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The Synthetic Role of Decision-Making Models in Theories of Foreign Policy: Bases for a Computer Simulation*

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THE NEED FOR AN INTEGRATIVE MODEL IN FOREIGN POLICY

A tragic single car accident claims the life of the driver and leads to an investigation into its cause. The accident report completed by the officer on the scene notes that the vehicle skidded off the road on a curve and turned over on a rainy night. Tread marks indicate the automobile was travelling in excess of the speed limit. The driver was not wearing a seatbelt and was thrown from the car, thereby sustaining fatal head injuries. An autopsy reveals alcohol in the bloodstream just below the amount state law has established as denoting legal intoxication. Several days after the accident the towing company which removed the car informed the police that the brakes were defective. Still later the state department of highways notes that the same location has been the scene of several other accidents and the department's engineers suspect that repair and resurfacing work done several years earlier may have altered the banking of the curve.

What caused the fatal accident? Inclement weather? High speed? Drinking? Lack of a seat belt? Faulty brakes? Poor highway design? Perhaps the event was "overdetermined"--one or two of these factors would have been enough to have precipitated the accident. Certainly evidence exists to suggest that the factors may have interacted to cause the event. The tragic

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Problems such as these have forced most scholars concerned with theory development to reject explanations of foreign policy based exclusively on single factors such as power, class struggle, emergence of a great man (or woman), or economic dependency. The recognition of the interplay of multiple factors combining in different ways under various circumstances was a theme in the introductory essay that Thompson and Macridis (1962) wrote to the second edition of their successful comparative foreign policy textbook. Among the factors Thompson and Macridis indicate should be taken into account are geography, natural resources, military/industrial capacity, nature of the population, nature of those involved in the political process within the government and outside the government, national purposes, diplomatic practices, nature of the political system, and the nature of the international system. Their list resembles that developed by Snyder and his associates in 1954.

The Snyder group would not claim originality for enumerating these possible sources of foreign policy. The major significance of the Snyder effort was the contention, novel at the time, that these various factors influenced foreign policy action only if they were recognized by decision-makers (Snyder, Bruck, and Sapin 1962). Why do governments or other foreign policy actors do what they do? According to Snyder, the connection between the various sources, or explanatory factors, and foreign policy action required the former to be recognized and interpreted by the human participants and the organizations in which they were embedded.

Time and again in the years since these original lists appeared, researchers and textbook writers have offered variations on the set of explanatory factors. Though there have been reformulations and occasional additions, the basic factors have remained remarkably stable. Numerous experts have tried their hand at flow diagrams that suggest what factors are related directly to what other factors. But the diagrams do not reveal how one variable changes under the influence of the others; or why it does so. In effect, the problem remains fundamentally the same as it was thirty years ago: How do the explanatory factors combine to account for foreign policy?

In the intervening decades, imaginative work has been done on various aspects of individual, group, and organizational decision-making. During the same period, however, a number of scholars and policymakers have

combination can be dramatized by considering what might have been enough to change the outcome--if the driver had been going slower; or had been clear-headed and an experienced race car driver; or the highway design had been different; or there had been no rain.

The problem we have in interpreting the automobile accident is analogous to the problem that has beset theory-building efforts in the foreign policy area for the past thirty years. The task that we face is to advance some plausible means for combining or integrating the varied effects of factors widely acknowledged as potentially important for understanding foreign policy behavior.

Two recent cases of intervention illustrate the problem. In examining the Cuban deployment of forces in Angola in 1975 and in Ethiopia in 1977, Dominguez and Lindau (1984:81) assert "explanations drawing on factors internal to Cuba are not very helpful. . . . Instead, international strategic factors set the context for each decision." Reviewing the reasons for Syrian intervention in Lebanon in 1976, Lawson (1984:478-479) concluded:

Structural arguments [i.e., regional distribution of power] cannot say why Syria launched its major offensive into Lebanon in June rather than three or four months later. . . . Perceptual arguments cannot reconcile their emphasis on the idiosyncratic character of Hafiz al-Asad's views concerning Lebanon with the evident orderliness and rationality of Syria's foreign policy decision-making process. . . . The military operation can best be explained in terms of the character and level of domestic conflict among the forces that constitute Syrian society.

Thus, in one case the authors indicate external factors were most critical in determining intervention whereas in the other case societal conflict is proposed as the most plausible explanation. In neither case can the author draw on theory that suggests how various domestic or external factors might interact; each is left with the intellectual problem of asserting the primacy of one set of factors over all others. As a result, both cases contain a certain awkwardness. Can the societal conflicts in Syria influence decisions without being perceived by key policymakers? Can foreign policy decisions, such as Cuba's, be understood only by looking at the international "context"? How does context get translated into the need for action?

model approximate those that may apply to the various factors alleged to interact in shaping foreign policy.

The observation that can be made from a review of recent comprehensive theoretical efforts to explain foreign policy behavior is that there is widespread, but by no means universal, recognition of the central role of decision-making in most foreign policy frameworks. According to this now rather broadly shared perspective, factors in the environment external to the human policymakers have an influence on foreign policy behavior only when they have been taken into account by the human decision-making component. Human decision-makers are not passive integrative systems. They ignore, enhance, or reinterpret the nature of external factors and weight their combined effects in a way that reflects their own distinctive processing of the foreign policy problem.

However, even those foreign policy analysts who have concentrated on the theoretical aspects of decision-making have not stressed its integrative function. They do not indicate how the decision process takes elements external to the nation and combines them with domestic factors and aspects of the decision unit to produce foreign policy outputs. Thus, for example, Allison (1972) constructs alternative models of the decision process--each limited to a subset of decision variables--and shows how, when considered separately, they yield different interpretations of the same crisis. Steinbruner (1974) describes two perspectives on decision-making that he believes are strongly complementary--the cybernetic and the cognitive perspectives--but he only hints at how they might be combined. Certainly much merit can be ascribed to developing alternative models of decision-making. The fact remains, though, that most scholars of foreign policy decision-making have elected to concentrate on examining components such as individual belief systems (e.g., George 1969), individual cognitive styles (e.g., Axelrod 1976), or group concurrence building (e.g., Janis 1972) rather than on the task of integrating the components.

