature as leader of the non-aligned movement, a position that China believed was rightfully hers.

Although she had suffered a major military defeat in 1962, India felt once again able to cope with a conventional attack from either China or Pakistan by early 1964. However, the situation was complicated in

October 1964 by China's detonation of a nuclear device. The official Indian view of this event was that China remained only a conventional threat, if any, to India. This view was stated by Prime Minister Shastri in late 1965, foreseeing world war if a nuclear attack was launched by China on India.¹³ The rejection of a Chinese demand for India to dismantle its army on the Sikkim border during the 1965 Indo-Pak war reemphasised India's perception of a nuclear China remaining only a conventional potential adversary. India's perception of China as a conventional threat has remained because of the latter's initial inability to develop a sophisticated delivery system. This view was further compounded by the internal chaos caused by Mao's cultural revolution in China during the late 1960's and early 1970's. The P.R.C.'s membership of the U.N. in the early 1970's and her apparent willingness to participate in the existing international political system reconfirmed the belief that China only posed a conventional threat to India's national security.

In the period from Independence until 1974 India fought many wars with her neighbours, but her existence was never seriously threatened. During the two crucial years leading up to India's nuclear test, neither Pakistan nor China posed a serious conventional or nuclear threat to the Indian state. Pakistan had suffered a demoralising defeat in the 1971 Indo-Pak war. Although President Bhutto made serious efforts in the wake of the war to form regional understandings with China (1972), Bangladesh (1973-74) and other regional powers, it was the belated resumption of conventional arms shipments in late 1974 that renewed Pakistan's sense of security. The spread of the Sino-Soviet dispute to South East Asia in the early 1970's drew Chinese attention away from South Asia. The chaos within China caused by Mao's Cultural Revolution further reduced the likelihood of an attack by Communist China on India. During the period after India's nuclear test,

the P.R.C. became preoccupied by the Sino-U.S. rapprochement. This development along with the increasing internal chaos in India, led Peking not to see India as a potential conventional or nuclear threat.

The present state of affairs suggests a degree of regional stability with China, India and Pakistan accepting the status quo. However, it is possible that the situation could alter rapidly, especially if either Pakistan or India deployed nuclear weapons. This might cause either India or China to undertake an operation similar to the Israeli attack on the Iraqi nuclear reactor at Tuwaitha, near Baghdad, in 1982.

India and South Asia in the International System

"World Regretful but not Surprised" was the headline in The Times reporting political reaction to India's nuclear explosion two days previously.¹⁴ Peking made no comment on the test; the Japanese government and four opposition political parties strongly condemned the test. In Moscow, Pravda noted India had carried out a nuclear test and that it was peaceful. Washington and London "regretted" the test. On May 22, 1974, Canada stopped all nuclear deliveries to India.

The history of India's position within the world polity of nations began in August 1947 when, under pressure from the Soviet Union, the United States and other United Nations member states, Britain withdrew from the Indian subcontinent. As the Cold War progressed during the late 1940's it was inevitable that the super powers would move to fill the power vacuum left by the rapid British withdrawal. Pakistan immediately looked to Washington for support, while India, guided by Nehru and Gandhi, determined not to become embroiled in the traditional power politics game of international relations.

South Asia's lack of unique strategic or economic resource potential

for either super power led to the Cold War being played out in other parts of the globe. India's rejection of the United States containment policy of the P.R.C. reinforced India's need to look elsewhere for allies. The necessity of preserving the United States as a major source of aid precluded a close alliance with the Soviet Union and was compounded by Nehru's wish to pursue a positive neutral stance in international affairs. It was for these reasons in the 1950's that Nehru undertook lengthy visits to Tito in Yugoslavia and Nasser in Egypt which culminated in the Bandung Conference of 1955 and the birth of a foreign policy of non alignment.¹⁵ Nehru remained prepared to receive much needed aid from either super-power, as long as there were no conditions attached, and until India could stand on her own.

The United States, because of India's reluctance to join a military alliance in the containment of China, became a major arms supplier to Pakistan until 1965. India willingly diversified her arms supplies and never, except ideologically, moved into the Soviet sphere of influence. The 1962 Sino-Indian war received little attention from the super powers because of the on going Cuban Missile Crisis.

The 1965 Indo-Pak war reflected a turning point in super power attitudes towards South Asia, and one another. The United States suspended all arms shipments to the region, which adversely affected Pakistan the most, and tacitly supported, by not undermining, the Soviet sponsored Tashkent Agreement signed between India and Pakistan in early 1966.

Détente had spread to South Asia and super power cooperation in the area appeared imminent. Super power involvement in the area during the 1950's was characterised by American support for Pakistan, the Sino-Soviet alliance and an India determined to remain non-aligned. The collapse of the Sino-Soviet alliance¹⁶ led to a tacit super power understanding not

to destabilise the South Asian regional system. This was largely the result of their mutual suspicion of China, particularly following the first Chinese nuclear test in 1964. Both super powers tried to build alliances to contain China; firstly, the U.S. with CENTO and SEATO during the 1950's and early 1960's, and later the Soviet Union in South East Asia. Both ostensibly failed.

The American response to the Soviet attempts to contain China, especially after the undignified U.S. withdrawal from South East Asia was to begin the construction of a major naval base at Diego Garcia, 1,000 miles to the south of India. The Americans also began to rearm Pakistan and commit themselves to Sino-U.S. rapprochement, once again in an effort to contain the Soviet Union.¹⁷

The reluctance of India to condemn the Soviet occupation of Afghanistan in 1979 alarmed China, Pakistan and the United States, further heightening their mutual suspicions of Soviet intentions in South Asia.¹⁸

The super power détente and cooperation in South Asia that appeared imminent in 1966 has yet to materialise in any major or lasting form. Instead super power actions in the region have continued to reflect (and promote) their global conflict.

Modern India

Modern India, unlike China, has spent only brief periods of her history united, and then only under external conquerors.¹⁹ The Buddhist influence reached a peak in 200 B.C., especially under Ashoka. Moslem dominance lasted for approximately 600 years beginning in 1,000 A.D. and was at a high point under Akbar. The third period of unity occurred during the introduction of Christianity by the British in the 18th and 19th centuries. J.K. Galbraith's statement that India, a state with fourteen official

languages and three principal religions, was a "functioning anarchy" becomes more understandable when the modern political system in India is examined.

There was relatively little animosity between Colonised and Coloniser when Britain withdrew from the Indian sub-continent in 1947. Nehru and other leading members of the Indian National Congress Party were prepared to adopt western democratic methods and institutions in the governing of an Independent India because they had used and respected them in their fight for Independence. Thus began what Nehru called India's adventure in democracy.

The Republic of India (Bharat) came into being on August 15, 1947, after a long campaign for Independence from Britain. The Indian Constitution came into force on January 26, 1950, and provides for a ^{State} democratic republic, secular, parliamentary and federal in character. It is the most populous democracy in the world: the 1981 census recorded 684 million people.

The Indian Constitution is primarily based on that of Britain. While the President is Head of State and Supreme Military Commander, his real powers are similar to those of the British Monarch. Real power in Indian politics lies with the Prime Minister who is appointed by the President if he can command majority support in the Lok Sabha.

Appointments to and removals from the Council of Ministers or Cabinet are made by the President on the advice of the Prime Minister. The collective decision-making process characterising the British and Canadian systems of cabinet government are less apparent in India. Prime Ministers are not in reality "primus inter pares," but with the aid of formal and informal advisors they predominate in Cabinet. Cabinet members are mainly occupied with implementing policy affecting their particular ministries and day to day administration. Hence, there operates a presidential

government ^{system} similar to that found in the French Fifth Republic.

The Indian Parliament is bi-cameral. The Lok Sabha or House of the People is more important with 542 directly elected members from single constituencies. The Rajya Sabha or Council of States with 250 members predominantly elected by the 31 state legislatures is the Upper House of Parliament. The two houses have equal power under the constitution over ordinary legislation, but only the Lok Sabha may introduce money bills and the upper house has only the power of delay

Jawaharlal Nehru, as leader of the Congress Party,²⁰ was elected India's first Prime Minister. The assassination of Mohandas K. Gandhi in 1948, the Mahatma or "great soul" inspirational leader of the National Congress since 1920, allowed Nehru to become known as the "father of Modern India." Nehru, a tireless worker concerned with building a united, industrialised, democratic and secure modern state, shaped much of India's domestic and foreign policy until his death in 1964.

Nehru's influence on Indian society was so great that near the end of his life people were asking not "who" but "what after Nehru?" A bitter leadership contest occurred within the Congress Party following Nehru's death. Eventually Lal Badhur Shastri emerged as the new party leader and Prime Minister. Shastri had to fill the vacuum left by Nehru, a task that was made more difficult by the internal and external events that affected India during his short tenure in office.

The death of Prime Minister Shastri in January 1966 was followed by eleven years of Mrs. Gandhi's first tenure as Prime Minister. Mrs. Gandhi, the only child of Nehru, was relatively inexperienced politically on assuming office. In fact, initially her ability to govern was questioned. She had become leader of the Congress Party and Prime Minister on winning another divisive leadership contest within the Congress Party. Mrs.

Gandhi won because she was the only acceptable alternative to Moraji Desai within Congress and would be able to unite the masses behind the party. As her experience increased, Mrs. Gandhi's popularity surpassed that of her father among the Indian people and by the early 1970's was referred to as Mother India. However, as the political and economic situation deteriorated in the mid 1970's, so Mrs. Gandhi's popularity waned. Economic crisis, political and social unrest, and electoral irregularities "forced" Mrs. Gandhi to declare a period of Emergency Rule in June 1975.²¹ Mrs. Gandhi, much as President Nixon did in refusing to release the Watergate tapes, claimed to be acting in the interests of her office and the state.

Nehru's "adventure in democracy" appeared to be ending with a decree by his daughter. Mrs. Gandhi defended her actions by saying "It is sometimes forgotten that the very meaning of words like democracy ... keeps changing As the world changes all concepts and definitions change."²²

The Foreign and Defence Policy Process

On achieving Independence India was almost immediately confronted by the Kashmir war of 1948 with Pakistan. The problem of formulating and implementing foreign and defence policies through respective ministries became an urgent task confronting the fledgling state. Which people and what ministries had what powers had yet to be clearly defined.

The President is constitutionally the Head of State, but has very little influence in the policy formulation and implementation processes, especially in Indian foreign policy. Only in times of emergency, for example during the Sino-Indian war of 1962, the 1971 Indo-Pak war, and Mrs. Gandhi's declaration of a State of Emergency in 1975 does the President, acting on the advice of the Council of Ministers, have any formal power in the Indian policy process.

The Council of Ministers or Cabinet is where the real power lies in the Indian foreign policy process. Right up until his death Nehru was External Affairs Minister as well as Prime Minister and Minister responsible for Atomic Energy. "Jawaharal Nehru was able to impress his personal stamp on the foreign policy of India,"²³ as have subsequent Prime Ministers. India's active role in international affairs, seeking international aid, countering external military threats and promoting a foreign policy of non alignment has allowed India's prime ministers to play a prominent, if not the main role in the foreign policy process.

The External Affairs Minister is usually a senior member of the Cabinet, presiding over a ministry of some 7,000 employees with 112 overseas missions.²⁴ Junior Ministers chosen from Parliament ensure political control of the Ministry, while the Foreign Secretary and three senior secretaries are responsible for administration of the ministries' divisions (nine Functional, eg. legal treaties, economic, etc., nine Territorial, eg. Africa, America, etc., and one Administrative Division).

Constitutionally, Parliament is not involved in the foreign policy process. Debates, questions, government statements and control of the budget by Parliament allow considerable influence on the process. However, there is no parliamentary standing committee to review foreign policy. Outside of Parliament, foreign affairs are vigorously debated in the media and by large sections of the public. There is little interest group activity in the process but there is growing academic input.

The influence of the Congress Party in the foreign policy process is considerable, partly due to its long tenure as the ruling party, and partly because of its mass support throughout the country. R. Park goes so far as to suggest "The considered opinion of the Congress Party today is likely to be official policy tomorrow."²⁵

Thus we can see that the senior members of government and the Congress Party, usually one and the same, have had a major effect on Indian foreign policy formulations and implementations. While debate over foreign policy is widespread, the electorate and Parliament have only informal influence in the policy process.

Similar conclusions can be drawn about the defence policy process. The President, acting on the advice of his council of ministers and the two Houses of Parliament, has ultimate responsibility for national defence. Again, it is the Cabinet that exercises real power in matters of defence; Parliament rarely uses its constitutionally given influence. The Cabinet cannot raise or spend money for defence purposes without the authority of Parliament. Yet, there is no parliamentary standing committee on defence, but the Estimates Committee, the Public Accounts Committee, the Committee on Public Undertakings, and the Comptroller and Auditor General can examine some aspects of defence spending. In practise this is not the case. R. Thomas notes that

Even during the East Bengal crisis year of 1971, the presentation of the defence budget produced little substantive debate on the specifics of defence spending, and continued to display most members' general lack of knowledge on the strategic situation confronting the nation.²⁶

If M.P.'s were ever to question defence appropriations, "the government could push through Parliament any amount demanded by the Defence Ministry while at the same time being able to avoid justifying it on grounds of security."²⁷ One M.P. suggested that the defence bill might as well be "directly certified" by the President to avoid the "force of the motions of getting us blindly to endorse a huge bill of expenditure."²⁸ The willingness of Parliament to accept any Cabinet defence expenditure plans without question was exemplified in the two budgetary years following the Sino-Indian war of 1962. Greater amounts were appropriated than could be absorbed by the armed services.²⁹ Outside of Parliament the Congress

Party is the major input into the defence policy process.

