SIMULATING U.S. NATIONAL SECURITY DECISION MAKING

DONALD A. SYLVAN
CHARLES F. HERMANN
Department of Political Science
Ohio State University

What is the impact of alternative configuration of the National Security Support System on the nature of national security recommendations to the President? In this article we conceptualize the issues involved in answering this question and suggest and evaluate an approach to deal with them.

The National Security Support System (NSSS) refers to the support system for presidential involvement in national security affairs. The NSSS includes those principal policy makers,

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associated staffs, relevant elements of executive branch departments and agencies, and interdepartmental procedures that regularly can be utilized to give direct support to a president when an issue of national security requires the President's consideration. A comprehensive examination of a NSSS would examine all support functions before, during, and after presidential action to determine the effect on policy outputs. As an intermediate task, however, this study will be limited to techniques for examining organizational inputs prior to presidential decision making. We are concerned with what the President gets as inputs rather than what happens after the President acts. Thus, the organizational outputs that our research needs to examine are the topics the system surfaces for presidential consideration together with the analyses and recommendations that it offers with respect to those topics. Additionally, relevant outputs would include the support system's responsiveness to presidential requests for further information and analysis.

In order to investigate the topic just described, this article proceeds in the following manner: The notion of national security reorganization is introduced, followed by a discussion of advantages of exploring the subject matter through computer simulation. Types of situations or problems and organizational variables are then explicated in an attempt to represent basic issues involved with this subject matter. Yet, this notion of a production system simulation is described and an argument is made for using it in this case. Examples of such applications are given before the summary section.

Since the National Security Act of 1947 established the National Security Council (NSC) as a facility for supporting presidential direction of our military and foreign policies, each president has modified both the Council and the broader supporting machinery in distinctive ways. Augmenting these actual organizational modifications has been a continuous flow of major studies and recommendations proposing other reforms of the machinery for forming and conducting foreign policy.[1] Until recently those inquiries that focused on national security organ-

izations (e.g., Jackson, 1965; Clark and Legere, 1969) tempered their proposals with the observation that the preferable support system is the one that corresponds most closely to a given president's personal style. Of course, it still remains essential to establish some congruence between the operating methods congenial to the occupant of the White House and those procedures of the national security organizations intended to support the President. As the period of adjustment at the beginning of every new presidential administration testifies, even this basic organizational requirement of congruence with personal style may be difficult to achieve.

In the past few years a number of publications have appeared that examine other implications of various organizational configurations for national security (George, 1972; Halperin et al., 1974; Destler, 1972; Allison and Szanton, 1976; Johnson, 1974; Hoxie, 1977). They have not rejected the maxim that no organizational arrangement can assure good policy and that there must be a fit between the machinery of a given president's mode of operation. In various ways, however, they have emphasized that alternative modes of operation of the presidential support system have different effects on the substance of policy.

Not only is it likely that organizational systems will affect policy differently, but the effectiveness of any system may depend on the nature of the problem it is called on to address. In other words, national security policies can be affected by the interaction between the mode of organization and the problem area. Thus, for example, one configuration of the national security machinery may be extremely effective at systematically reviewing extant doctrines and policies for critical inconsistencies with current world conditions, yet be quite inadequate for coping with acute international crises.

This present study is based on the premise that organizational structures and processes used to support the President in national security matters do have an impact on the substantive nature of the decisions and their implications; that these effects vary from one arrangement to another and from one type of problem to another; and that, for the most part, these effects are not well

understood. We need to develop techniques to systematically explore these effects. We need to compare alternative organizational structures (e.g., the arrangement and composition of the entities involved) and the nature of the processes used in those structures (e.g., the modes of handling information, resolving disputes, performing implementation). Alternative organizational structures and processes need to be compared for their impact on the time needed to respond to a problem, the range of options considered, the likelihood of innovative actions, the probability that the preferences of the President and the national command authority are implemented, and the amount of feedback and evaluation they receive about the consequences of their directives.

Unlike some nonmanipulative factors which may have impact on policy actions, organizational arrangements can be changed and have been altered regularly by different administrations. There has, however, been a lack of systematic study of the effects of various alternative arrangements.

Let us summarize the state of the problem.