The intent of this paper is to explore possible means for integrating the factors generally acknowledged to influence foreign policy. Two conclusions are suggested by our review of the theoretically-oriented foreign policy literature. First, the decision-making process appears to be regarded as a strong candidate for performing the integrative function on the range of

raised doubts about the utility of these same approaches. Some have interpreted decision-making strictly in terms of the choice process and have judged it too narrow and restrictive a perspective. Some have suggested other factors so constrain the freedom of action of policymakers that decision-making must necessarily be a minor source of explanation. Still others have acknowledged the theoretical centrality of the decision-making process in foreign policy, but have felt the obstacles to acquiring meaningful data about such activity (particularly cross-nationally) make it a poor candidate for the focus of empirically-based theory. (See Hermann and Hermann 1982, for a review of this literature.) Despite the various types of reservations, it can be argued that many--perhaps most--efforts to deal with the synthesis of the sources of foreign policy acknowledge the integrative function of decision-making. Two recent examples of efforts to provide comprehensive frameworks for foreign policy illustrate both the acceptance of decision-making and the frustrations with it.

Brecher (1972, 1975) has advanced an elaborate framework that catalogs the sources of foreign policy explanation and suggests in a general way their interplay. Basic to his scheme is the distinction between the operational and psychological environments. All factors that influence what foreign policy organizations actually do must somehow be filtered or translated into the psychological environment through such mechanisms as the attitudinal prisms of decision-makers and the images of elites. Despite Brecher's affirmation of decision-making and his suggestion of possible filtering mechanisms for moving from one environment to the other, he does not say how these mechanisms work or the conditions under which they operate to give a certain direction to foreign policy.

Wilkenfeld and his associates (1980) likewise advanced an integrative model for interpreting foreign policy and ascribed a central position to decision-making variables. They also recognized a variety of other important factors including political, societal, interstate, and global components mediated by a typology of nations. When it came to the task of integrating these various components, however, the Wilkenfeld team retreated to a statistical procedure--partial least squares. No attempt was made to suggest how the assumptions and relationships that govern the statistical

reaching decisions. Which decision units are involved may vary with issue and type of political system. An integrative model using a decision-making orientation, thus, needs to take these multiple kinds of decision units and processes into account. To deal with differences in decision units and processes may require developing different models or one model that indicates how the alternative decision units and processes separately combine the array of possible explanatory factors in foreign policymaking.

3. Cover the Spectrum of Foreign Policy Activity. We believe that any integrative model must account for the range of behaviors initiated by various types of foreign policy actors rather than be limited to one type of behavior such as wars, concessions, intervention or trade agreements. Certainly the task of accounting for only one type of foreign policy activity might simplify the integration problem, if by lifting our focus the set of explanatory variables and their patterns of interaction would thereby be reduced. We assume, however, that foreign policy output (or behavior) ought to be free to vary depending upon the mix and interaction of explanatory variables and, therefore, should not be constrained a priori. For the purpose of this essay foreign policy behavior will be defined as the discrete, purposeful action that is the verbal or physical implementation of a political level decision and intended to influence the attitudes, beliefs, and/or actions of one or more domestic or external entities through the activity which involves actors located beyond the political jurisdiction of the decision-makers. The external entities are either (1) the object of the influence attempt or (2) the channel through which a message is conveyed to some domestic audience. Foreign policy behavior, thus, is the visible product of a goal-seeking program known as foreign policy. (See Callahan, Brady, and Hermann 1982, Hermann and Dixon 1984.) An integrative model based on a decision-making orientation should be able to account for a range of foreign policy behavior, thus defined.

4. Focus on an Array of Policymaking Functions. For purposes of integrating explanatory factors in foreign policy, we believe it is important to focus on an array of policymaking functions not just the task of choosing among several alternatives. Different external elements may come into play at different points in the policy process, transforming the output from the previous part of the process. Thus, for example, societal

alternative explanatory factors. Second, such synthetic models of decision-making remain to be developed.

REQUIREMENTS GUIDING SPECIFICATION

A first step in the search for an integrative decision-making model is to specify some design criteria. We propose seven requirements that we believe must be met if a model of foreign policy is to perform effectively. There may be other criteria, but we believe these form a minimal core.

1. Use a Decision-making Orientation. From the previous discussion it will come as no surprise that we propose to explore how multiple factors might be combined to explain foreign policy using a decision-making orientation. As has been suggested, we believe this is the approach many foreign policy analysts currently accept. The primary alternative would appear to be some kind of weighting of the multi-level explanatory factors imposed by a statistical model or by a set of decision rules created by the analyst without reference to the human element in foreign policy. The extreme version of this alternative approach is to specify conditions under which one explanatory factor or set of factors prevails over all others. Rosenau's (1966) proposed ranking of explanatory variable clusters according to their potency in his pre-theory essay is an example of this extreme version of the alternative approach.² Most Marxist explanations of foreign policy can be similarly interpreted as establishing a set of conditions (e.g., the stage of economic development of a society; the mix of societies in the international system) which then enable one to select a small set of closely related variables and to ignore the effects of others, including various decision processes. In these examples, integration occurs by excluding all but one or two features or by ranking potential factors. We submit that this is not a very satisfactory mode of integration.

2. Account for Multiple Kinds of Decision Units and processes. An examination of how governments make foreign policy decisions suggests that there are many kinds of decision units or entities that have the authority to commit resources for the conduct of foreign policy. Among such decision units are prime ministers, politburos, juntas, cabinets, inter-agency groups, interest groups, coalitions, and parliaments. These different units often use different kinds of processes in

decision unit figure prominently will pose severe difficulties for meeting this empirical test criterion. Even considerably after the fact, reliable information on preferences of policymakers in most countries of the world on most issues is unavailable. As a result, we would only be able to test such a model against actual foreign policymaking for a small number of nations and decisions.