Thomas succinctly summarises the foreign and defence policy process in India by claiming that what occurs is "essentially individual ministerial accountability to the ruling party, much less cabinet responsibility to parliament as a whole, and little parliamentary control over defence."³⁰ The structure favours centralised decision-making, the significance of which will be seen in Chapter III.

The Advent of Nuclear Energy

The Atomic Age began on July 16, 1945, when the Manhattan Project completed its assignment to explode an atomic device. Robert Oppenheimer, the Manhattan Project leader, on viewing the test from his observation post said, "I am become death." Within weeks the military potential of atomic devices became more apparent with the U.S.A.F. dropping bombs on Hiroshima and Nagasaki.

Government interest in the atom began with Einstein's splitting of the atom--the resulting energy producing potential caused many states to initiate research projects. The potential military applications ensured large scale funding for research, but as in the development of many other peaceful tools of mankind, it was the existence of war that brought forth the final development of atomic energy.

In a letter to President Roosevelt in 1939 Albert Einstein pointed out the military potential of an atomic explosion, and urged attention be given to its development as the Germans were making great advances in atomic science.³¹ The top secret Manhattan Project was initiated involving some of the top scientists from occupied Europe, then settled in the U.S.A., Britain and Canada.

The Manhattan Project was disbanded after VJ Day and international cooperation and sharing of atomic knowledge was curtailed. This became

official U.S. policy in 1946 with the MacMahon Act of Congress essentially halting the sharing of atomic secrets with America's allies. The American's desire to maintain their atomic weapons monopoly encouraged other nations to develop their own super weapons, while simultaneously developing civilian atomic generating facilities.

The Soviet Union had never been invited to join the Manhattan Project and thus was relatively unprepared for the atomic age. The increasingly wide ideological conflict between the Soviet Union and the United States was partly fueled in the late 1940's by the former's mistrust of America's intentions to maintain an atomic weapons monopoly. The Soviet Union undertook a crash programme and with the help of secrets passed by the spy ring of Philby, Burgess and Maclean, and Fuchs exploded an atomic device in August 1949 breaking the U.S. monopoly. The nuclear arms race had begun.

Three years later, almost to the day, Great Britain exploded an atomic device in a small group of islands off the North West Coast of Australia. Britain's development of an atomic device had been aided by an exclusive special relationship with the United States in atomic physics. Continued membership in the Big Three Club by Britain required that she develop and deploy nuclear weapons in order to remain an equal to the U.S. and Soviet Union. Essentially, the 1952 display of independence and great power status was merely to enhance British prestige on the international stage and served to make the 1956 Suez debacle and her subsequent loss of international standing even more precipitous. The American failure to lend support to the Anglo-French Suez expedition, and indeed economic pressures to induce withdrawal, compounded by Khrushchev's threat to drop atomic devices on their capitals if Britain and France did not withdraw, reaffirmed French desires to break the Anglo-American monopoly of nuclear weapons in

the West.³² On February 13, 1960, in the Sahara Desert, the French exploded a nuclear device and became the fourth member of an exclusive club.

A similar withdrawal, as that of the U.S. over Suez by the Soviet Union of a "nuclear umbrella," and dissatisfaction with allies in the sharing of atomic secrets, encouraged the Peoples Republic of China to develop a nuclear weapons capability. In the late 1950's the increasingly acrimonious Sino-Soviet dispute and Khrushchev's "peace offering" to Eisenhower in the hope of inducing U.S. support for a test ban treaty and a nuclear proliferation treaty, resulted in atomic science cooperation between the two communist giants being unilaterally ended by the Soviet Union. The Chinese were incensed. In an effort to gain prestige in the Third World and as a method of underlining that the superpowers and their allies were not invincible, especially as Mao thought atomic bombs were merely "paper tigers,"³³ China exploded a nuclear device in the Taklamakan Desert in Sianking Province on October 10, 1964.

Thus, as Richard Betts has pointed out, the first two nuclear weapons states competed politically on a global basis.³⁴ The third and fourth members of the nuclear club, Britain and France, had illusions of worldwide influence. Today, their nuclear arsenals are, as is the Chinese arsenal, accepted as of only regional importance.

Britain's possession of nuclear weapons has not significantly altered the regional balance of power in Europe. The French and Chinese acquisition of nuclear weapons in their regional operating environments, Betts argues, has tended to "support the argument that nuclear multipolarity increases stability by reducing a nuclear power's ability to coerce its rivals."³⁵ While Betts is not suggesting that every state should possess nuclear weapons in the interests of world peace,

It is interesting that nothing in the record of proliferation to date proves the assumption that the process makes the world more dangerous by increasing the risk of war through escalation of ~~local~~ conflicts.³⁶

It could, therefore, be argued that if³⁷ India developed a nuclear weapons capability, without putting a serious strain on its internal societal structure, a greater degree of strategic stability might result in South Asia.³⁸

Peaceful Uses of Nuclear Explosions

The discovery of atomic power promoted further research into its use as a means of solving mankind's quest for a cheap, clean and renewable source of energy. Such hopes are a far cry from 1985, a time of nuclear arms races, threatened melt-downs at nuclear reactors and nuclear waste spills.

The Manhattan Project had an important civilian spinoff in the generation of electricity. The United States was quick to develop a capability for generating electricity using atomic reactors. The Soviet Union and Western Europe soon imitated the Americans, hoping to fuel their industrial rebuilding in the aftermath of World War II. It soon became apparent that atomic power would not be a rejuvenating tool in the developed world alone. In 1956, India's first research reactor became critical, emphasising the Third World's interest in atomic power. Since the mid 1950's there has been a rapid vertical and horizontal spread of atomic generating units throughout the world.

The high capital cost of building an atomic generating plant could be offset by the assurance of a cheap abundant supply of electricity. Further, because of rapid industrialisation in many parts of the world--following World War II, a dependable, quickly-constructed energy source was needed. In 1953 President Eisenhower announced the Atoms for Peace project whereby America would transfer atomic knowledge to peaceful friend-

ly countries if they agreed not to use their knowledge to develop nuclear weapons. Many countries accepted the limitations and accepted the Americans' offer. India, amongst others, rejected the Atoms for Peace plan as it did not require the United States to dispose of her nuclear weapons. The plan obviously enshrined America's "right" to nuclear weapons while denying others the same right. It has also been argued that the plan was commercially based so the United States could maintain her technological lead over her Western European competitors by selling atomic generating plants.³⁹ Global economic development since 1945 was, therefore, made possible partly by atomic energy proliferation. The oil crisis of 1973-74 spurred greater reliance upon atomic power than in the past as its relative cost had declined. Consequently orders for atomic plants dramatically increased in the late 1970's, especially from the Third World.

However, now the reactor market is virtually dead.⁴⁰ Construction costs have greatly increased and nuclear power is no longer regarded as a particularly cheap energy source. The Three Mile Island incident in the U.S.A. confirmed many of the worst expectations of the ease with which melt-downs might occur. In the U.S. many atomic power stations have been halted in their construction or closed down not long after becoming active because of serious budget overruns and/or their safety was in question.⁴¹ Reactors, however, have other uses that are also important in economic development.⁴²

Without becoming too technical it is useful briefly and simply to explain the manufacture of an atomic device. The raw material required for the generation of electricity by an atomic plant is Uranium--it comes in essentially two types: UR-235 and UR-239. The production of uranium is limited because it is found only in a few countries (Canada, South Africa, Soviet Union, Namibia and Zaire are the largest producers). Uranium-239

forms the basis of a nuclear device, but plutonium can be used as an alternative. Plutonium is not a natural mineral--it is the waste product of uranium after it has passed through an atomic reactor. The production of Uranium-239 nuclear devices is limited by the need to obtain the raw material and process it, not an easy operation; plutonium as the waste product of an atomic reactor is available to all those who generate electricity by atomic methods. However, the sale, transfer and disposal of uranium is strictly controlled by the International Atomic Energy Agency (IAEA), but not all countries adhere to its safeguards. Further, there are bilateral safeguards often in line with and sometimes more stringent than those which the IAEA, recommends. Even so, it is impossible to ensure that some uranium or plutonium is not diverted by a country intent upon constructing a nuclear device.⁴³

Once the relevant ingredients are at hand, it is relatively easy to construct a nuclear device. A Harvard University student in 1974 was able to outline the main procedures, purely by consulting various available government public documents. A state intent upon building a nuclear device with qualified scientists and the relevant raw materials could be capable of detonating a device through a crash programme within a matter of years.

Since 1974 there has been increased debate as to whether the detonation of a nuclear device implies an intention to manufacture nuclear weapons, as the Non-Proliferation Treaty (NPT) assumes.⁴⁴ While the technology required to build and detonate a military and a non-military device are essentially the same, there has been a distinction made between peaceful Nuclear Explosions (PNE's) and nuclear devices developed for military purposes. Further, it must be remembered that the Soviet Union, Britain, France and China preceded India's 1974 test with an explosion for peaceful uses, that is, a deterrent to ensure peace. The United States claimed that the bombing of Hiroshima and Nagasaki were necessary to bring

peace that much sooner to the Far East in 1945.

There have been a large number of nuclear explosions since 1945, mainly associated with the development and testing of nuclear weapons. However, there have also been a significant number of nuclear explosions used as a substitute for conventional explosives. In spite of the possibility of subsequent contamination of the environment with radioactive fall-out, the bigger explosion at a lower cost than conventional explosives has resulted in over 100 such projects.⁴⁵

Yu A. Izrael and M.P. Grechuskin⁴⁶ outlined two areas where the Soviet Union has been using nuclear explosives engineering. Firstly, the use of cratering explosions in construction industry, particularly channel, canal⁴⁷ and reservoir construction and the opening up of mineral deposits.⁴⁸ Secondly, in the use of contained nuclear explosions in industry to stimulate oil and gas production and the working of natural ore deposits, and for the construction of cavities for the storage of gas and oil products, or the burial of waste. There has also been some mention of the Soviets using nuclear explosions in mineral extraction from beneath the seabed.

Although the USA, has undertaken some construction work using nuclear explosives, this has attracted little support or money in recent years and has apparently been discontinued. The Soviet Union, seemingly still sees a potential for nuclear explosions in civilian projects. While there has been much discussion of using nuclear explosives engineering in many Third World countries, no such projects have occurred. In populous countries the cheapness and abundance of under-utilised labour would tend to reduce the advantages of NEE construction projects. (The development of an indigenous NEE project by a Third World country would be avoided under Article V of the Nuclear^{NCP-} Proliferation Treaty (1970) which encourages the peaceful transfer of nuclear explosives for such projects but has yet

to be used).

Military Uses of a Nuclear Device

The bombing of Hiroshima and Nagasaki essentially ended the Second World War, and ushered in a new era of arms development. While there has been no subsequent World War, inter-nation violence has continued unabated. Yet, though many nations possess, or have the ability to develop them in a short space of time, nuclear weapons have not been used except as a threat since 1945.

For the purpose of this section it will be assumed that any state exploding a nuclear device has a military intention. It is enlightening to ask why any state should wish to undertake a major commitment to develop a nuclear weapons system that will likely (hopefully) never be used, particularly when nuclear weapons are such a headache for the super powers. If we can answer the why we can better identify who will likely acquire nuclear weapons in the future.

A state that wishes to develop its own nuclear weapons must have the political will and the technical capability to do so.⁴⁹ Richard Betts observes that existing Nuclear Weapons States (NWS) developed their nuclear weapons because they perceived a potentially threatening adversary.⁵⁰ It is, therefore, a political decision to develop nuclear weapons. A decision to commit the financial, technical and personnel resources of a state to such a project can only be taken by politicians.

While most states perceive an external threat, they may not decide to meet that threat by acquiring nuclear weapons. This is usually the case, for many different reasons including a lack of technical ability. This is especially true in the Third World where a shortage of relevantly trained personnel, technical support facilities and the accessibility of raw materials preclude nuclear development although the political will may

exist. Assuming the existence of the political will and the technical capability to develop a nuclear bomb, there is still a need to accurately deliver the device. The cost of developing and deploying an effective guidance and delivery system is considerable and cannot be explained away in a similar manner to that of a peaceful nuclear explosion.

Why India Exploded⁵¹ a Nuclear Device

This section puts forward three generally accepted theories as to why a state might decide to detonate a nuclear device: strategic/military, peaceful, and psychological/prestige. Each will be examined in turn in the case of India's 1974 nuclear test.

Strategic/Military Reasons for Test

Examining Betts' claim that "No state without apparently threatening adversaries has yet acquired nuclear weapons"⁵² in relation to India, requires the identification of potential threats to Indian national security. On the global scale, the Soviet and American response to the Indian test was that it was of little military significance.⁵³ On the sub-continent of India, many writers at the time claimed that it seriously upset the regional balances of power and would spark a South Asian nuclear arms race. Such power politics conjecturing took little account of the actual strategic/military environment in South Asia in 1974, and in retrospect, is found to have little factual support.