(1) The U.S. government has used a variety of organizational structures and processes to support presidential decision making in national security and foreign policy since the National Security Act of 1947. Even more numerous than the actual changes have been the endless series of studies that have recommended other organizational arrangements. Both the studies and the actual experimentation with the presidential National Security Support System are likely to continue.

(2) Changes in organizational configurations are not likely to be benign with respect to their impact on the substance of policy recommendations and analysis as presented to a president. It is not only efficiency, coordination, or style that is likely to be influenced, but also substance. Furthermore, there is one reason to suspect that a system appropriate for one type of situation such as politicomilitary crises may not be nearly as appropriate for some other types of problems.

(3) The effects of organizational structure and process on policy analysis and recommendations are not well understood.

Nor has there been much of an attempt to examine the interaction between type of policy problem and organizational configuration in recommendations for various organizational procedures.

(4) A research strategy is needed that will provide some evidence of the effects of various configurations of the NSSS system on policy analysis and recommendations. That strategy should permit a system perspective in which the interaction effects with a problem-area and related factors are taken into account.

EXPLORATION THROUGH COMPUTER SIMULATION

This study concludes that the research problem posed above can be productively investigated through the use of computer simulation. Several reasons suggest such a strategy. First, simulation allows for the careful representation and manipulation of various structural and process relationships while controlling for other possible factors. In this manner it may be possible to ascertain what impact various structure and process variables have on the policy outputs in dealing with alternative national security tasks. Second, by using simulation it becomes possible to explore configurations of structure and process for presidential support systems that have not been tried in historical experience. It becomes possible to experiment with alternative designs without staggering consequences of introducing modifications in the real system. Third, the track record of simulation as a useful and practical tool in representing organizational characteristics is already well established. Simulations have been used successfully to explore a variety of budgetary, marketing, personnel, management, and production problems in various types of organizations. (For reviews of this work, see Guetzkow, Kotler, and Schultz, 1972; Cohen and Cyert, 1965.)

The research task to be examined is the modeling of selected features of the presidential National Security Support System through an interactive computer simulation. Such an interactive simulation model would allow the investigators to introduce changes in features such as the problem area, the policy-making

group structures, or the information-processing system. These changes will be accomplished by interactively altering parameter or variable values in the computer simulation.

One possible research plan using such a simulation might be as follows: A small set of prototypic national security and foreign policy problems that might require presidential involvement are carefully defined (for example, the management of alliance relationships). Each prototypic problem would pose different demands on the NSSS simulation. The simulation would contain a number of key parameters and variables representing such structure and process variables as the nature of the information available to each participant, the role of NSC and other pertinent staff, and the degree of presidential participation.

If the variables have been correctly chosen and designed, it should be possible to configure them in arrangements that characterize important features of, say, the Eisenhower, Johnson, or Kennedy National Security Support Systems, or to produce more abstract decision systems such as the formalistic, competitive, and collegial schemes described by Johnson (1974). Still other configurations of the NSSS that did not correspond to any in an actual presidential administration also could be represented by altering the values of the simulation's components (or the permitted roles and relationships among human participants). Obviously none of these configurations would be able to represent the total complexity of an actual national security decision system, but the purpose would be to isolate those qualities believed to be most influential in affecting policy.

It then would be possible to initiate a series of trials. Every prototypic problem would be run against each of the major configurations of the NSSS. One could then determine whether the different decision systems tended to produce different kinds of outcomes for comparable tasks. The outcomes could then be compared against a number of performance criteria.

Of course, the above illustration is only one possible research plan that could be pursued with the simulation model. Many others would be possible. For example, sensitivity testing could be performed to determine the effect on policy achieved by

manipulating only one variable while all others were held constant. Furthermore, the possibility of using some version of such a simulation for training purposes exists and has been done with various simulations of firms at graduate schools of business.

SELECTING INPUT VARIABLES FOR THE SIMULATION

The type of simulation research described above requires that the model be designed to treat two broad categories of variables whose impact on policy outputs would be studied. One class of variables characterizes different tasks or problem areas. These problems would serve as the input variables for the simulation and would represent the range of major issue areas with which the NSSS deals at the highest levels of authority. The other class of variables that would be incorporated in a NSSS simulation model are the organizational characteristics including both structural and procedural properties. Each of these classes of variables—problem areas and organizational characteristics—will be discussed in turn.