7. Accommodate Complexity. As should be apparent from the previous specifications, the envisioned model will be relatively complex. It must accommodate multiple explanatory factors from different levels of analysis as well as different kinds of decision units and different processes; it must be able to generate an array of behavior outcomes; and it must be applicable to a wide variety of nations and governments. Computer simulation would appear at present to be the technique holding the most promise for helping us realize the design criteria we have specified. As Guetzkow (1981:332) has observed: "Simulations permit one to tackle immense problems of great complexity, involving large numbers of variables in both foreign affairs and international relations. The modules within the simulations tie relationships among variables into bundles, giving opportunity for the display of interacting properties." Schultz and Sullivan (1972:15) have noted that computer simulations allow the analyst to design "... more complete models with greater degrees of complexity" and to focus on the whole instead of being confined to pieces of the whole. In effect, computer simulations "... are frameworks into which both verbal and mathematical formulations may be incorporated, therein combining something of the rigor of a mathematical model... with the comprehensiveness of a verbal inventory" (Guetzkow 1972:676).

SKETCHES OF ALTERNATIVE APPROACHES TO SIMULATION MODELS

The task of developing a computer simulation of foreign policymaking that will integrate the potential sources of explanation presents a major challenge. In the rest of this essay we will sketch three alternative approaches to such an undertaking that appear congruent with some simulations that have already been developed in international relations. The three approaches differ in how integration takes place. Although each assumes that integration occurs through decision-making, in one

opposition may have more of an effect during the implementation stage of the policy process with the result that the foreign policy behavior actually occurring differs from what would be expected if one had focused exclusively on the point of choice. The analyst would seem in a better position to posit an integrated model if the model includes attention to problem recognition (definition of the situation) and to implementation after the decision(s) as well as to the point of decision.

5. Have Cross-National Applicability. Rather than design a model to represent a single country's foreign policymaking process, we propose to begin with a more generic model. This general approach means that the model must have sufficient complexity to permit representation of the important diversities that emerge among countries. We focus on developing a generic model in order to advance theory building in the comparative study of foreign policy. If a plausible network of relationships can be advanced with applicability to a range of countries, it is possible to imagine variants of the generic model for specific nations. These variants would detail the features that are distinctive to a particular government or nation. The reader should note our emphasis is on the nation. Although the role of non-state or subnational units as foreign policy actors has been widely recognized, we suspect a substantially different mix of explanatory factors operates with respect to these actors; we do not expect the same generic integrative model to apply to them.

6. Permit an Empirical Investigation. An important requirement for any integrative model of foreign policymaking is that it be susceptible to empirical investigation. It should be possible to set the parameters and the variables of the model to reflect relevant factors for existing or historical situations and governments and compare the model's projections on an array of foreign policy behaviors to those actually observed for these actors. It should also be possible to treat some of the key relationships in the model as hypotheses and to subject them to independent empirical analysis. Our interest in fitting the model to the observable world has implications for the kinds of variables that should figure centrally in the model. There needs to be reliable information available on the variables for a variety of countries, governments, and types of decision units. Thus, for example, proposing a model in which the preferences of individual members of a

possible. In a somewhat similar manner the input hypotheses in the decision as modifier approach can be viewed as the idealized world wherein the effects of each element are not mediated by decision-making. Human systems not only provide the means for choice, but they introduce the potential for passions and distortions that can alter the expected effects postulated in the idealized world. As envisioned, decision modifying dynamics only generate a limited number of options. The options that are generated depend on the decision-making structures and processes involved in the policymaking process.

It should be noted that in the decision as modifier approach no effort is made to determine how policymakers might actually respond to various explanatory factors that exist in the situation with which they are dealing. Instead the hypothesized effects of a given mode of decision-making are used in the model to adjust the expected effects on foreign policy of other explanatory factors. In other words, the initial hypothesis (i.e., any explanatory variable's effect on foreign policy) is re-interpreted or modified by our knowledge about the decision-making structure and process that may be operative in a government at a particular time. Among the ways in which decision-making structure and processes can modify the initial foreign policy predisposition determined from the various external and domestic factors present in the situation are the following:

1. Inaction; delay (expected action does not occur; no substitute)
2. Intensification of action (action is stronger, more intense than expected)
3. Minimization of action (action is weaker, less intense than expected)
4. Redirection of action (action is an option other than expected)
5. Expected action (action is unaltered)

By incorporating information about decision-making structures and processes into the model, we can ascertain how the expected behavior is likely to be modified by the mode of decision-making. Information on such features as the size of the decision groups, the distribution of power among members of the group, information processing style, and ways of coping with disagreement within the group can provide the bases for saying how the

approach the decision-makers modify what might be expected based on external and domestic factors; in the second, decision-makers serve as information processors who selectively attend and respond to external and domestic factors; whereas in the third, decision-makers are configures in multiple groups that must bargain and negotiate in both defining and acting on a foreign policy problem. In what follows, we will describe each alternative approach, suggest an example of the approach using an existing simulation, and discuss some of the approach's strengths and weaknesses.

The 'Decision As Modifier' Approach

Description. This approach assumes that it is possible to hypothesize the effect that each of the various domestic and international explanatory factors will have on foreign policy behavior. Thus, for example, one might hypothesize that a bipolar, as compared to a balance of power, international system tends to produce more crisis behavior. Another example might be: In dealing with opposition in pluralistic societies, a regime will display more vacillation in its foreign policy behavior than will regimes in politics with limited opposition. Obviously the hypotheses need not be as simple as these illustrations, but, in whatever form they take, these statements of the effects on behavior of the various explanatory variables become the inputs for the decision as modifier model. Decision-makers act upon, or modify, these predispositions for certain foreign policy behavior generated by the external and domestic environments. Moreover, decision structures and processes provide the bases for selecting among the behavioral effects when the explanatory factors generate conflicting predispositions for action. How the decision-makers are configured and the processes they engage in have implications for how the expected behavior generated by external and domestic factors is altered.