As early as 1967, Cohen argues, Washington had confirmed India's "sub-continental preminence and 'great power' status," and Pakistan could "no longer obtain strategic superiority on the sub-continent ..."⁵⁴ This conclusion was even more apparent by 1974 following the dismemberment of

Pakistan in the aftermath of the 1971 Indo-Pak war. Although India's conventional Armed Forces were divided between the Chinese and Pakistan borders, it is safe to assume that India could adequately repel a conventional armed attack by any of its neighbours, except possibly China.

The likelihood of a conventional military confrontation between India and the P.R.C. in 1974 was limited. On the domestic level, China was in a state of internal chaos due to the failure of the Cultural Revolution and the rule by the Gang of Four. On the World stage, Peking was attempting to gain international respectability and restructure its relations with the United States. A Chinese attack on India would have put attainment of both these goals in jeopardy. Even if China had considered undertaking such a power politics action, the possession of nuclear weapons by India would have been unlikely to deter the P.R.C. India's inability to attack major Chinese population centres due to its inadequate potential delivery vehicles (in the guise of aging supersonic aircraft) and, by 1974, China's considerable nuclear capability and advanced delivery system (including ICBM's), effectively precludes the possibility of Indian decisionmakers contemplating a nuclear response to a conventional Chinese invasion. Closing the ten year gap in Chinese and Indian nuclear capability would have been a considerable undertaking requiring a far more sustained and costly effort than India undertook in exploding a nuclear device in 1974, and that has been the case to date.

It has been suggested that India exploded a nuclear device in 1974 to maintain her nuclear lead over Pakistan. Then Pakistan Foreign Minister, Ali Bhutto's suggestion that Pakistanis would eat grass in order to get the bomb (1965) did not result in major activity towards such acquisition.⁵⁵ Hypothetical scenarios of an 'Islamic bomb' with a Pakistani finger on the trigger⁵⁶ "fails to recognise Pakistan's limited capabilities, the

multiple divisions in the Islamic world, and the destructive power of the assumed anti-Islamic countries."⁵⁷ The Islamic bomb developed by Pakistan in conjunction with other Islamic countries is unlikely ever to occur.⁵⁸

The development of a nuclear capability by Pakistan alone fails to take account of India's "far superior nuclear establishment,"⁵⁹ and the possible termination of economic, military and technological aid by the west. Rais concludes

the crude nuclear device that Pakistan could produce would place it far behind India in over all nuclear weapons capability because Pakistan lacks the parallel technological developments in critical areas of fission explosion and delivery systems.⁶⁰

Thus it would seem safe, if not sensible, to conclude that India's strategic/military position in 1974 did not warrant the development of a nuclear weapons capability. Subsequent events tend to confirm this conclusion.

As the sixth nation on Earth to undertake a nuclear explosion, India has not followed the route of its predecessors. It has not tested any more devices.⁶¹ It has not diverted or appropriated extra money from the conventional defence budget. It has not deployed nuclear weapons.

In spite of India's refusal to carry out subsequent nuclear tests, there has been on-going development of rocket and satellite technology. Elkin and Friedrichs⁶² conclude that in such areas as reconnaissance, command and control, weather forecasting and intermediate range ballistic missiles, India's accomplishments have direct military applicability. However, while noting these conclusions, other writers⁶³ have highlighted the many delays and problems in India's rocket and satellite development projects. Further, the fact that these advances have military applicability should not obscure their importance to the process of Indian economic and industrial development.

The military benefits that India may have accrued in exploding a

nuclear device, then, are difficult to pin point. A common assertion of India's ability to use nuclear blackmail against Pakistan is debatable. In response to such a "power politics"⁶⁴ assumption, the existence of a considerable Indian conventional military advantage, and the lack of subsequent development of a nuclear capability have already been mentioned. Rais points to another factor that further obscures the Pakistani proclaimed nuclear blackmail thesis. A confrontational history since independence of "action-reaction strategies ... India and Pakistan would out of psychological and political necessities attempt to acquire rough nuclear parity"⁶⁵ regardless of other restraints. The fact that Pakistan did not begin a "crash" nuclear weapons programme in 1974, might partly result from Pakistani decisionmakers seeing no new threat to their security from the Indian test.

By 1985 Pakistan still had not made any serious or sustained attempts to attain nuclear weapons. Rajiv Gandhi's warnings of an imminent nuclear arms race in South Asia⁶⁶ can once again be better explained as political rhetoric by an Indian Prime Minister than a serious expectation.

Peaceful Reasons for a Test

The announcement of the Sarabhai Nuclear Energy and Space Programme in 1971 reflected growing international and domestic optimism in India's economic development prospects. The fourth five year plan announced in 1969 would enable India "to stand on our own feet as soon as possible and not take a very large amount of foreign aid."⁶⁷ As Prime Minister Gandhi noted "we are doing with less aid because of our own desire and because less aid is available."⁶⁸ The completion of an indigenously built plutonium processing plant in 1971 emphasises India's growing technological competence and economic expectation for the 1970's.

The official Indian announcement of the May 18, 1974 test emphasised that it was purely for peaceful purposes. The Indian Government had consistently claimed only peaceful intentions for their nuclear industry, except during the late 1940's⁶⁹ and under Prime Minister Shastri when the possibility of acquiring nuclear weapons was publicly discussed.

Peaceful intentions in this section will be taken to mean a tool of internal economic development that may also be used to aid friendly Third World countries in their economic development. While India faces many impediments to her economic development, not the least being a complex geological terrain,⁷⁰ it is uncertain which problems it was hoped Nuclear Explosives Engineering (NEE) might provide a solution in the early 1970's, or to date. The use of nuclear explosions to create underground caverns within India has not been well researched. For construction projects above ground, Mehta notes "India has always had a large indeterminable floating population of destitute men and women who, without any assistance from nuclear devices, would for the mere opportunity of gainful employment, move mountains."⁷¹ The use of nuclear explosives engineering seems to have had little promise for the economic development of India; especially considering the fact that such technology was, in theory, available to her from the IAEC as laid out in Article V of the 1970 Nuclear Proliferation Treaty.

Psychological⁷²/Prestige Reasons for a Test

The concept of domestic and international prestige of a regime⁷³ is difficult to define and often leads to ambiguity. However, for lack of a better term the following benefits that accrued to the Indian Government following the 1974 nuclear test will be labelled Psychological/Prestige reasons for a test. Principally, these were:

1. Showing off India's technological prowess, thus reinforcing her claimed independence from and growing equality with, industrialised states.
2. Uniting domestic popular opinions behind Mrs. Gandhi's ailing regime.

While India was widely condemned by western industrialised nations for a few months after the 1974 test, the fact that India is an underdeveloped nation and could explode a nuclear device gave hope to many countries that believed they had been intentionally kept underdeveloped by the capitalist west.

China's test in 1964 had broken the industrialised nations' (including the Soviet Union) monopoly of nuclear technology, but this had been substantially aided by the Soviet Union until 1959. Further, Peking was still viewed with suspicion by many Third World states, and any bilateral agreements with the P.R.C. in the 1960's on nuclear sharing may have jeopardised the recipients' relationship with either super power.

In India, the Chinese nuclear test sparked off widescale public debate about nuclear weapons proliferation in South Asia. Until this time the majority of Indians had never considered the subject; when their perennial northern enemy scorned nuclear weapons as "paper tigers,"⁷⁴ the Indian people remembering their military defeat of 1962, began to demand that India also develop a nuclear weapons capability.

The growing economy of the early 1970's based largely on good monsoons in the late 1960's, the military defeat of Pakistan in 1971, and the decisive leadership of Nehru's daughter, brought a sense of "one nation" to India as exemplified by the sweeping parliamentary election victories of Congress in March 1971. The announcement of the May 18, 1974, nuclear test revived the "one nation" feeling of unity with virtually all the political parties represented in the Lok Sabha applauding the accomplishment.

However, as a distraction from the worsening economic political and social problems that had emerged since 1972, its effect was short-lived.

India's nuclear programme had largely been an indigenous effort by what appeared in the early 1970's to be an emerging industrial power committed to peace and equality among all nations. The number of visiting foreign dignitaries particularly from Third World states considerably increased in the months after the 1974 test⁷⁵ India signed many bilateral agreements during the period on the sharing of nuclear technology, notably with Argentina and Iran.⁷⁶

As will become more apparent in Chapter III, the Psychological/Prestige⁷⁷ benefits that accrued to the Indian Government in undertaking a nuclear test shows scant regard for the inevitable negative repercussions. The benefits of increased Third World respect, and the almost unanimous domestic applause for the May test tended to negate the west's unfavourable response.

The purpose of this section has been to suggest that India did not receive any military or economic benefits from exploding a nuclear device in May 1974. It undoubtedly did in both of these areas but they were only of small importance in relation to the international and domestic prestige that the Indian Government subsequently acquired.

The capability to deploy nuclear weapons is not sufficient to imply that the political will exists to use them. E.W. Lefever points out "The weapons themselves are inert and neutral until they are given meaning by human volition within a political setting."⁷⁸ It is a political decision to acquire nuclear status, and "Even in the case of the super powers the political leadership still maintains the right to give instructions on the use of all strategic and theatre nuclear weapons." The acquisition of nuclear status is "rooted in unique circumstances and has led to diverse

consequences."⁸⁰ In the next chapter the "unique circumstances" that led India to acquire nuclear status will be more closely examined in light of the theories of decision-making described in Chapter I.

Chapter III: Muddling Along, Not Yet Through

The literature review of decision-making theory and foreign policy formulation, and the second chapter concerning India in the international system, and nuclear technology are a necessary prelude to explaining Indian nuclear decision-making. While this is obviously a continuous process, it is necessary to split the explanation into three periods: 1944-72; 1972-74 and 1974 onwards.

The reason for these apparently arbitrary divisions can best be explained in conjunction with the title of this chapter. 'Muddling along, not yet through' is a paraphrase of Charles Lindblom's famous description of incremental decision-making.¹ By incremental Lindblom means change by small steps over a period of time--in our case a period of thirty years. A refinement of this process is disjointed incrementalism whereby the small steps of change occur but are not linked. Utilising Lindblom's concept of disjointed incrementalism, it will be seen from a macro-perspective, how "one thing led to another" in India's nuclear decision-making from 1944 to the present. However, if we analyse each change of policy on a micro level, using the three main theories of decision-making processes as we do with the critical period from 1972 leading up to the nuclear test in 1974, we will better understand what Professor Kapur label^{ed} a "zig-zag pattern" to May 1974.²

It will be argued later in this chapter that the test was merely one step, albeit a major one, in India's nuclear policy. The technological drift up to the mid 1960's, and the political indecision until 1972; uncertain goals of a nuclear test followed by an apparent lack of interest

in further development suggests a pattern of muddling through in the early and middle years of India's nuclear policy. As Lindblom was later to point out, muddling through suggests an end is in sight; he later altered the inference of his writing to "muddling along, not yet through" in order to emphasise that the process is usually never ending.³ Thus, in India's nuclear policy "muddling will continue" into the future.

In its entirety, India's nuclear development illustrates the problems of applying any decisional model to a long chain of events in which people, personalities, perceptions and goals alter in relation to the dynamic operating environment. It can be argued that the early and middle years of India's nuclear development did not necessarily preordain a nuclear test explosion. The dynamics of the decision to go ahead with a nuclear test are the focus of this chapter.

In applying the various theories of decision to the process by which the Indian Government decided to explode a nuclear device during the period 1972 to 1974, four "cuts"⁴ or explanations are offered. The first cut gives an analytic (or rational) explanation. The second cut or cybernetic explanation incorporates Models II and III. The third cut, the cognitive explanation is separated from the two cybernetic models in order to emphasise the importance of an individual's belief systems on the process of decision. The fourth cut applies Stein and Tanter's constrained rationality model to the events leading up to the 1974 test.

Thus, the micro-perspective shows that by applying the three decisional theories we can better understand Indian nuclear decision-making during a certain time period. The brief section on constrained rationality, in combining the three models, however, emphasises each theory's weaknesses in that each theory is only useful in different instances at different times.

Muddling Along: The Macro-Perspective

The first small step on the road to the May 1974 test can be traced to mid-year in 1944, when the Tata Institute for Fundamental Research was established as part of the Bombay Plan for India's post-war reconstruction. The Tata Institute was primarily to investigate the further supply of energy to meet India's expected post-war requirements.

The atomic bombs dropped by the United States on Hiroshima and Nagasaki concluded the Second World War, and left political leaders in the Far East stunned. Nehru, in June 1946, did not immediately rule out India developing and using atomic weapons if she were attacked.⁵

The United States Congress passed the MacMahon Act in 1946 preventing further bilateral contact on atomic technology similar to that which had occurred under the Manhattan Project. Spurred by this, and by the hope that peaceful uses of atomic energy might emerge and enable India and developing countries in general to industrialise rapidly, the Indian Atomic Energy Agency (IAEC) was established. It was to be an outgrowth of the Tata Institute for Fundamental Research created by an Act of Parliament in 1948. The Act gave the IAEC, presided over by a Minister of Cabinet traditionally the Prime Minister, control over the working and export of all fissionable substances.