It is reasonable to assume that various kinds of problems in foreign policy and national security pose quite different demands or requirements on the support and decision system that must cope with them. This variation in the demands imposed on the system becomes one of two criteria for selecting problems for a typology of task inputs: (1) the problem would be recurrent in foreign policy/national security issues at the presidential level; (2) the problem should be expected to create distinctive requirements on the decision system.

One approach to establishing the set of problems to be treated in the simulation is to enumerate those issues frequently handled at the presidential level. Although it is difficult to get a comprehensive picture of the problems demanding presidential attention (particularly those that are not attended to), it is possible to make some informed judgments from public sources (for example, see Leacacos, 1971-1972). One set of possible problem

categories that is by no means comprehensive, but which does capture some of the diversity of requirements on the NSSS, is as follows:

(1) formulating U.S. position in *protracted major negotiations* with foreign governments (e.g., with North Vietnamese on the Vietnam war, SALT);
(2) selecting and reviewing "in principle" *policies and doctrines* (e.g., first use of nuclear weapons, one and one-half war fighting capability);
(3) responding to *external crises* (e.g., *Mayaguez* seizure, 1973 Arab-Israeli war);
(4) making *budgetary allocations for established programs* (e.g., annual Defense Department appropriations request to Congress);
(5) deciding on *new programs and weapons systems* (e.g., nuclear reactors to Egypt, Trident submarine system);
(6) making *administrative arrangements* (e.g., revision of National Intelligence Estimate format, designation of U.S. ambassador as head of "country team," creation of the interdepartmental groups);
(7) engaging in *personal diplomacy* (e.g., NATO summit meetings, receiving or visiting major heads of state).

These categories are neither strictly parallel nor mutually exclusive, but such a list does appear to capture a number of the major recurrent tasks facing the upper levels of the national security decision system. It is still necessary, however, to determine whether this set of problem areas adequately represents the array of distinctive demands made on the presidential national security system (the second criterion for critical issues).

SITUATIONAL VARIABLES

Miller et al. (1976) constructed a series of dimensions that represent underlying properties—such as urgency, scope of problem, and complexity—that are present to a greater or lesser

degree in any problem. In order to better estimate the demands that problems create for the NSSS, we can use similar dimensions and relate them to the type of recurrent problems listed above. An example may clarify this procedure. One situational dimension of possible significance is the extent to which the president and his national security advisers can determine or regulate the pace at which a situation develops—that is, the controllability of timing. In the review and *selection of a major policy or doctrine,* the NSSS leadership normally has substantially greater control over timing than in most *external crises.* Thus, the two problem areas of external crises and policy review differ substantially on the situational feature of "controllability of timing."

What are some other situational dimensions that might be used to evaluate the requirements for policy makers imposed by various types of problems? An initial listing might include the following.

(1) Problem familiarity—the extent to which the major features of the problem seem clear and familiar to the policy makers. The less familiar the problem, the more uncertainty about its nature and probable effects. As problem familiarity declines, the NSSS is probably required to engage in more search activity about the problem and to engage in procedures for resolving competing interpretations of the problem.

(2) Problem stability—the likelihood that the problem will remain in its essential features about as it is when first considered by the government or at least will change or evolve only gradually in contrast with highly volatile problems that are likely to change rapidly and unpredictably. The less stable the problem, the more a NSSS is required that can shift plans and actions quickly and with flexibility.

(3) Value conflicts—the degree to which the problem poses a choice for the policy makers between two or more strongly held values so that one cannot be secured or protected without forfeiting some or all of one or more other values. Problems that involve major value tradeoffs require a system that can make sensitive political judgments about who will be deprived by various responses and the implications that may follow.

(4) Detailed technical information—the extent to which a problem encompasses substantial amounts of scientific, economic, or other specific knowledge which must be comprehended in order to cope with it. The more a problem rests on technical information, the more a NSSS must be able to acquire the necessary expertise and transmit that information accurately to the locus of decision.

(5) External threat—the degree to which the problem poses a major obstacle to the realization or maintenance of some highly desired objectives, programs, or policies that come from some entity outside the government's political jurisdiction. The greater the threat, the more necessary is the ability to mobilize resources that might neutralize that threat (military, economic, political, and so on) and knowledge of the external entity's capabilities and motivations.