In some sense the decision as modifier approach is analogous to March and Simon's (1950) "satisficing" model of decision-making. Although one can posit an ideal world of decision-making with perfect information and knowledge of all options, March and Simon argue that in the real world there is only imperfect information and often only recognition of a few of the possible alternatives. Instead of engaging in optimal behavior, decision-makers satisfice for what they perceive to be

configuration of the decision-makers might modify the expectations coming from the international and domestic environments. Though far from complete, the existing literature on group and organizational consequences of such structure and process variables suggests some rules for indicating how the initial predisposition may be modified. Thus, for example, a decision unit whose structural characteristics make deadlock and, thus, inaction likely (e.g., a group in which power is distributed equally, where there is poor distribution of information and members' loyalty is minimal, where there are no norms for internal conflict resolution) would probably override any external or domestic predisposition for action. Consider as another example a decision unit in which the structural characteristics promote concurrence seeking (e.g., a group where members' loyalty is high, where there is a common information base for all members); these characteristics promote amplification or intensification of the expected action.

Figure 10.1 diagrams the way the decision as modifier approach would function.

Example. Two international relations simulations that use the decision as modifier approach to integrating domestic and external factors are the Inter-Nation Simulation (INS) (Guetzkow 1963; Guetzkow and Cherryholmes 1966; Elder and Pendley 1981) and the International Processes Simulation (IPS) (Smoker 1972 and 1981). Both are man-machine simulations with computer programs representing the domestic and external factors that these researchers believe influence foreign policy behavior and with participants playing the roles of foreign policymakers. The computer programs suggest what will happen given a particular set of national resources in one type of political system. Participants in the simulation must work within the constraints imposed on them by the computer programs in reaching their foreign policy decisions.

As an illustration, consider the programmed assumption in both INS and IPS that the stability of the political system is dependent on how well those in power "gain and retain the support of politically relevant groups in their nation" (Elder and Pendley 1981:85) and how accountable those in power are to those other groups. Gaining and retaining support of politically relevant groups, in turn, depends on how satisfied these groups are with the current quality of their lives, with the government's national security policies, and with the state of world and public opinion about the government.

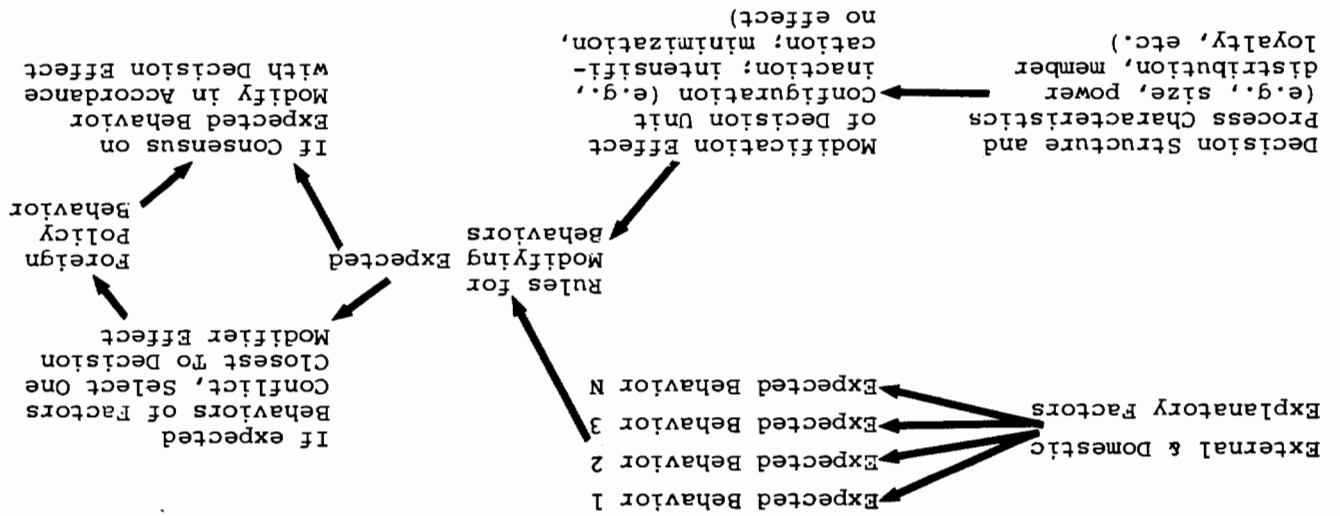


Figure 10.1: In the Decision as Modifier Approach, hypotheses about the expected effects of the various explanatory factors on foreign policy behavior are altered by the postulated effects of the structure and process characteristics of the decision units. The rules for modification vary depending on whether or not the expected behaviors conflict.

Nations in these simulations are assigned values on these factors and, thus, from the beginning of the simulation the participant policymakers are given indications of how stable their political system is. Participants can act to maintain the level of system stability, to increase it, to decrease it, or they can do nothing and let the programmed formulae determine what happens. Through their decisions the participants modify the expectations based on domestic and external factors. The parallel between these simulations and the proposed approach is not complete, however, because in INS and IPS it is the substantive decision rather than the mode of decision that alters the programmed effects. Although not done to date in either the INS or IPS, it would be possible to configure the participants into different types of decision units and see how the units might differ in the way they modified the programmed expectations.

Discussion. Several positive features of this approach invite attention. First, it allows us to build on existing research including that on the bivariate relationships between the various explanatory factors and foreign policy. See, for example, the propositional inventory of McGowan and Shapiro (1973) and the findings reported in Sullivan (1976). Moreover, the research on the effects of group structure and process provides a basis on which to decide the rules governing how decision-makers may modify an initial predisposition. Illustrations of this literature include Collins and Guetzkow (1964), C. Hermann (1978), and Brandstatter et al. (1978).

Second, by focusing on the structural properties of decision units, the kinds of data required in this approach are more readily accessible than if the focus were on the characteristics or preferences of individual decisionmakers. Data on structural properties of decision units can be acquired for a variety of countries.

Third, this approach would allow us to examine the effects of a variety of decision units through knowledge about how they are configured. Instead of being confined to one kind of decision unit, we could explore what effects different structures and processes have on the linkage between various domestic and external factors and foreign policy behavior.

Fourth, this approach provides us with the opportunity to begin to understand under what conditions we need to know something about the decision unit and under what conditions information about external and

domestic factors is sufficient to predict the outcome. When the decision-makers do not modify the initial predisposition arising from the interplay of external and domestic factors, knowledge about the decision unit adds little to determining what a government is going to do in foreign policy. Information on the decision unit becomes important under those conditions when it modifies the initial expectation.