Indian external relations have been characterised by a reluctance of being too closely allied with either protagonist in the Cold War. This was reflected in India's nuclear policy in the 1950's. Indigenous research, aided by Canada through the Colombo Plan, enabled Nehru to reject Eisenhower's Atoms for Peace project,⁶ denouncing it as a way of maintaining a superpower nuclear weapons and technology monopoly, ensuring

the continued divide between rich and poor states. In August 1956, India's and Asia's first experimental atomic reactor became critical. The fact that the reactor was indigenously built only added to the extent of the achievement. India's impressive achievements in atomic sciences soon brought the possibility of exploding a nuclear device into Indian political debate. In July, 1957, Nehru foresaw only peaceful uses for nuclear explosions, doubting any future Indian Government would see any use for a nuclear test.⁷

Political debate during the 1950's in newly-independent India centred more on relieving poverty than on the development of nuclear technology (although senior politicians claimed it was hard to separate the two).⁸ The IAEC operated largely in secret with little political interference. Such a free hand led to it being labelled "a state within a state."⁹ It was able to operate very much as it desired with little political interference; except for controlling its "purse strings," but this was never a real hindrance.

In 1964, Dr. Homi Bhabha, Vice Chairman of the IAEC, known as the father of India's bomb, broadcast on All India Radio in favour of India producing its own nuclear weapons.¹⁰ This can be seen as a significant, but not crucial, turning point that led to Prime Minister Shastri's announcement of the Subterranean Nuclear Explosion Project (SNEP) allowing for the development of a nuclear device to continue until three months before a test was possible.

Dr. Bhabha's radio broadcast can be regarded as a small step in India's nuclear policy since 1944. India was near the forefront of nuclear technology and was thus internationally respected.¹¹ It would be unnatural for a scientist who had worked so conscientiously towards such a momentous event not to desire to see the next step taken, thus proving his work

valuable. Dr. Bhabha, therefore, supported a nuclear test, the natural culmination of his work. Bhabha's broadcast came soon after China exploded her first nuclear device in the Taklamakan Desert, Sianking Province. Dr. Bhabha warned "no form of power is as expensive as no power,"¹² an obvious reference to India's nuclear neighbour. The SNEP was given the go-ahead in December 1965, by Prime Minister Shastri. Shastri replaced Nehru as Prime Minister and Minister for Atomic Affairs after Nehru's death in May 1964. Replacing the father of modern India was likely to be no easy task--especially as Shastri had not come to power with unanimous Congress Party support. The disastrous war with Pakistan in 1965 led to widespread public support for India to develop a nuclear weapons programme. In September 1965, 86 Members of Parliament from the Lok Sabha signed a petition supporting such a move. Thus, reflecting the majority of public opinion, Shastri gave the green light to the SNEP. We can see how the domestic and international environment influenced a reluctant prime minister to make this apparently major political decision.

Within two months of the SNEP being adopted, Shastri and Bhabha were dead. The main scientific protagonist and the premier political decisionmaker of the SNEP had died. Mrs. Gandhi, the only daughter of Jawaharlal Nehru, was chosen as the only person who could effectively unite the Congress Party in the country and within the party against Morajai Desai, the other main contender for Congress leader. Mrs. Gandhi was sceptical about the development of nuclear weapons from the beginning of her term as Prime Minister and thus cancelled the SNEP soon after coming to office.¹³ While this initially appears as a major reversal of policy, it too can be seen as an incremental step in light of the dynamic environment in which it occurred.

Shastri had died following the negotiation of an "honourable" agree-

ment at Tashkent with Pakistan. Bhabha had died in a plane crash on his way to replace a reluctant Canada (because of the SNEP) with France as India's main supplier of nuclear raw materials and technology. Mrs. Gandhi, as Shastri's successor, was not widely experienced in Indian government and feared for India's security following the 1962 and 1965 border wars. Due to poor economic performance, India was also reliant upon western aid. The Indian scientific community was weakened by the loss of Bhabha, and Mrs. Gandhi's name ensured her wide public support for whatever she did. Thus, the weak domestic political position of Prime Minister Gandhi and India's weak international position made the cancellation of the SNEP only a small step along the road to the 1974 test.

During the mid 1960's formal international discussion of a Nuclear Non-Proliferation Treaty (NPT) got under way in Geneva. Ambassador Trivedi representing India remained throughout a critic of the negotiations proclaiming them as a means of enshrining the United States, the Soviet Union, Britain, France and China's monopoly on nuclear weapons.¹⁴ Renunciation of future nuclear weapons by non-nuclear weapons states (NNWS) was only acceptable to India if attempts at horizontal nuclear disarmament were successful. Ambassador Trivedi's arguments in Geneva were very much in line with India's general foreign policy stance since Independence: non-alignment or positive neutralism in seeking to reduce Cold War tension and nuclear armament levels.

Partly due to the failure of gaining a commitment to disarmament by the nuclear weapon states (NWS), India did not sign the NPT. India intended to keep her options open vis a vis the further development of nuclear technology which was not to be impeded by an "unfair" NPT. The death of Dr. Bhabha and the threat of losing contact with important Canadian counterparts led the IAEC to accept bilateral safeguards on the

raw materials and plant received from Canada. While Mrs. Gandhi and the IAEC were prepared to accede to the NPT,¹⁵ the fact that India did not sign the NPT can be viewed as another incremental step in Indian nuclear decision-making.

In 1971, India completed a plutonium separation plant which was not subject to bilateral or multilateral safeguards. The separation plant was a result of the continued work of the IAEC in developing an indigenously based nuclear industry. The unsafeguarded processed uranium (plutonium) could either be used in plutonium using power stations or in a nuclear explosion.

1972-1974: The Micro-Perspective

Within a few months of India's decisive military intervention in the Pakistan civil war, a decision was taken to go ahead with a test explosion of a nuclear device.¹⁶ Nearly thirty years of "zig-zag" in India's nuclear policy appeared to be at an end. Although the decision was reversible right up until the moment of detonation, the test went ahead and India became a nuclear weapon state according to Article II of the NPT.

The following section of this essay will make three cuts at explaining the 1972 decision, and why in the light of new information available in 1974, it was not reversed. Applying the rational actor, the cybernetic and the cognitive theories of decision to this time period will allow greater comprehension of the three theories and a clearer understanding of the events leading up to the 1974 test.

In order to evaluate the rationality of the events leading up to the 1974 test, it is necessary to reach some tentative conclusions as to why India should want to detonate a nuclear device. To simplify matters it will be assumed that the principal benefits which India accrued due to the

test were:

1. Greater prestige among Third World nations, by showing off India's technological prowess and reinforcing her claimed independence from, and equality with, industrialised states.
2. Uniting Indian popular opinion.

These were the principal benefits for India following the 1974 test,¹⁷ and are taken as the goals she hoped to achieve in opting for a test in 1972.¹⁸

A First Cut: The Rational Actor Explanation

Decisionmakers act in what they regard as the only rational manner. They must do so in order to retain a degree of consistency, and hence credibility. The first cut in explaining the 1972 decision to go ahead with a nuclear test and the subsequent failure to reverse this decision before May 1974, will apply the Rational Actor Model (RAM) of decision-making. The first cut, therefore, gives an account of what happened assuming the involved decisionmakers were behaving according to the code of rationality demanded by the Analytic Theory.

The Rational Actor Model of decision assumes a single decisionmaker, a set of hierarchical goals and perfect information. It is necessary, and acceptable, to relax these stringent conditions so as to apply the model to the real world. In Indian nuclear decision-making, Mrs. Gandhi as Prime Minister and Minister for Atomic Energy, with her personal advisers and advisers from the IAEC, during informal Cabinet discussions, took the decision to go ahead. The constitutional and personal power of the Prime Minister in Cabinet, and widespread parliamentary and public support for a nuclear test encouraged the Cabinet at least to be seen to be acting together as a unified decision-making body.

Diagnosis. The lack of a procedure for problem recognition or identification in the RAM means that the rational explanation can only be used in retrospect. The causal explanation requires a starting and a finishing point. In our case study we must, therefore, assume the positive outcomes achieved by the 1974 test were indeed those desired by decisionmakers in 1972. While it remains difficult to rank hierarchically the various goals, they can in retrospect be identified as greater prestige for India in the Third World, a sign of India's technological capability reinforcing her claim of development and independence, and unifying domestic popular opinion so as to distract Indians from their deteriorating economic and social problems.¹⁹

Perfect information is illusory, but, according to the RAM the processes of identifying relevant options and revising estimates in the light of new information must be extensive to enable an adequate evaluation of the likely consequences of alternatives discussed. The degree to which these processes can be undertaken concerning nuclear policy in India, a poor country with other more pressing issues, such as a third of the population living below the United Nations poverty line, is far less than in a more wealthy state possessing greater resources of time and finance.²⁰ This may indeed prove to be beneficial as calculations of value trade-offs will not be so complex. Thus, the failure to delimit adequately the processes of search and revision is a fundamental weakness of the RAM.

Search. While the benefits achieved by the nuclear test were not India's only expected goals, they did structure the environment in which an analytic decisionmaker would have been expected to operate. Because there are no set limits on the process of search for the analytic decisionmaker, it is difficult to comprehend what search across all relevant options would require. The following suggests some areas that may have been

covered in searching for options to achieve Indian nuclear decisionmakers' goals in 1972.

The 1960's had been disastrous for India on the international stage. Nehru had lost control of his cherished non-aligned policy, which was becoming an institutionalised movement.²¹ Defeat by China in 1962, and the failure to deal with Pakistan in 1965, had led to an Indian sabbatical from international affairs. As an emerging economic and regional industrial power, how could India improve her standing among Third World states?

A more radical stance in international affairs by the largest Third World industrial power supporting the Third World in an unselfish manner to achieve parity and overcome inequality on the world stage, was required. The transfer of technology, goods, or personnel to more needy countries was one option. Intervention in the Bangladesh Liberation War exemplified another option. More obvious support for a fairer international economic order, disarmament, and world peace in the international organisations to which India belonged was another option. A move towards a more non-aligned policy, relying upon no external power for technological, economic, military, food or political aid was an option. In the late 1960's India's desire to break free of its considerable reliance upon Western European and superpower aid appeared more feasible as her economic position improved. The fourth five year plan announced in 1969 could have led to such a position. The non-aligned policy followed in the 1950's and 1960's had resulted in India being closely allied to neither superpower. Improved economic performance, a more stringent policy of non-alignment or detonation of a nuclear device were some of the possible options that might have reflected India as being able to stand alone.

Possible solutions to unite further domestic political opinion

behind the Congress Party are difficult to identify, especially following the March 1971 election triumphs, and the decisive military intervention in Bangladesh. Mrs. Gandhi was at the height of popularity in her political career. Perhaps the formation of a national government, the removal of political corruption, the elimination of poverty, "transistor radios for all,"²² or the detonation of a nuclear device could only further unify Indian mass opinion. It is important to stress that the options above were not the only possible ones identifiable in achieving the desired goals. They merely illustrate the analytic decisionmakers' problem of having no limits on search--it is especially difficult to delimit search across relevant options.

Revision. The process of generating and revising estimates of likely outcomes is no less clear than that of searching for relevant options. Generating estimates of the likelihood of India's prestige being enhanced among Third World states by a nuclear test shows the imposed limits of revision. In 1972, a nuclear test could well have been expected to increase India's prestige among Third World states.²³ Indian nuclear decisionmakers correctly interpreted Third World opinion concerning the weaknesses of the nuclear Non-Proliferation Treaty and the desire for an emerging industrial and economic power as leader of the non-aligned.

While this may have been the case in 1972, that led to the initial go-ahead decision, it was not so in 1974, when there was still time to cancel the test. By February 1974, the Indian economy had suffered serious reverses and India's international prestige was declining due to its political and social internal problems. The likelihood of improving India's prestige among Third World states through a nuclear test in 1974 had significantly declined since its "certainty" expected in 1972.

Thus, the failure to define optimal levels of revision, and continually

up-date estimates in the light of new information from 1972 to 1974, weakens the rational explanation of India's nuclear decision-making during this period.

Evaluation. The rational process of evaluation, a comparative calculation of costs, benefits and likely consequences of alternatives requires complex computation of the likely outcomes of each live option. Enhancing India's prestige among Third World states had to be weighed against the likely sanctions that could be expected from aid donors. In 1972, India was soon expecting to be able to stand alone with little help from Western countries. Hence, the benefit of greater standing in the Third World would outweigh any sanctions imposed by industrialised states. By 1974, India's economic problems required renewed western aid and allied to the reduced likelihood of enhanced Third World prestige, the rational choice became far less obvious.

Choice. Choosing the best possible option under the circumstances in optimising the desired outcomes calculated by cost benefit analysis, is the decision rule used by rational decisionmakers. Arriving at the conclusion that one policy, a nuclear test, could achieve the three goals outlined above, and comparing these benefits against the principal costs of the test, was an unlikely feat in 1972. The economic, social and political chaos that existed by 1974 would likely make this task that much more complicated. It must be questioned whether Indian nuclear decisionmakers were capable of, or willing to, undertake such calculations.