(6) Feedback probability—the likelihood that the consequences of any response to the problem result in reasonably quick and clear feedback to the policy makers as to both intended and unintended effects. Problems with potential for feedback require a NSSS that is capable of monitoring the environment and interpreting the signals received together with a capacity to relay to the locus of decision whether further response is required.

(7) Decision time—the amount of time available before the problem is transformed significantly, making any response impossible or under conditions perceived to be less favorable to the United States. The less decision time, the greater the need for quick analysis and response capability.

(8) Collaboration of autonomous domestic actors—the extent to which the problem affects or otherwise involves multiple domestic actors with a significant degree of autonomous authority from one another. The more collaboration of an autonomous authority is required, the more a NSSS must be able to communicate and coordinate effectively with these separate actors and establish procedures by which they can reach agreement.

(9) Collaboration of autonomous external actors—the extent to which the problem affects or otherwise involves multiple actors outside the political jurisdiction of the United States who have a

significant degree of autonomous authority from one another. The more collaboration of autonomous authorities is required, the more NSSS must be able to communicate and coordinate effectively with these separate actors and establish procedures by which they can reach agreement.

(10) Resources mobilization—the extent to which the problem involves the utilization of large amounts of human and non-human resources. The more resources required, the more a support system must have a credible and effective means for the timely mobilization of those resources.

Table 1 arrays the seven proposed types of problems against the ten dimensions of problems just introduced. A provisional judgment has been made as to the typical value of each dimensional feature in a given class of problems. The reader may not agree given the broad categories of problems; undoubtedly there is considerable variation within any one of them, and we may have misjudged the average or most common value in some cases. Because Table 1 is intended only to be illustrative, however, disagreements need not be troublesome. The important point that the table seeks to summarize can be stated as follows: The prototypic problems selected as simulation inputs vary substantially with respect to certain characteristics. Specifically, the problems are structured so as to create varied requirements on the National Security Support System. The purpose is to create inputs that will allow us to determine how well a given support system copes with problems that create diverse demands on it.

CORE ORGANIZATIONAL VARIABLES

Before indicating what organizational variables are proposed, it may be useful to provide a clearer statement of the specific focus of the simulation. This clarification will provide further context for evaluating the organizational variables. To be represented in the core of the simulation is that part of the executive branch which is designed to identify and assist the President in making and implementing decisions about national security and

TABLE 1

Judgments on Typical Values of Ten Situational Dimensions for Various Policy Problems

	PROBLEM FAMILIARITY	PROBLEM STABILITY	VALUE CONFLICTS	TECHNICAL INFORMATION	EXTERNAL THREAT	FEEDBACK PROBABILITY	DECISION TIME	DOMESTIC COLLABORATION	EXTERNAL COLLABORATION	RESOURCE MOBILIZATION
MAJOR NEGOTIATIONS	MODERATE	MODERATE	HIGH	HIGH	HIGH	HIGH	MODERATE	MODERATE	SUBSTANTIAL	SUBSTANTIAL
POLICIES & DOCTRINES	HIGH	HIGH	MODERATE	MODERATE	MODERATE	LOW	EXTENDED	SUBSTANTIAL	MODERATE	MODERATE
EXTERNAL CRISES	LOW	LOW	HIGH	MODERATE	HIGH	HIGH	SHORT	LITTLE	SUBSTANTIAL	MODERATE
BUDGETARY ALLOCATIONS	HIGH	HIGH	HIGH	HIGH	LOW	MODERATE	MODERATE	SUBSTANTIAL	LITTLE	SUBSTANTIAL
PROBLEM & WEAPON SELECTION	HIGH	MODERATE	HIGH	HIGH	MODERATE	HIGH	EXTENDED	SUBSTANTIAL	MODERATE	SUBSTANTIAL
ADMINISTRATIVE ARRANGEMENTS	HIGH	HIGH	MODERATE	MODERATE	LOW	HIGH	EXTENDED	MODERATE	LITTLE	LITTLE
PERSONAL DIPLOMACY	MODERATE	LOW	LOW	LOW	LOW	MODERATE	SHORT	LITTLE	SUBSTANTIAL	LITTLE

NOTE: The judgments reflected in this table are provisional and considerable variation undoubtedly occurs within each type of problem as to the appropriate value on the situational dimensions. However, the purpose of this table is to illustrate the overall distinctiveness of the profile for each type of policy problem rather than report uncontestable judgments concerning the value assigned any particular problem on a single dimension.

foreign policy problems. As mentioned earlier, the NSSS is defined to include three basic components: (1) the executive branch departments and agencies that assume a major role in a variety of national security problems; (2) the heads of these departments and agencies and other key individuals who are national security principals; and (3) the interagency staffs—most notably the National Security Council staff—intended to coordinate the activities of the other components of the support system and represent the White House perspective.