Serious weaknesses in this approach are also apparent. The integrative process for synthesizing explanatory factors is crude and difficult to justify as the representation of some actual operation. In its most basic form, the decision component generates its own limited form of behavior expectation and then either matches or modifies the behavior expectation from other factors. If other factors produce conflicting expectations, then a search occurs for the one which most nearly matches that produced from the decision dynamics. Certainly such an arrangement stretches the notion of integration. If two or more explanatory factors yield conflicting behavioral expectations, we are still constructing a model that picks one. Integration occurs primarily between the decision dynamic and one set of expectations. The possibility that the interaction of multiple factors will yield behavior different from each factors separately is suppressed.

Single Actors as Information Processor Approach

Description. This approach unlike the previous one assumes that integration takes place as decision-makers process information in their environment. Instead of modifying the predisposition to act determined by external and domestic factors, the decision-makers in this approach act as information processors employing the principles of selective perception and retention. Inputs become the state, or condition, of the various external and domestic explanatory factors not their expected effects on foreign policy behavior. Whether and how external and domestic factors are defined as problems depends on the selective perception and retention rule of the particular decision unit.

To use this approach the analyst must make a major simplifying assumption which, though common in international relations research, is severe. We must assume that we can treat foreign policy decision-making in the nation-state as the product of a single unified

Thus, in addition to rules for selective perception, this approach requires two other sets of rules: (1) rules for matching currently perceived information with stored preferences in memory, and (2) rules for action indicating how the actor deals with conflicting information in order to minimize value conflicts and to preserve its belief system while responding to what is happening in the domestic and international arenas. Figure 10.2 sketches this approach to integration.

Example. If one pursues using the single actor as information processor approach to integration, a basic choice must be made. If the model is intended to represent aspects of one policymaker's information processing or does it represent a common decision process presumably shared by all policymakers as some form of group mind? There are examples in the literature of computer simulations that have developed each of these orientations. For purposes of illustration we will use Shapiro and Bonham's (1973) cognitive process model representing how one policymaker might work and Tanaka's (1984) CHINA--WATCHER model to show how the unified group model might work.

In their cognitive process model of foreign policymaking, Shapiro and Bonham (1973:165) argue that decision-makers tend to "fit incoming information into their existing theories and images." In their model beliefs and past experiences determine what information from the domestic and international environments is selected or rejected as appropriate to the current decision situation. "Beliefs represent both the congealed experiences of the decision-maker and his expectations about the decision environment" (Shapiro and Bonham 1973:161). In the simulation beliefs involve causal linkages among the policy objectives and interests the decision-maker has in the international arena, his sense of the kinds of actions that are happening among nations in international relations, and possible policy alternatives. In the course of the simulation, new international developments are fed into the policymaker. If they activate any concepts in the decision-maker's belief system or cognitive map, the concepts are highlighted and become the focus of attention. The decision-maker then searches for an explanation for what is happening by examining the interconnections among the highlighted concepts in his cognitive map. Once the decision-maker has a definition of the situation based on his belief system, he begins searching for an acceptable course of action. The

actor. The task then becomes representing the decision process of that actor including how it processes domestic and external information from the national and international arenas.

Some years ago Pool and Kessler (1969:665) offered a set of rules that they indicated were drawn from research on selective perception. Their rules were:

1. People pay more attention to news that deals with them. People pay less attention to facts that contradict their previous views.
2. People pay more attention to news from trusted, liked sources.
3. People pay more attention to facts that they will have to act upon or discuss because of attention by others.
4. People pay more attention to facts bearing on actions they are already involved in, i.e., action creates commitment.

Using a set of rules like those of Pool and Kessler allows us to indicate the kinds of information from the domestic and international environment a government is likely to attend to in making its foreign policy. Rules like these enable us to operationalize the proposal of Brecher (1972) that domestic and external factors become part of decision-makers' psychological environment by passing through the "attitudinal prisms" of the decision-makers. The filtered information represents what the actor "knows" about a foreign policy problem and the current status of those domestic and external factors that can impinge on any possible response.

In order to move from available information to behavior several other steps are needed in this approach to integration. Currently perceived information must be interpreted with reference to the actor's beliefs and preferences as configured in the actor's memory. As part of this interpretation process the actor will have to deal with conflicting information and select an action. If we assume that actors work to preserve their belief systems and reinterpret conflicting information so that it is consistent with their beliefs and preferences, resulting behavior will be consistent with that the actors believe and value. (See Steinbruner 1974, for a discussion of how international developments are interpreted in order to maintain the consistency of beliefs.)