In 1972, Indian nuclear decisionmakers made an important policy decision which was not reversed by 1974, in spite of a considerably altered

operating environment; the rational actor model fails to explain such an anomaly except as an irrational oversight. It is to the cybernetic and cognitive explanations that we must now turn to disentangle the complex "irrational" path which led to the May 1974, detonation.

A Second Cut: The Cybernetic Explanation

The cybernetic explanation of decision attempts to overcome the inherent problems of the Analytic Theory. Individuals alone and within groups are not causal learners as the RAM suggests: they learn by trial and error. The processes of search, revision and evaluation are often foreshortened by relying on selective information feedback and programmed operations. The cybernetic account of the decision to go ahead in 1972, suggests methods by which Indian nuclear decisionmakers bypassed some of the shortcomings inherent in the Rational Actor explanation.

In 1971 the Sarabhai Nuclear Energy and Space Programme was adopted by the Indian Government. The programme called for one to two nuclear tests and missile development amongst other things. The long suppressed bureaucratic inertia of the IAEC required that a political decision be taken as to whether India should explode a nuclear device. The decision to go ahead was not irreversible but was a change in policy, although not a significant one, once the Sarabhai Programme had been adopted. The detonation of a nuclear device had been a plausible option since Dr. Bhabha's announcement in November 1965, that India would be capable of a test within eighteen months.²⁴ Prime Minister Shastri gave formal approval for a Subterranean Nuclear Explosion Project in late 1965.²⁵ Prime Minister Gandhi cancelled the SNEP in 1966 on assuming office.

Diagnosis. Cybernetic decisionmakers are expected to monitor preselected

and validated indicators. Indian nuclear decisionmakers' reassessment of the cancellation of the SNEP formed the process of diagnosis. When it was found that the policy of no nuclear tests was no longer satisfactory, a new policy had to be prepared.

Search. The cybernetic explanation of the 1972 decision to go ahead with a test expected the programme's consideration of a preselected number of variables. Essentially, therefore, the process of search consisted of questioning why the SNEP had been cancelled. The purpose of the SNEP had been preponderantly for military use--India had suffered reverses in the 1962 Sino-Indian border dispute and the 1965 Indo-Pak war. The traditional northern threat, China, had detonated a nuclear device in October 1964. Many Indians demanded that their government do the same; but the peaceful applications of a nuclear explosion in 1965 were still uncertain.

The Tashkent Agreement signed by Prime Minister Shastri before his death on India's behalf with Pakistan emphasised Indian military and economic weakness. India could not afford a conventional arms race with Pakistan and was unsure of winning a nuclear arms race with her. In addition, she was uncertain of the Chinese response to such a provocative action. Mao had denounced the bomb as a "paper tiger" and declared his will to use it if attacked.

The growing Indian nuclear energy programme still depended upon transfers of technology and raw materials from Western countries. A nuclear test was likely to disrupt such transfers. The Soviet Union, the only feasible replacement as a donor, was unlikely to be helpful as it strongly favoured the Nuclear Non-Proliferation Treaty then being discussed in the mid 1960's. India remained dependent on the West for aid in other areas

and would not be able to endure possible international sanctions in retaliation for its detonation of a nuclear device.

Allied to this was the coming to power of Mrs. Gandhi, a relatively inexperienced politician in an unfamiliar setting²⁶ discussing an issue of which she was uncertain, and doubting the benefits it might bring. The SNEP was cancelled for these reasons, and thus forming the process of search used in the decision to go ahead in 1972. As J. Stein and R. Tanter point out: "This simplified search procedure is consistent with constrained learning; just as human beings learn through trial and error, they also search through trial and error."²⁷

Revision. The cybernetic process of revising estimates is incremental; marginal adjustments are made through a process of trial and error. This requires that new information received since 1966 from preselected indicators used for the process of search should be integrated with the reasons why the SNEP was cancelled. The reasoning behind the decision to cancel in 1966 should be brought up to date incorporating new information resulting in a revised evaluation of likely outcomes. Only the information pertinent to the reasons for cancellation would be included in the cybernetic process of revision in 1972.

One of the reasons why the SNEP had been cancelled in 1966 was because of the uncertain uses of nuclear explosives engineering (NEE). By 1972, however, there had been a number of NEE projects undertaken by the superpowers, and hence a considerable advance in the range of applications that NEE might be used for.²⁸ The Indians chose to label their 1974 test purely peaceful. Another reason for cancellation of the SNEP in 1966 was the uncertain effects it might have on the regional status quo. The Pakistanis questioned the "peacefulness" of the 1974 test and

labelled it "nuclear blackmail."²⁹ However, by 1972, and more so by 1974, India had modernised its military forces and proven them with the decisive intervention in the 1971 Pakistan Civil War. The Pakistani economy was relatively weak and could not afford a conventional arms race with India; and, since 1965, had fallen further behind India in nuclear research and development.³⁰

By 1972, the Chinese development of a sophisticated nuclear weapons delivery system was far beyond that of India's. In a nuclear exchange with China, India could expect to hit only unpopulated areas using conventional aircraft, while the Chinese using rockets could wipe out major centres of population in India. It was unlikely, therefore, that China would view an Indian nuclear test in 1972 as provocative. Added to this, the rule of the Gang of Four in China had caused major internal disarray and a subsequently low profile in international affairs.

In 1966 Indian economic expectations were not great. But the fourth five year plan announced in 1969 was expected to enable India "to stand on our own feet as soon as possible and not take a very large amount of foreign aid" ... "we are doing with less aid because of our own desire and because less aid is available" declared Mrs. Gandhi.³¹ Good monsoons in the late 1960's had significantly strengthened India's economy. Further, India at last seemed to be emerging as a major industrial power, which was reflected by its first plutonium processing plant becoming operational in 1971. This allowed India to process enriched uranium from its own unsafeguarded atomic energy reactors for use in plutonium reactors or for nuclear devices without international inspection. Essentially, India's nuclear industry had come of age and could operate, with some difficulty, without Western support. Replacing Western aid could be possible from the Soviet Union following high level diplomatic

exchanges and agreements between India and her socialist superpower friend.³² The Soviet Union had lost interest in the NPT in the late 1960's and seemed prepared to aid India's nuclear industry partly to offset her increasingly unpredictable relations with China. The Soviet Union shared India's suspicions of the Sino-American rapprochement of the early 1970's. Thus, another barrier preventing the 1966 test was of little hindrance by 1972.

Moving India into the Soviet sphere of influence during the early 1970's reflected not only Mrs. Gandhi's socialist ideological leanings but also her determination to lead India Indira's way. This was in marked contrast to her uncertain approach on assuming office in 1966. In 1972, Mrs. Gandhi was at the zenith of her domestic and international political career--she was "mother India"--the negative consequences of a nuclear test alone could not be expected to change this.

Evaluation and Choice. The cybernetic process of revision, of taking past operating procedures identified during a limited search process and relying on the programmed consideration of a preselected number of variables and integrating them with new information, gives a compelling alternative to the Rational Actor explanation of India's decision to test a nuclear device. Evaluation and choice are indelibly linked to the earlier processes of problem identification and search. The Sarabhai Programme had called for at least one nuclear explosion; decisionmakers were required to update the 1966 cancellation of the SNEP. By revising the estimates against a nuclear test arrived at in 1966 and integrating new pertinent information, there no longer appeared any reason not to detonate a nuclear device if need be. This option now satisfied the avoidance of the various disasters that had been envisaged by decisionmakers cancelling the SNEP in 1966.

The cybernetic explanation of the go ahead decision given in 1972 for a nuclear test is plausible if we isolate the event. However, the following two years saw a dramatic change in India's domestic political situation and her international position. The February 15, 1974 final decision to go ahead³³ was taken in a very different climate from some two years before. The incremental process of revision involved in the cybernetic explanation was no longer so apparent; evaluation of the new environment should have led to cancellation if preanalysed standard operating procedures were the only indicator. No longer were all the 1972 goals likely to be satisfied.

The intended purpose of the test remained peaceful according to Indian official pronouncements. Pakistan, while still smarting from its defeat in the 1971 Indo-Pakistan War, was still incapable of matching India either in a conventional or nuclear arms race. Yet, the recognition of Bangladesh and President Ali Bhutto's visit to former East Pakistan in February 1974, pointed towards a renewed effort by Pakistan to win regional allies. It also won international approval, especially from Western arms-selling states. Although Sino-American rapprochement continued, the internal disarray in Chinese politics in 1974 was increasingly ensuring a muted, if any, criticism of an Indian nuclear test from Peking.

One important factor to consider at the time was that India had drifted into the Soviet sphere of influence. The 1971 Simla Agreement allowed India to gain economic and technical support from the Soviet Union. This became much needed following a poor monsoon in 1972, and the effects of the oil crisis on the rapidly deteriorating Indian economy. The fourth five year plan announced in 1969 was failing; India would not be able to stand alone and inevitably looked to the West for aid. The

Indian economy's poor performance was reflected by cuts in the Sarabhai Programme's 1973-74 budget, bringing it below that of 1971-72. Work fell behind schedule.

The State of Emergency introduced during the 1971 war with Pakistan had not been lifted by 1974. Political opposition to Mrs. Gandhi following, and in spite of, her convincing electoral successes in March 1971, continued. Raj Narain's claims of electoral irregularities by Congress, particularly in Mrs. Gandhi's constituency, and the J.P. Movement, spearheaded political opposition to Mrs. Gandhi.

The consequences of a nuclear test in 1974 were likely to be far less favourable than those envisaged two years previously. Although India still remained secure in the South Asia context, a resurgent Pakistan with international support, plus evident internal political and economic difficulties reduced India's international power and prestige. The satisfactory avoidance of all disasters feared in 1966, that led to the go ahead decision in 1972, no longer existed by February 1974. Because value trade-offs are limited by the cybernetic process of decision, and the fact that the desired goals although different from those two years previous, were not met in 1974, suggests the nuclear test would have been cancelled if cybernetic explanation was complete. Only by including the thoughts and beliefs of important decisionmakers can we understand why the 1974 test did go ahead.³⁴

A Third Cut: The Cognitive Explanation

The success of the cybernetic explanation relies upon a highly structured appropriately arranged environment. Constructing such a simplistic picture is not easy bearing in mind the inherent complexities of the modern state. It is even more unrealistic when analysing India--

a highly fractured society which became a state so shaped by the pattern of Whitehall bureaucracy. Secondly, the cybernetic explanation fails to include the human mind's ability to make inductive inferences on its own initiative. Problem construction and problem solving involve the human mind and, therefore, the structure of human belief systems must be accounted for. By early 1972, perceptions of India's domestic and external situation had changed from those of 1966; so much so, that a nuclear test could once again be considered. The cognitive model attempts to explain why this change of perception had occurred and why the go ahead decision given in 1972, was not reversed in light of new, apparently contradictory evidence by 1974.

1971 had seen India gain an impressive military victory in the third Indo-Pakistan War. In March of the same year, Mrs. Gandhi as leader of Congress, came of age with an impressive electoral victory in Federal elections. Furthermore, the Indian economy was flourishing, one result being the announcement of the extensive Sarabhai Nuclear Energy and Space Programme. The optimism of decisionmakers for the future of India allowed for the decision to go ahead with a nuclear test which would confirm India's industrial power and her desired position as the economic, technological and ideological leader of the Third World. The negative consequences of the test were minimal and would be considerably off set by the expected positive outcomes, as perceived in 1972. By 1974, the Indian economy was again in deep recession, Congress was at its lowest popularity rating since Independence, and internationally India again looked like an impoverished Third World country. In May 1974 a nuclear test occurred in the Rajasthan Desert. Why, in light of the events since 1972, had the test gone ahead?

Diagnosis. On February 15, 1974, a political decision was taken by Mrs. Gandhi and senior atomic personnel to detonate a device on May 18, 1974. The problem seemed to be a black and white one: either detonate or do not detonate. The cognitive explanation requires an account of what were the relevant issues that shaped the decisionmakers' prevalent beliefs. Essentially, they were Indira Gandhi's domestic position and India's economic and international position. Bearing these two points in mind we can see how Mrs. Gandhi, principally, and her advisers decided India should become a member of the nuclear weapons states club (as defined by the NPT).

Search and Revision. The J.P. Movement and Raj Narain's charge of electoral irregularities during the March General Elections to the Lok Sabha highlighted the crumbling political consensus that Mrs. Gandhi had enjoyed in 1971. However, the political chaos in the North Eastern states, Nagaland, Manipur and the territory of Mesoram, and the failing economy served to worsen Mrs. Gandhi's position. Failure of the 1972 monsoon and the inflationary effects of the 1971 war with Pakistan reversed the positive effects of four good monsoons in the late 1960's and "laid bare the weakness of the Congress Administration and Gandhi's own ideology and policies."³⁵ For a number of reasons, including the fact that the economic situation in India failed to improve in 1973, the oil crisis of 1973-74 affected India more severely than most countries.