Having defined the NSSS for the purposes of a simulation and agreed that the initial development should concern the pre-presidential decision process, we can now turn to the task of describing the organizational variables. As with the class of variables representing problem areas, we have constructed two criteria for the selection of the organizational variables to be employed, as follows.

(1) The organizational features should have the potential of capturing in a limited number of variables, and their relationships, those organizational properties that would appear to be able to have a substantial impact on the policy output. (Note that all that is required to meet the criteria is positing the existence of a relationship, not its direction.)[2]

(2) The organizational features should be among those that differentiate historical support systems (e.g., Truman through Nixon) so that it can be established with some confidence that the represented features are ones which policy makers have regarded as manipulable. We believe that seven organizational clusters of variables meet our dual criteria of effecting the choice outcome and having been altered in various past National Security Support Systems.

ORGANIZATIONAL BASE

The first cluster of organizational variables refers to the information and interpretive capabilities of the respective departments involved in a NSSS simulation (i.e., Departments of State and Defense, Joint Chiefs of Staff, the Central Intelligence

Agency, and any issue specialty agency). Using organizational goals, orientation to the external world, and an existing stock of information as the basis for designing decision rules, each organization would screen the input on an incoming problem area and selectively retain and weigh that new information. The organizational base variables can be compared to the early work of Pool and Kessler (1969) on the selective perceptions of the Kaiser and the Tsar in 1914. It is suggested for inclusion on the assumptions developed by Halperin (et al., 1974: esp. ch. 3) that each of the major executive branch organizations has its own organizational interests which influence how it considers national security and foreign policy issues. In brief, the organizational base consists of groups of variables: first, a set of topics about which selected information is stored, including evaluative information; second, a set of decision rules that determine what new information or problem will be retained and how it will be evaluated.

ORGANIZATIONAL LEADER'S LINK TO BASE

This component of a NSSS simulation also would contain two parts, both of which concern the link between the weighted and screened information in the organizational base and the individual who heads that organization. The first element concerns how much access the leader has to his or her organization's informational base. Historical accounts suggest that there are differences from organization to organization and between different individuals holding the same position in one organization with respect to the amount and kinds of access they have to information in their organization.

The second element of this component concerns the latitude or discretion the leader has in his/her advice to the President to deviate from the organization's goals and interpretation of developments. Clearly, the head of each of the major executive branch departments and agencies assumes many roles—adviser to the President, chief department administrator, overseer of assigned policy implementation, spokesperson for the mission of

the department, and so on. Some conflict exists between these various roles, and individuals can partially resolve these role conflicts by emphasizing some at the expense of others. The simulation should be designed to represent different emphases or mixes of these roles for department heads. The constraint would determine whether the individual must remain committed to the department's point of view. Under one condition the individual may be able to disassociate from the department's analysis and weigh it equally with evaluations from all other sources in giving advice to the President. Adherence to this nonadvocate role may hamper the welfare of the department. It might be noted that a leader's access to his/her organizational base may be inversely related to the leader's latitude to deviate from the agency's position in dealing with others. If a leader is known by his/her department not to be a vigorous advocate of the department's analyses and goals, department morale and interest in providing the leader with all the information at the department's disposal may decline. Conversely a strong departmental advocate might find a subordinate committed to giving every possible bit of information and argumentation available.

INTERAGENCY INFORMATION EXCHANGE

This next set of variables determines the normal procedures in a given version of the NSSS simulation for the exchange of information among agencies or departments and principals. Decision rules govern (a) with whom information is shared, (b) under what conditions, (c) whether the information is "raw" or "weighted" (i.e., interpreted from the department's point of view), (d) whether the information is volunteered or given only on request, and (e) when and from whom search procedures are instituted to acquire or confirm information. Historically, support systems have used different patterns of communication as the normal or typical arrangement. For example, with a limited NSC staff the exchange of information might be left to individual departments. With a strong NSC staff, all information tends to be routed to it for compilation and general distribution of restricted circulation.