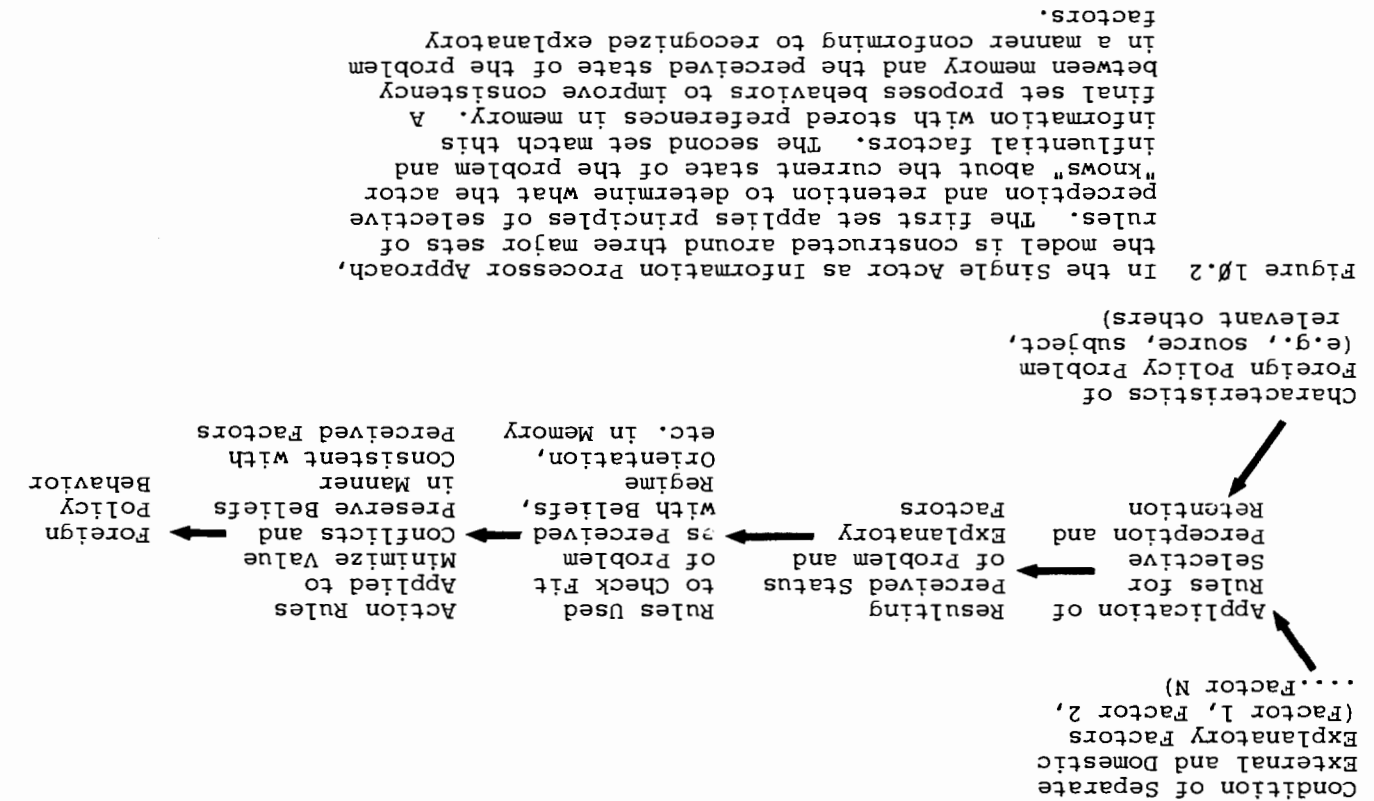


Figure 10.2 In the Single Actor as Information Processor Approach, the model is constructed around three major sets of rules. The first set applies principles of selective perception and retention to determine what the actor "knows" about the current state of the problem and influential factors. The second set match this information with stored preferences in memory. A final set proposes behaviors to improve consistency between memory and the perceived state of the problem in a manner conforming to recognized explanatory factors.

decision-maker "looks for options that he thinks will give him some control over events in the international system. He thus selects a policy that he believes will set off a series of events that will have an impact on his policy objectives" (Shapiro and Bonham 1973:170). The option or combination of options selected maximize the net gain in what the decision-maker perceives are his objectives in the situation.

Tanaka (1984:311-312) indicates that his CHINA--WATCHER model suggests how the government of China "perceives new events, understands them, and responds to them according to specified rules." China perceives the world as composed of friends and enemies. Who are friends and enemies are defined by Marxist-Leninist ideology (imperialist and revisionist countries are enemies, socialist countries are friends), by national interests, by vote on the entrance of China into the United Nations, and by diplomatic relations. The status of other countries in China's world map is continually updated based on what these countries have done with respect to China. Based on its map of the world the Chinese government tries to "understand" each new international event and place it into context. In deciding on the appropriate context the model both searches what is concurrently happening to China or in international relations that is relevant to the present situation, what has happened in the past that is relevant, and the relationship of China to the other actors in the situation. Once the situation is understood China "decides how to respond via precedent search . . . it responds to historically similar situations in similar ways" (Tanaka 1984:324).

Discussion. Although much of the research is fragmentary many different avenues of current scholarly inquiry can be viewed as converging upon this approach or, at least, could contribute to its development. Among the applicable areas of research are those on cognitive mapping (in addition to Shapiro and Bonham, see Axelrod 1976), the initial effort to consider the application of artificial intelligence to more complex decision problems (e.g., Shank and Abelson 1977; Tamashiro 1984; Thorson 1984), the examination of operational codes (e.g., George 1979; Johnson 1977), and the attempt to determine areas of shared regime beliefs or orientations (e.g., Bobrow, Chan, and Kringen 1979; C. Hermann 1983). Undoubtedly many of these researchers might shudder at the effort necessary to move from the present state of the effort to the kind of integrative decision-making model we have

sketched, but some are close to designing such a model. To us the feasibility of model construction does not pose the primary difficulty for this approach to integration.

As we noted earlier, researchers using this single actor approach choose either to represent aspects of one policymaker's information processing or a common decision process presumably shared by all policymakers in the foreign policy apparatus of a government. Most of the research we just noted has opted for the representation of a single individual. Two major problems emerge when this tack is followed in the study of cross-national foreign policymaking. First, the data requirements are quite substantial and they are of the kind that pose significant difficulties for accessibility. Data about a particular decision-maker's attitudes, beliefs, preferences in, and assessment of an array of prior international episodes as well as general social and political background information are, at best, painstakingly assembled with substantial inference when one is examining policymakers from other countries. At worst, such data simply are not available. The second problem concerns the conceptualization of political decision-making. Foreign policymaking, it can be argued, is seldom the action of a single person. Even in personal dictatorships, information gathering-interpretation and implementation must be left to others and the process of consulting with advisors in one form or another is pervasive. In most contemporary countries, the political process involves an elaborate interplay of many actors. The resolution or nonresolution of their varying perspective and the competing missions of their agencies or ministries is a major feature in the shaping of foreign policy. Such processes and the different forms that the decision units can take are simply omitted in simulating one policymaker.