The oil crisis caused serious economic concern which was not reduced by the increasingly uncertain security position perceived by Mrs. Gandhi for India. The American withdrawal from South East Asia and its search for new allies in the area to prevent a "domino" series of victories to the Soviet block, and the Sino-American rapprochement were undesirable in Mrs. Gandhi's mind.³⁶

The undignified withdrawal from South East Asia by the U.S. following the 1973 Agreements signed with North Vietnam, increased American determination to maintain a major military capability in the Indian Ocean with the development of a naval base at Diego Garcia, one thousand miles to the south of India. Allied to this, the United States rapprochement with the Peoples Republic of China begun by Henry Kissinger's secret contacts with Chinese personnel in the early 1970's compounded Mrs. Gandhi's perception of encirclement by the U.S. and its allies. The arrival of the American Task Force in the Bay of Bengal during the Indo-Pakistan War triggered this perception.³⁷ The improved Indo-Soviet relations during the early 1970's was not to be solely relied upon, as it remained India's policy for the superpowers not to spread their confrontation to the sub-continent. The resumption of U.S. aid to Pakistan, suspended in the aftermath of the 1965 Indo-Pakistan War, looked likely in 1974; especially with Pakistan's recognition of, and establishing diplomatic relations with, Bangladesh, formerly East Pakistan.

Evaluation. We can see, therefore, that if Mrs. Gandhi perceived domestic turmoil and growing economic and security problems to be increasing, the process by which she reviewed information received since her 1972 go ahead decision coincided with her dominant beliefs in February, 1974. This is the key dynamic of the cognitive model: the ability of individuals to draw inferences from supportive information alone, allowing for sharp oscillation from low probability to certainty in the process of revising estimates. The need to achieve political consensus, before serious efforts at overcoming India's economic problems could be attempted, and a fear of military encirclement, reinforced Mrs. Gandhi's thinking on a nuclear test.

Choice. In this case study, a lexicographic decision strategy is apparent (all remaining alternatives were considered, but with only one goal in mind) in which Mrs. Gandhi chose that option which best discriminated among rank-ordered dimensions of value. Thus, the need to ensure an "independent" India through strong political leadership shaped Mrs. Gandhi's thinking concerning a nuclear test in 1974 (and indeed Declaration of Emergency Rule in June 1975).

Prime Minister Gandhi's belief system, as the central nuclear policy maker, can be seen as an important influence on the decision-making process that immediately preceeded the test. Mrs. Gandhi's control of the process is exemplified by the fact that the Defence Minister was not informed of the test until eight days prior and the External Affairs Minister until two days before the test.³⁸

Shaping the problem and searching for options within the parameters of Mrs. Gandhi's belief system, revising by deductive and categorical inferences and the limited process of evaluation, emphasise the importance of the cognitive theory in Indian nuclear decision-making.

Prime Minister Gandhi's perceptions, at the centre of the Indian political system, of events around her undoubtedly left their mark on the nuclear policy environment in India during the period 1972 to 1974.

A Fourth Cut: How Rational Was Mrs. Gandhi?

Stein and Tanter's Constrained Rationality Model (Model V) emphasises an individual's ability to synthesise the analytic and cognitive elements in a single process of choice. The final cut attempts to synthesise the rational actor, cybernetic and cognitive explanations of India's decision to explode a nuclear device, and in retrospect asks to what degree Mrs. Gandhi's thought processes were correct.

Diagnosis. The process of diagnosis is used in the cognitive explanation: "perception of a stimulus for decision is filtered through belief systems."³⁷ Mrs. Gandhi saw the growing domestic, social, political and economic turmoil and the threat to India's national security of encirclement by the U.S. and its allies. This was a threat not only to her political position, but also to the Indian constitution and thus the continued existence of an autonomous India.³⁸

Search. Something was required by 1974 to stop the rot from spreading to other parts of the political system, and to assert India's status as an autonomous regional power. To solve such problems, the number of options were limited. The decision taken two years previously to proceed with a nuclear test programme needed to be confirmed for a test in May 1974. The expected gains in 1972 of confirming India's technological prowess and economic stability were no longer to be expected, but bureaucratic inertia had ensured the test programme continued. In February 1974, Mrs. Gandhi was required to make a political decision as to whether the test should occur. Thus, an option that could possibly overcome the internal and external threats to Indira's and India's position, as perceived by Mrs. Gandhi, offered itself in the form of a nuclear test. There were probably other options at the time, including the possibility of declaring a State of Emergency.

Revision. The cognitive explanation argues that once an option has been identified as overcoming the perceived problems, information integrated to estimate its chances of success would only be supportive. While this was the case to a great extent (for example, expected increased prestige in the Third World and Indian popular support), the adverse effects of

a nuclear test were also realised. The likely reactions of India's neighbours, particularly China and Pakistan, were uncertain, as were the responses of India's western aid donors and partners in nuclear development. Thus, estimating the likely outcomes of a nuclear test although largely dependent upon confirming information probably included attempts to understand the possible negative repercussions.

Evaluation. The political fallout of the test was uncertain--Mrs. Gandhi's and India's position could either be strengthened or weakened. The calculation of the costs and benefits to Indira and India of the test were likely extensive. Yet, dealing with a complex issue with possible unforeseeable consequences was going to be constrained by the decision-makers' perceptions, as they are in any cost-benefit calculation.

Choice. The option chosen, a nuclear test, could best be expected to overcome the problems perceived by Mrs. Gandhi, with the least expected negative consequences. A process of choosing that option which was expected by Mrs. Gandhi³⁹ to overcome India's problems as she perceived them.

The extent to which Mrs. Gandhi correctly interpreted her operating environment reflects the unstable structure of Indian society in the mid 1970's. Overcoming the very real internal chaos in India during this time could only have been achieved by real political, economic and social reforms. A nuclear test, however widely supported, was never going to remove the structural problems inherent in India at the time.

Events in the Indian Ocean were unlikely to offer much comfort to a Prime Minister in Delhi ruling over a rapidly crumbling consensus. Renewed American arms shipments to Pakistan, Sino-U.S. rapprochement, and

a U.S. naval base constructed at Diego Garcia caused much speculation in Delhi as to American intentions in South Asia. Yet, an Indian nuclear deterrent was unlikely to alter American intentions, whatever they might have been. A more certain deterrent would have been closer alignment to the Soviet Union.

The test was widely acclaimed throughout India and the Third World, but as a means of overcoming the inherent problems of India in 1974, the test was not a great success. The development of nuclear technology continues in India today, but it is uncertain as to where this will lead: "not yet through."

Conclusion

This essay has examined three theories of decision (the Analytic, Cybernetic and Cognitive), and their usefulness in explaining a particular event--in this case India's nuclear policy.

In reviewing the literature and testing the theories of decision-making in the Indian nuclear policy process, the various weaknesses and strengths of each theory have been highlighted. When the strengths of each theory were synthesised, the Constrained Rationality Model offered a more complete explanation. The constrained rationality approach is labelled a Model, rather than a Theory because it has many variations, and no set guidelines as to which should be used in any particular situation.

Chapter III took a macro-perspective and a micro-perspective of the events leading up to India's nuclear test in May 1974. The macro-perspective suggested a disjointed incremental explanation of the decision-making process. Change or progress by small steps characterised the first three decades of Indian nuclear decision-making. The bureaucratic momentum of the Indian Atomic Energy Commission (IAEC), especially during the period of leadership by Dr. Bhabha until his death in 1966, ensured that India remained at the forefront of nuclear technological developments.

Nehru's preoccupation with other affairs of state enabled the IAEC to become a state within a state. Prime Minister Shastri on coming to office was influenced by public opinion in deciding in favour of a nuclear test in 1965. Mrs. Gandhi's decision to cancel the SNEP in 1966, although politically weak, was made possible by the IAEC being in a state of

disarray since Dr. Bhabha's death. From a macro-perspective then, a constitutionally strong Prime Minister unsure of him/herself and strongly influenced by public opinion and a determined IAEC, or an influential and popular Prime Minister keeping the IAEC in check characterised the first three decades of Indian nuclear decision-making. That is: muddling along.

A micro-perspective, in this case 1972-74, suggests a different explanation. The Indian political system enables the ascendant belief system of a popular Prime Minister to prevail on important issues. The perceptions of Prime Minister Gandhi did not significantly alter between 1972 and 1974, although the environment in which she operated had changed considerably. A constrained optimising decision-rule was apparent.

Our case study offers two alternative explanations of the final decision to go ahead with a test: muddling along and constrained optimising. While the incremental account offers no explanation for prediction, neither does the Constrained Rationality Model offer guidelines as to which process should be used and when. Where, then, does this leave the study of decision-making? Is decision-making as a scholarly area of investigation redundant?

This essay suggests not. The decision-making processes used in the macro- and micro- explanations in this study offer no guidelines in predicting decision-making processes and outcomes. But, as any social scientist realises, prediction is a hazardous business. Decision-making theory does, however, offer some guidelines as to how individuals might react in the future based on their beliefs and past actions. But more importantly, studying the process of decision allows an observer to understand more fully an event than might otherwise be the case.

India exploded a nuclear device on May 18, 1974. This fact does not

tell us who were the decisionmakers that decided in favour of a test, how they were influenced by their operating environment, or what influence the individuals' beliefs had on the decision-making process. Only by integrating these factors within the various approaches to decision-making can one arrive at a more comprehensive understanding of the rationale behind India's nuclear test. In so doing we enhance our broader understanding of the complex processes by which individuals and governments decide.

Footnotes to the Introduction

1. J. Steinbruner, The Cybernetic Theory of Decision: New Dimensions of Political Analysis (Princeton University Press, 1974).
2. "Nuclear" and "Atomic" are used interchangeably throughout this essay, the differences are academic. The term nuclear generally refers to atomic, hydrogen, neutron and thermo-nuclear generating plants and weapons.
3. There are many examples of American Foreign Policy used during the literature review. This is because most of the literature emanates from the U.S.A., and to emphasise that while a theory developed in America may be useful in explaining American foreign policy decisions, it may not be as useful in explaining events in another country.
4. J. Stein and R. Tanter, Rational Decision-Making: Israel's Security Choices, 1967 (Columbus: Ohio State University Press, 1980).
5. J. Steinbruner, op. cit., p. 15.

Footnotes to Chapter I

1. J. Steinbruner, The Cybernetic Theory of Decision: New Dimensions of Political Analysis (Princeton University Press, 1974), p. 16.
2. James A. Robinson, "Psychological Aspects of Decision-Making" in David L. Siles (Ed.), International Encyclopedia of the Social Sciences, Vol. 4 (The Macmillan Company and the Free Press, 1968), p. 55.
3. J. Steinbruner, op. cit., p. 16.
4. J. Stein and R. Tanter, Rational Decision-Making: Israel's Security Choices, 1967 (Columbus: Ohio State University Press, 1980), p. 18.
5. This five step typology of the processes of decision is common to most literature. Stein and Tanter, op. cit. (p. 25) gives a particularly clear definition of the various stages that make up the process of decision.
6. It is important to note that Stein and Tanter do not "recognise" a problem before it arises, they merely "diagnose" it once it has arisen. There is no means by which to recognise problems in advance. If it were possible to recognise problems before they arose, measures could then be taken to prevent them rather than responding to them. For example, the police would rather prevent a crime from occurring than investigating it after it has occurred.
7. Ibid., p. 26.
8. Ibid., p. 26.
9. Thomas S. Kuhn argues that the study of decision-making constitutes an academic discipline in itself.
10. L.C. Mayer, Comparative Political Inquiry: A Methodological Survey (The Dorsey Press, 1972), p. 52.
11. Ibid., p. 48.
12. Dubin, Theory Building (1969).
13. For simplicity's sake the Models will be labelled I, II, III, IV and V to avoid terminological confusion.
14. G.H. Snyder, N.W. Bruck and B.M. Sapin, Foreign Policy Decision-Making: An Approach to the Study of International Politics (New York: The Free Press of Glencoe, 1962).

15. G. Allison, Essence of Decision: Explaining the Cuban Missile Crisis (Boston: Little, Brown and Company, 1971), p. 11.
16. J. Steinbruner, op. cit., p. 63. Agrees and then disagrees.
17. G. Allison, op. cit., p. 11.
18. There is some debate as to whether the cognitive explanation is a model or a theory. It is plausible to call it a theory as it is a significant sub-field in psychology. But as is often the case, when a theory is transferred to another academic discipline it loses many of its original qualities.
19. J. Steinbruner, op. cit., p. 13.
20. Ibid., p. 14.
21. Thomas S. Kuhn, The Structure of Scientific Revolutions (Chicago: The University of Chicago Press, 1963).
22. Lakatos' argument of competing hardcore theories appears more appropriate than Kuhn's use of paradigms. See I. Lakatos and A. Musgrove, Falsification and the Methodology of Scientific Research Programmes (1974).
23. J. Stein and R. Taner, op. cit.
24. Terminology first applied by Allison, op.cit.
25. Rationality, according to Eighteenth Century Enlightenment philosophers to the defining characteristic of human nature. (If you're not rational, you must be insane!) Rational decisionmakers are expected to search for truth and understanding through reason and are capable of choosing the best option that achieves their objective.
26. This is what J. Steinbruner, op. cit., labels "sensitivity to new information."
27. M. Brecher, The Foreign Policy Systems of Israel: Settings, Images, Process (London: Oxford University Press, 1972). Brecher points out that societal (ideology and tradition) and personality factors "(idiosyncratic qualities of decisionmakers) constitute the screen or prism through which elite perceptions of the operational environment are filtered" (p. 11).
28. J. Stein and R. Tanter, op. cit., p. 20.
29. G. Allison, op. cit., pp. 123-126.
30. In general terms see the literature on Public Policy Budgeting Systems (P.P.B.S.).
31. J. Stein and R. Tanter, op. cit., p. 30.
32. H.H. Kelley, "Attribution Theory in Social Psychology" in D. Levine

- (Ed.), Nebraska Symposium on Motivation (University of Nebraska Press, 1967), pp. 192-240.
33. G. Allison, op. cit., p. 67.
 34. The important point here though, is that it is possible for an individual, but not practically possible for a state.
 35. N. Wiener, Cybernetics: Or Control and Communication in the Animal and the Machine (Cambridge, Mass.: M.I.T. Press, 1948).
 36. K.W. Deutsch, The Nerves of Government Models of Political Communication and Control (New York: The Free Press, 1966).
 37. M.E. Maron, "Cybernetics" in David L. Sills (Ed.), op. cit., p. 6.
 38. Herbert A. Simon, "Rational Choice and the Structure of the Environment." Psychological Review (1956), p. 129-138.
 39. See Max Weber, The Theory of Social and Economic Organisations, A.M. Henderson (Trans.), Talcott Parsons (Ed.) (Glencoe, Ill., 1947).
 40. A. Downs, Inside Bureaucracy (Boston: Little, Brown and Company Press, 1967), pp. 50-51.
 41. Herbert A. Simon, Models of Man (New York, 1957), p. 3.
 42. G. Allison, op. cit., p. 71.
 43. R. Cyert and J. March, A Behavioral Theory of the Firm (Englewood Cliffs, N.J., 1963).
 44. Incremental Politics was originally developed in D. Braybrooke and C.E. Lindblom, A Strategy of Decision: Policy Evaluation as a Social Process (New York: The Free Press, 1963). Lindblom became more broadly associated with incrementalism in later years.
 45. Indeed, J. Steinbruner, op. cit., contends that Lindblom "in many ways is an expositor of cybernetic logic," fn. p. 80.
 46. C.E. Lindblom, "Still Muddling, Not Yet Through" in Public Administration Review, Vol 39 (1979), pp. 517-526.
 47. G. Allison, op. cit., p. 12.
 48. Theodore Sorenson, "You Get to Walk to Work." New York Times Magazine, March 19, 1967.
 49. J. Stein and R. Tanter, op. cit., p. 34.
 50. Ibid., p. 35.
 51. Ibid., p. 34.
 52. J.P. Crecine, Governmental Problem Solving (Chicago: Rand McNally

and Co., 1969).

53. J. Steinbruner, op. cit., p. 14.
54. G. Allison, op. cit., p. 144.
55. D. Braybrooke and C.E. Lindblom, op. cit., p. 64.
56. "There is not a single example of a decision for which it can be claimed both that it accomplished a large degree of change and that its implications were comprehensive and clearly understood." D. Braybrooke and C.E. Lindblom, op. cit., p. 66.
57. G. Allison, op. cit., p. 144.
58. R. Hilsman, To Move a Nation (New York: Doubleday and Company Inc., 1967), pp. 554-555.
59. R. Neustadt, Presidential Power: The Politics of Leadership (New York: John Wiley and Sons, Inc., 1960).
60. Ibid.
61. W. Mills (Ed.), Forrestal Diaries (New York, 1951).
62. G. Allison, op. cit., p. 144.
63. J. Steinbruner, op. cit., p. 14.
64. R. Neustadt, op. cit., pp. 108-114.
65. J. Steinbruner, op. cit.
66. Ibid., p. 13.
67. Ibid., pp. 13-14.
68. J. Stein and R. Tanter, op. cit., p. 29.
69. See J. Steinbruner, op. cit., p. 91.
70. Ibid., p. 95.
71. Ibid., p.
72. Ibid., p. 95.
73. See W.P. Ittleston and F.P. Kilpatrick, "Experiments in Perception" in Scientific American, Vol. 185 (Aug. 51), pp. 50-55.
74. L. Festinger, A Theory of Cognitive Dissonance (Evanston, Ill.: Row Peterson & Co., 1957).
75. J. Steinbruner, op. cit., pp. 100-101.
76. Ibid., p. 102.

77. See fn. 22 above.
78. J. Stein and R. Tanter, op. cit., p. 39.
79. G. Allison, op. cit., pp. 118-123.
80. J. Stein and R. Tanter, op. cit., p. 66.
81. Ibid., p. 69.

Footnotes to Chapter II

1. There has been much discussion in Indian foreign policy specialist circles as to the preferred status of Pakistan. Particularly in the 1970's it was thought that Pakistan might break up into four autonomous states. However, following the Afghanistan invasion by the Soviets it now appears to be in India's interests to promote Pakistan as a unified buffer state. The external threat from the Soviets might just be enough to maintain the unified state of Pakistan, especially with large U.S. arms shipments.
Other states that border India are Bangladesh (formerly East Pakistan), Burma, Nepal, Tibet and the island of Sri Lanka. The impossibility of policing the border with Bangladesh has led to great population flows into India. This has occurred mainly in West Bengal, an area whose population has many historic ties with the Moslem population of Bangladesh. India has an interest in maintaining the territorial independence of Nepal as a buffer state against the P.R.C. The Tamils in Sri Lanka have cultural bonds to their mainland cousins. There have been suggestions that India has encouraged the present internal disharmony within Sri Lanka.
2. J. Nehru quoted in India's Current Policy (New Delhi, 1947).
3. "It was felt that Pakistan's leaders would not sacrifice their country's military and economic ties with the west for any short-term gains obtained in collusion with China at India's expense." L.J. Kavic, India's Quest for Security: Defence Policies, 1947-1965 (University of California Press, 1967), p. 213.
4. Keesings Contemporary Archives (London), Vol. XV, June 11-18, 1966, p. 21452. Vertzberger suggests that Chinese fears of Soviet penetration in Pakistan in wake of the Tashkent Conference prompted Peking to initiate a military assistance programme with Pakistan in 1966. See R. Wirsing, "The Arms Race in South Asia: Implications for the United States" in Asian Survey, Vol XXV, No. 3 (March 1985), p. 276.
5. Defence Minister Chavan quoted in F.T.J. Bray and M.L. Moodie, "Nuclear Politics in India" in Survival (May/June 1977), p. 111.
6. Good monsoons in the late 1960's had established a firm base for economic development.
7. Pakistan has charged that the Awambi League, East Pakistan's leading secessionist party, had been working in collusion with Delhi since 1964. See Keesings Contemporary Archives, Vol. XVIII, May 15-22, 1971, pp. 24597-24598.
8. Quoted in F.T.J. Bray and M.L. Moodie, "Nuclear Politics in India,"

p. 113.

9. "India's military advantage over Pakistan ... is in no real danger of being overturned." R. Wirsing, "The Arms Race in South Asia: Implications for the United States," p. 289.
10. U.S.-Pak relations had been strained by the Americans' suspension of arms shipments to Pakistan in late 1965. The problem worsened when the U.S.A. failed to give Pakistan concrete support during the 1971 Indo-Pak war. The arrival of the U.S.S. Enterprise in the Bay of Bengal during the 1971 war was probably a symbolic gesture, and perhaps as a deterrent to the Chinese siding with Pakistan.
11. A similar explanation was given by Peking for its border war with Vietnam in 1979.
12. For example, CENTO and SEATO. CENTO (Central Treaty Organisation) was established in 1955 and insured American and British defense support for Pakistan, Iran, Iraq (left in 1959) and Turkey. SEATO (Southeast Asia Treaty Organisation) grew out of the Southeast Asia Collective Defence Treaty established in 1954. Sponsored by the United States, its primary function was to contain the spread of Communism in Southeast Asia. Much the same purpose as N.A.T.O., its members were largely dependent on U.S. aid. It effectively ended its tenuous existence in 1977.
13. F.T.J. Bray and M.L. Moodie, "The Arms Race in South Asia: Implications for the United States."
14. The Times (London), May 20, 1974.
15. "Indian nonalignment is nothing but a strategy of being engaged in power politics but of doing so preferably through diplomacy, given India's military and economic weaknesses. A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making (Praeger, 1976), p. 27. By nonaligned, Nehru envisaged a responsive cohesive and dynamic collection of states, but following the 1962 N.A.M. Meeting, steps were taken to institutionalise the policy into a movement. Thus, it has lost much of its original purpose as a dynamic foreign policy alternative of positive neutralisation.
16. Nehru foresaw this as early as 1950. Ibid., p. 52.
17. And prevent the "domino" theory collapse of friendly governments in South Asia.
18. This became virtually impossible following increased American arms shipments to Pakistan in response to the Soviet invasion of Afghanistan in 1979. India, in order to maintain her conventional military superiority over Pakistan, was dependent upon Soviet arms. There have been suggestions that the recent spy scandal in India was associated with the arms procurement department of the Indian Government. Apparently, the fact that 70 percent of Indian arms are supplied by the Soviet Union is partly due to a Soviet agent being in charge of Indian weapons procurement, and not because of India being a virtual

satellite of the Soviet Union.

19. China, in contrast, has spent most of the past 2,500 years as a unified state with little interference from external powers. However, China has yet to take any steps towards removing governments which are not democratically elected.
20. The Indian National Congress was established in 1885 to press for reforms in the British Raj. Since then, in spite of many splits, it has dominated the Indian political system. It was the main group pressing for an Independent India, and almost inevitably formed the first government after the British withdrew. Although it has divided on many occasions, the faction that has included the Nehru dynasty has always dominated. Rajiv Gandhi's ruling party in 1985 is the Congress (I), ("I" for Indira).
21. Mrs. Gandhi often declared she was "forced" to declare Emergency Rule in order to protect the position of the Chief Executive and for the good of India as a whole; similar to Richard Nixon's claim in defence of not releasing the Watergate Tapes. See Ved. Mehta, The New India (London: Penguin Books, 1978), p. 61.
22. Quoted in M.C. Carras, Indira Gandhi in the Crucible of Leadership: A Political Biography (Boston: Beacon Press, 1977), p. 154.
23. P. Park, "India's Foreign Policy" in R.C. Macridis, Foreign Policy in World Politics, 5th ed. (Englewood Cliffs, N.J., 1964 (1976)), 321.
24. Ibid., p. 323.
25. Ibid., p. 324.
26. R.G.C. Thomas, The Defence of India: A Budgetary Perspective (Macmillan of India, 1978), p. 79.
27. Ibid., p. 78.
28. Frank Anthony: Lok Sabha Debates, 4th April 1963, Third Series, Vol. XVI, No. 34, Col. 796. See R.G.C. Thomas, op. cit., p. 69.
29. In the British tradition the Indian Armed Forces have been apolitical, having shown no desire to become actively involved in Indian politics, even during periods of great uncertainty caused by internal events (e.g., 1962 Sino-Indian war).
30. R.G.C. Thomas, op. cit., p. 69.
31. See Dr. Mahmoud Abdel-Aziz, Nuclear Proliferation and National Security (New Delhi: Lancer Publishers, 1978), Appendix II.
32. J. Schlessinger labelled this "Suez Psychology."
33. "The atom bomb is a paper tiger which the U.S. reactionaries use to scare people. It looks terrible, but in fact it is not. Of course the atom bomb is a weapon of mass slaughter, but the outcome of war is decided by the people, not by one or two types of weapon." Quoted

34. R. Betts, "Nuclear Proliferation and Nuclear Rivalry: Speculations on South Asia." Orbis (Spring, 1979), pp. 167-183.
35. Ibid., p. 171.
36. Ibid., p. 171.
37. This is a big "if," and would, therefore, open a similar line of argument for Pakistan.
38. This follows General Andre Beaufre. See Dr. Mahmoud Abdel-Aziz, op. cit., p. 146.
39. This U.S. policy seems to have persisted. See E. Wonder, "Nuclear Commerce and Nuclear Proliferation: Germany and Brazil." Orbis, Vol. 21 (Summer, 1977), pp. 277-306.
40. For example, Canada last sold a nuclear reactor in 1981, but has found it difficult to make further sales. There must eventually come a point when Canadian political decisionmakers will say "enough is enough," and halt further injections of public money into nuclear research if there is to be no visible commercial return. Perhaps, then, Canada may begin to look for other uses to justify its nuclear research programme.
41. Time Magazine, April 9, 1979.
42. Reactors also have other implications for research in medical and agricultural studies that have been successfully used throughout the world. See R.W. Jones, "Atomic Diplomacy in Developing Countries." Journal of International Affairs, Vol. 34, No. 1, pp. 89-119 (Spring/Summer, 1980), p. 90.
43. India possesses large deposits of thorium. Thorium is required in plutonium "second generation" nuclear reactors.
44. J. Maddox, "Prospects for Nuclear Proliferation," in Adelphi Papers, No. 113 (The International Institute for Strategic Studies, London, 1975), p. 4. Lists four main criticisms of the N.P.T. similar to those voiced by India and other countries during its negotiation: (1) treaty is politically inequitable between nuclear powers and non-nuclear powers; (2) the treaty perpetuates the commercial advantages of nuclear powers by reserving them the right to develop P.N.E.'s; (3) obligations to work towards nuclear disarmament are not sufficient; (4) fears about the security of non-nuclear states.
45. N. Seshagiri, The Bomb: Fallout of India's Nuclear Explosion (Delhi: Vikas Publishing House P.V.T. Ltd., 1975), p. 10.
46. IAEA Proceedings of a Technical Committee, Vienna (22-24 Nov., 1971). Peaceful Nuclear Explosions V (Vienna, 1972).
47. The recent project to redirect some northern flowing rivers in the Soviet Union into the Volga by man made canals in an effort to rejuvenate the Caspian Sea, and provide regular water supplies to

Central Asian Republics had intended to use over 200 nuclear explosions in construction. The project has been abandoned because its sponsor was found to have falsified his data.