Of course, if the researcher models some kind of group mind as a single unitary actor, then, the collective process is assumed to be incorporated in the theory. Doing this requires the assumption that decision-makers agree upon some strategy or ideology which establishes common principles for action. Thus, a regime might be characterized as pursuing a strategy of consolidation, expansion, or economic development through self help. Strategies could be varied by issue area. At a more discrete level these strategies might be pursued in different situations through varying tactics of the

kind that have been explicated in the theory of games (Schelling 1960; Snyder and Diesing 1977) and are illustrated by "tit-for-tat" tactics (Axelrod 1984). Even, however, with the introduction of variations in strategy for different issue areas and the use of variable tactics in different situations, the unified group approach tends to provide only a limited set of outputs describing the macro trends in foreign policy. It is not likely to be sufficiently sensitive to characterize discrete foreign policy behaviors. In part this results because grand strategies can seldom be decomposed in either real life or computer simulation to provide guides for how specific problems should be treated. And in part this occurs because the individual members of regimes often have differing perceptions and interests when confronted with discrete foreign policy issues even if they share a commitment to a broad strategy or ideology.

Multiactor Bargaining Approach

Description. The multiactor bargaining approach is a logical response to the limiting assumption required by the single actor as information processor approach. If positing the existence of only a single actor in the policymaking process appears to be an unrealistic assumption, then relax it with an approach that introduces interaction between multiple actors in the course of decision-making. Integration occurs in the bargaining and negotiation among the multiple actors as they try to collectively define and act on a foreign policy problem.

This approach begins in the same fashion as the single actor as information processor model but has separate selective perception and retention rules for each participant or actor in the decision unit. The separate information processing rules incorporate the history, mission, and objectives of the ministry, agency, party, or other interest group that is represented in the decision unit. Perceived information on the current status of certain domestic and external factors as well as the nature of the foreign policy problem as they appear to each organization are then matched with the data in its "organizational memory" to determine its preferred response. Because the information processing rules are different among the multiple actors and the

organizational histories and missions vary, the resulting preferences are not likely to be identical.

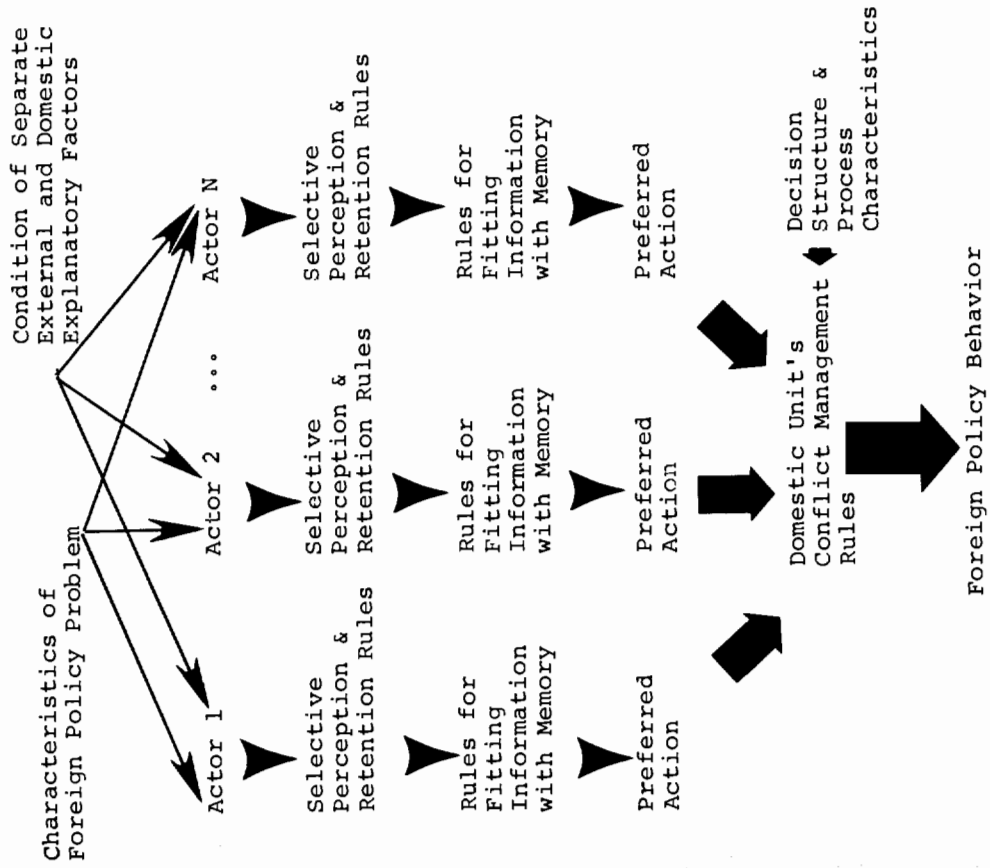
With differing preferences for coping with the foreign policy problem, this approach requires the introduction of methods for attempting to resolve the conflicting positions. The method used to seek a solution to the dispute among the multiple actors is the major additional element in this approach that is not in the single actor as information processor approach. The means for resolving conflict can differ dramatically among political systems and sometimes within political systems on different occasions. Among the possible ways of coping with these disagreements in addition to bargaining and negotiation are coalition formation, voting, redefining the members of the decision unit, forcing the issue (if there is a dominant leader or subgroup), and seeking unanimity. Like Allison (1972), we propose that these differences can affect the foreign policy outcome. The particular conflict resolution method used in any decision unit can be inferred from its structural characteristics or simply stipulated based on independent knowledge about the political system.

Figure 10.3 shows how this multiactor bargaining approach adds complexity to the single actor as information processor model.

Example. Bennett and Alker (1977:231) in their world politics simulation, designed to examine regional relations among nations in the Southern Pacific, assumed that the governments being represented were "organized in a multitechelon, multisectorial problem-solving structure." Governments were composed of subunits responsible for achieving more in the way of either wealth, power, or prestige for the nation. Each subunit pursued one of these goals, the relative importance of the subunit being based on how important their goal was for the nation at any point in time. A goal's relative importance, in turn, was based on the government's previous experiences in that area and on current international circumstances. Bennett and Alker designed the simulation so that here was a central unit that coordinated both the behavior of the subunits and the allocation of resources among the subunits.