48. This had been suspected in the West on receiving radioactive bars of silver from the U.S.S.R. in the late 1960's.
49. It is important to note that nuclear weapons proliferation is not inevitable. "Proliferation" is borrowed from Biology and connotes automatic growth. Nuclear proliferation is the result of a conscious decision by a government; it is not accidental.
50. R. Betts, op. cit., p. 168.
51. For the technically-minded reader, India's test was an implosion, not an explosion.
52. R. Betts, op. cit., p. 168.
53. "What the Indian government increasingly discounts is that external perceptions of its intentions are more significant than its own policy declarations." J. Maddox, op. cit., p. 15. But Maddox (op. cit., p. 7) then points out that only Pakistan saw the Indian test as conferring on India nuclear power status. E.W. Lefever, Nuclear Arms in the Third World: U.S. Policy Dilemma (Washington, D.C.: Brookings Institution, 1979), p. 9 argues China also saw the test as a military signal to Pakistan. But as L. Beaton, Must the Bomb Spread? (London: Penguin, 1966), p. 67 states: "Prestige has been and is likely to remain the decisive issue for any state exploding a nuclear device. India is no exception."
54. Stephen P. Cohen, "U.S. Weapons and South Asia: A Policy Analysis," in Pacific Affairs, Vol. 49, No. 1 (Spring, 1976), p. 63.
55. A. Kapur, International Nuclear Proliferation: Multi Lateral Diplomacy and Regional Aspects (New York: Praeger, 1979), p. 186.
56. See D.K. Palit and P.K.S. Namboodri, Pakistan's Islamic Bomb (Delhi: Vikas Publishing House, 1982), pp. 8-11, 44.
57. R.B. Rais, "Pakistan's Nuclear Program: Prospects for Proliferation" in Asian Survey, Vol. XXV, No. 4 (April, 1985), p. 463.
58. Libya, Iraq and Saudi Arabia have often been rumoured as possible partners in an "Islamic Bomb" project.
59. R. Wirsing, op. cit., p. 285.
60. R.B. Rais, op. cit., p. 471. Although this was written in 1985, a similar conclusion was possible to determine in 1974.
61. G.S. Bhargava, "India's Nuclear Policy" in India Quarterly, Vol. 35, pp. 131-144 (1978), p. 142. Suggests there were no "on-going" plans made for a second test--Mrs. Gandhi did not decide to cancel only in light of western reaction. The fact that India's technological capability had been proved, and increasing internal disarray leading to the Declaration of Emergency Rule may have also been influential

in the failure not to test a second device.

62. See Wirsing, op. cit., fn. 19, p. 271.
63. For example, Maddox, op. cit., p. 17.
64. This is also an important theory of deterrence.
65. R.B. Rais, "Pakistan's Nuclear Programme: Prospects for Nuclear Proliferation," p. 463 (1979), p. 40.
66. The Hindustan Times, October 26, 1985. As Lefever notes for India "Politically the costs of keeping the option open are probably less than those of pursuing a convincing policy of nuclear chastity."
67. Quoted in M. Carras, op. cit., p. 164.
68. Ibid., p. 164.
69. J. Nehru quoted in A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making, p. 65.
70. India can be seen as different from other states with similarly developed nuclear industries. Canada has yet to encounter geological formations that would require a nuclear explosion to overcome. Japan, S. Korea, Israel, Taiwan and the West European states are too densely populated. Only Brazil and South Africa are possible exceptions to these two limitations.
71. Ved. Mehta, op. cit., p. 139.
72. Psychological reasons are those that reinforced Mrs. Gandhi's belief that the test might "stop the rot" in the political, social and economic situation in India following the 1972 go-ahead decision and before the May 18, 1974 test.
73. L. Beaton (op. cit., p. 49) argues that only the United States tested its first nuclear device for primarily anything but prestige.
74. See footnote 33, Chapter II above.
75. Dr. Mahmoud Abdel-Aziz, op. cit., p. 99 and J. Maddox, op. cit., p. 17.
76. J. Maddox, Adelphi Papers, p. 19.
77. The question arises as to why other states with equally developed nuclear industries have not attempted to improve their international prestige with a nuclear test. In the case of the democratic western states with similar capabilities, they have advanced their international standing in ways more acceptable to their influential electorate (notably Japan and W. Germany by economic development). South Korea, Taiwan, Israel and South Africa have possibly not attempted a test in order to gain greater prestige because of their generally accepted "pariah" status in international affairs. They do not have the same status, a developing, peaceful, non-aligned state, as India possessed in the early 1970's.

78. E.W. Lefever, op. cit., p. 118.

79. Dr. Mahmoud Abdel-Aziz, op. cit., p. 172.

80. E.W. Lefever, op. cit., p. 118.

Footnotes to Chapter III

1. C.E. Lindblom, "The Science of 'Muddling Through,'" in Public Administration Review, 19 (1959), pp. 79-99.
2. A. Kapur, International Nuclear Proliferation: Multi Lateral Diplomacy and Regional Aspects (New York: Praeger, 1979), p. 184.
3. C.E. Lindblom, "Still Muddling, Not Yet Through," in Public Administration Review, Vol. 39 (1979), pp. 517-526.
4. G. Allison, Essence of Decision: Explaining the Cuban Missile Crisis (Boston, Mass.: Little, Brown and Co., 1971). "Cuts" are used in a way based on Allison's use.
5. L.J. Kavic, India's Quest for Security: A Budgetary Perspective of Strategy and Politics (University of California Press, 1967), p. 27.
6. "Atomic energy could be of enormous importance in raising living standards to some reasonable parity with those in the west The underdeveloped countries cannot, therefore, forego an opportunity to develop atomic energy for industrial purposes, nor can they allow any international organisation dominated by the industrially advanced countries to control their activities in regard to the development of atomic energy." J. Nehru, quoted in A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making (New York: Praeger, 1976), pp. 106-107. Nehru saw the "Atoms for Peace" plan as a method of maintaining the divide between rich and poor nations and maintaining U.S. monopoly on reactor sales (see A. Kapur, International Nuclear Proliferation: Multi Lateral Diplomacy and Regional Aspects (New York: Praeger, 1979), p. 219) and as not requiring superpower disarmament. India, therefore, never supported the plan. See also R.W. Jones, "Atomic Diplomacy in Developing Countries," in Journal of International Affairs, Vol. 34, No. 1, pp. 89-119 (Spring/Summer, 1980), p. 91.
7. See A. Kapur, "India's Nuclear Option: Atomic Diplomacy and Decision-Making, op. cit., p. 99.
8. E.W. Lefever, Nuclear Arms in the Third World: U.S. Policy Dilemma (Washington, D.C.: Brookings Institution, 1979), p. 27.
9. International Institute for Strategic Studies, Strategic Survey (London, 1974), p. 34.
10. Dr. Bhabha's speech on All India Radio 24 Oct. 1964. Quoted in Dr. Mahmoud Abdel-Aziz, Nuclear Proliferation and National Security (New Delhi, Lancer Publishers, 1978).
11. J. Maddox, "Prospects for Nuclear Proliferation," in Adelphi Papers,

- No. 113 (London: The International Institute for Strategic Studies, 1975), p. 15.
12. Dr. Mahmoud Abdel-Aziz, op. cit., p. 173.
 13. F.T.J. Bray and M.L. Moodie, "Nuclear Politics in India," in Survival (May/June, 1977), p. 113.
 14. "India does not accept the principle of Apartheid in any matter and technology is no exception." Mrs. Gandhi quoted in Indian and Foreign Review (New Delhi, 1974), p. 7.
 15. See footnote 13 above.
 16. There is some disagreement as to when the decision to explode a nuclear device was made. This essay tends to support A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making (p. 198) conclusion that the decision was taken in late 1971 or early 1972 soon after the 1971 Indo-Pak war. The actual year is not important, but is labelled throughout this essay as "1972." A. Kapur (ibid.) dates the final go-ahead decision as February 15, 1974, three months before the test allowing final preparations for the test to be made by the IAEC.
 17. These are concluded from "Psychological/Prestige Reasons for a Test" in Chapter II of this essay.
 18. As was pointed out in Chapter II, the military benefits to India of a nuclear development programme, and China was ten years ahead. India has possessed the ability to carry out a nuclear test for some ten years (this had been publicly known), yet the IAEC had not done so. The strategic/military position of India in the early 1970's was at its strongest since Independence. Only if she had territorial designs on Pakistan or her territorial neighbours (something A. Kapur (1979, p. 53) suggests as "idiotic" as it "would only add to India's existing problems") could India have benefitted greatly from a nuclear weapons programme. The 1974 test merely confirmed that India had a nuclear test capability and that the N.P.T. was not a barrier to proliferation. The environment in which the test occurred fails to lend support to the thesis that India had a nuclear weapons intention.
 19. The military/strategic implications were debated in Chapter II of this essay. A. Kapur, International Nuclear Proliferation: Multi Lateral Diplomacy and Regional Aspects states "India argues that what counts is the intention behind a nuclear test" (p. 3) and that in the case of India's "the strategy is to acquire the nuclear option and practise its non-use, in contrast to the normal strategy of the NWS, which is to acquire nuclear weapons and then practise their non-use" (p. 9).
 20. It is important to remember that "perfect knowledge" is illusory for any state--poor or rich--in any situation.
 21. See footnote 15, Chapter II above.
 22. During the period of Emergency Rule in the mid 1970's males in India were offered a free transistor radio if they agreed to be

sterilised. This policy was initially successful as over one million Indians failed to realise the adverse affects it would have on their ability to reproduce--and subsequently their future economic welfare.

23. Indian could expect to replicate Third World prestige gained by China in 1964 by indigenously detonating a nuclear device. After all, India in 1972 appeared to many to be an emerging industrial power ready and able to lead underdeveloped states towards economic development.
24. A. Kapur, International Nuclear Proliferation: Multi Lateral Diplomacy and Decision-Making, p. 65.
25. Ibid.
26. "Don't forget that ... she is a woman in a male dominated society and one which retains its traditional outlook towards women." A cabinet colleague on Mrs. Gandhi quoted in M. Carras, Indira Gandhi in the Crucible of Leadership: A Political Biography (Boston: Beacon Press, 1979), p. 50.
27. J. Stein and R. Tanter, Rational Decision-Making: Israel's Security Choices, 1967 (Ohio State University Press, 1980), p. 34.
28. See footnote 45, Chapter II in this essay. Also J. Maddox, Adelphi Papers, op. cit., p. 5. "American enthusiasm has waned steadily since the mid 1960's, but Soviet interest in peaceful nuclear explosions persists."
29. The Times (London), May 20, 1974.
30. See Rais, "Pakistan's Nuclear Program: Prospects for Proliferation," in Asian Survey, Vol. 25, No. 4 (April, 1985), p. 463. J. Maddox (op. cit., p. 17) states that total expenditure on the IAEC until 1974 had been \$1,000 million. E.W. Lefever, op. cit., p. 16, suggests that the actual test only cost \$400,000. The suggestion that the development and test were a considerable drain on India's financial resources is not therefore supported.
31. Quoted in M. Carras, op. cit., p. 164.
32. Specifically the Simla Agreement signed between India and the Soviet Union. Treaty signed in August, 1971 provided for cooperation between the two nations, especially in economic and technical fields.
33. A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making, op. cit., p. 198.
34. Unfortunately, this study lacks the thoughts and beliefs of involved decisionmakers. This is for two reasons--many individuals involved during the period 1944 to 1974 had died. Secondly, nuclear technology, particularly in issues related to national security, has rarely been a topic for open discussion by involved decisionmakers. India is no exception to this rule.
35. M. Carras, op. cit., p. 150.

36. Ibid., p. 175.
37. R.G.C. Thomas, "Prospects for Indo-U.S. Security Ties," in Orbis, Vol. 27, No. 2 (Summer, 1983), p. 376.
38. A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making, op. cit., p. 199.
39. The president of Senegal and Tito of Yugoslavia welcomed India's peaceful test. See J. Maddox, Adelphi Papers, op. cit., p. 19, and Dr. Mahmoud Abdel-Aziz, op. cit., for reference to the increased number of foreign dignitaries from the Third World visiting Delhi soon after the test.
40. J. Stein and R. Tanter, op. cit., p. 66.
41. This raises the possibility that Mrs. Gandhi may have perceived the fate of India indelibly linked to her own political fate. With the ascension of Rajiv Gandhi in 1984, the Nehru family dynasty was set to continue.
42. Mrs. Gandhi, alone, took the final decision to go ahead in February 1974. See A. Kapur, India's Nuclear Option: Atomic Diplomacy and Decision-Making, op. cit., p. 20.

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