In this simulation the subunits respond to problems in the international arena that they perceive involve them. A problem occurs when there is a disparity between what is and what the subunit would like to see exist. Each subunit searches its organizational experience for a way of dealing with the foreign policy problems it

Figure 10.3: The Multi-Actor Bargaining Approach repeats for each member of the decision unit the early stages of the Single Actor as Information Processor Approach. The usual result is that there are differing preferences between some or all members which must be managed according to the decision unit's norm as determined from its structure and process characteristics or from outside data sources.



faces. The central unit then acts as the consensus building mechanism among the units, resolving any logical inconsistencies that may arise among the various strategies the subunits propose for dealing with the problem. The subunit dealing with the nation's highest priority goal gets its way unless two of the subunits with lower priority goals dispute its strategies. In this case a minimalist method of conflict resolution is followed in which a smaller degree of change is accepted than the subunit with the highest priority goal may have wanted. If the proposals of the various subunits call for change in opposite directions, the result is no change at all.

Bennett and Alker (1977:266) observe that they have structured their simulation so that the multiple subunits cannot arrive at a metastrategy. The various outputs of the subunits are logically consistent although they may not be compatible. Bennett and Alker indicate that they are interested in having the subunits have autonomy so that they can both perceive and solve problems relevant to their area of expertise. To force a metastrategy they note "permits the subunits to end up playing their most exciting 'games' with each other rather than with other organizations in their (external) environment" (Bennett and Alker 1977:266) and increases the conflict among the subunits. It is precisely, however, this push for a government-wide strategy that may be most characteristic of much foreign policymaking and an important reason behind a multiactor bargaining approach to integration.

Discussion. In considering using the multiactor bargaining approach to integration over the single actor as information processor approach, the analyst needs to think about how much more is gained for the added complexity. If, as many insist, the dynamics of the interplay among elements of a regime are a fundamental part of foreign policy decision-making frequently having a powerful effect on the results, then the multiactor approach best represents this way of synthesizing the factors that shape foreign policy. This approach has the further advantage of readily permitting the introduction of the phases of the policy process with various units involved in different phases and feedback occurring among them.

At the same time, it is not difficult to see that the multiactor approach is more demanding than the single actor approach both in terms of constructing the model and fitting it with data about actual foreign policy actors. Not surprisingly there are few examples of this

approach in the literature. Elsewhere one of us has participated in design effort for a simulation of the American national security policy system that is consistent with this multiactor approach (Sylvan and Hermann 1979). In general, however, the foreign policy analyst must look to writings on formal organizations to find simulation models that introduce the features of interunit or intergroup interaction of the kind outlined here. Unfortunately these simulations seldom include the information processing features we have assumed are needed at the front end of any effort to use the multiactor bargaining approach to achieve integration.

CONCLUSIONS

In recent times scholars in the field of comparative foreign policy have creatively avoided the task of trying to synthesize the various proposed sources of foreign policy into an integrated theory. Either they have asked which sources are more potent or important in which nation and under what circumstances or they have asked what difference it makes if we analyze foreign policy decision-making with one set of factors as opposed to others. Although these questions are important and insightful work has shown up in the answers, foreign policy analysts have not asked what we think is the question most relevant to theory building, namely, under what circumstances and in what manner do various domestic and external factors combine to account for foreign policy. We submit that this question of interactive causation is at the heart of the theory-building enterprise as conceived by many scholars and policymakers. Significant advance in foreign policy theory development requires that it be addressed.

In this paper we have proposed that by focusing on the decision-making process we may be able to synthesize the multitude of external and domestic factors whose influences on foreign policy are periodically observed in individual studies. Moreover, we have argued that developments in computer simulations as evidenced in international relations may offer a technique for facilitating integration that has been infrequently used in foreign policy research. The three broad approaches to decision-making models that we have outlined in this essay are not without their problems. The promise they offer, however, for coming to grips with one of the

central issues of the comparative study of foreign policy should compel us to explore them more fully.

NOTES

1. Many enumerations of the explanatory factors or sources of foreign policy have been developed. Rosenau's (1966) influential listing included idiosyncratic, role, governmental, societal, and systemic variable clusters plus three mediating variables for classifying nations--economic development, physical size, and political accountability. McGowan and Shapiro (1973:41) list individual, elite, establishment, political, governmental, economic, societal, cultural, linkage, other nation's policies, systemic, and decision-making variables. Three theoretically oriented textbooks that are partially organized according to conceptualizations of the explanatory factors are East, Salmore, and Hermann (1978), Jensen (1982), and Lentner (1974).
2. In subsequent work on foreign policy as a model of societal adaptation, Rosenau (1970a, 1970b) viewed foreign policy as a mediating process by which governments keep certain defining properties of the society within stable limits, but the integrative questions about the sources of foreign policy was not addressed.

11 Exploring International Relations Through Organizational Theories in a Global Systems Simulation: A Training Template

Joseph J. Valadez

Although most global modeling in recent years has been performed with all-computer simulations (Alker 1985; Guetzkow 1981b), researchers should not be distracted from the potential outputs of person-machine formulations such as the Global Systems Simulation (GSS). An important heuristic characteristic of person-machine formats is that they capture reflective processes of human decision-makers and consequently may be more isomorphic to reference systems than their all-machine counterparts (Alker et al. 1973). Yet, this advantage of person-machine simulations also suggests their logistical costs, namely, sufficient numbers of participants have to be identified, prepared, and coordinated. Such an effort is labor intensive, and may require longer preparation than do all-computer simulations. However, these costs may be negligible since GSS-like models allow direct inputs of human creativity and comprehension (Guetzkow 1981c:340).

In 1950 Guetzkow first proposed that the modeling simulated international processes could commence through constructing islands of theory. Although some of these islands may now be linked both as verbal and formal theories (Guetzkow 1981c, Guetzkow and Valadez 1981ab), it may now be the time to describe silhouettes of yet other islands that lay on the horizon.

This paper, thus has two foci: first, to outline a potentially rich area of theory that could broaden our understanding of international relations and of problems mitigating peace; second, to demonstrate how GSS may be appropriate for conducting such an investigation; a fortiori no simulation outputs will be analyzed. This chapter is intended to "train" potential simulators through a detailed presentation of how simulation theory