INTERAGENCY OPTION COORDINATION

One of the major tasks of any support system is to develop alternative courses of action or options for the President. This variable governs the nature of the coordination between agencies or departments in formulating options. At one extreme, the task is performed independently by each agency without any consultation with others. Each agency forwards its separate recommendations to the President or the NSC staff. At the other extreme, the agencies not only share their provisional options with each other, but must reach consensus on the preferred course of action before forwarding it to the President. Between these extremes is the sharing of the suggested options among agencies without any requirement for reaching consensus. In this mode an agency can modify its original options to include features of others. Moreover, two or more agencies may submit joint recommendations. Decision rules would be established to determine which mode is operative in a particular simulation.

NSC STAFF FUNCTIONS

The NSC staff—as distinct from the departmental staffs in the various agencies—has played quite varied roles in different presidential administrations. A set of variables is needed to determine the mix of functions assigned to a particular NSC staff. The staff functions can be characterized as consisting of a series of dimensions with opposing extremes on the dimensions as follows:

(1) *Establishment of governmentwide studies and requests for information.* Studies and information needed by President determined exclusively by departments versus NSC staff with authority to require governmentwide studies and request specified information.

(2) *Recommended revisions in materials supplied by departments.* Nonobligatory suggestions for revision made by NSC staff to department versus mandatory revisions before material will be forwarded or a meeting convened.

(3) *Role in creation of analysis and recommendations.* No NSC staff authority or capability to conduct independent analysis of problems versus generation of independent NSC analyses and recommendations.

(4) *Transmission of material and access to President.* Nonevaluative neutral transmission of materials submitted by departments to President (or departmental material not routed through NSC staff at all) and independent departmental access to President versus NSC staff preparation of summaries and evaluation of departmental materials before transmitted to President and control of access to President by others.

Of course these functions would not be granted specifically to a staff but rather to the Assistant to the President for National Security Affairs who in turn creates a staff to fulfill authorized functions that the individual directs. Thus, the NSC staff is equivalent to the organizational base of other principals. A strong or weak NSC staff can be created by its degree of authority on these functions. A NSC staff also has potential functions concerning the implementation of presidential policy, but that is beyond the scope of the proposed simulation.

PRESIDENTIAL PARTICIPATION

This cluster contains three major variables: timing of presidential participation, nature (or kind) of presidential participation, and style of presidential interaction. For the present purposes, the timing of presidential participation can be treated as a dichotomy—participation only after options are advanced (postoptions) or involvement in defining the problem and shaping the options (preoptions). In each stage the nature of the President's participation can be varied by the types of activities in which the President engages.

Postoption presidential participation limits his role to the final act of choice between a set of alternatives placed before him. Full postoption participation allows the President to engage in a variety of activities after one or more options have been ad-

vanced. These activities include (a) interrogating advisers for more information or for their evaluation of options; (b) generating entirely new options or combining elements of those advanced; and (c) conducting informal "votes" among advisers as to their preferred course of action. Alternatively, a simulation might be structured to represent preoption participation. In this mode the President's activities could include some combination of (a) underscoring concern with certain issues of information, thereby structuring or defining the situation for other participants; (b) placing parameters or requirements on the kind of options the President will accept; and/or (c) requesting certain sequence routines in handling the problem (see the next set of variables). Depending on whether the pre- or postoption condition was being simulated, the President will be able to access different information sources at different times.

Regardless of postoption or preoption modes and the mix of activities, the President could have a variety of styles of interaction with other actors. The President could meet with them singularly (that is, with one adviser at a time), with a subset of advisers, or simultaneously with all advisers. In the latter case—which could be the simulation equivalent of a slightly expanded NSC meeting—all participants would witness all the interaction with the President and may engage in it at any time. In other conditions of presidential interaction the circulation of information would be restricted.

SEQUENCE OF DECISION PROCESS

We have already established that the simulated support system could vary with respect to the mix of participants and their expected functions at different points in the decision process. Essentially this last cluster of variables concerns who will be represented in the decision process and what functions will be operative. With the exception of the President and the Assistant to the President for National Security Affairs, the other suggested participants in the simulation would have any combination of three possible functions: (a) information acquisition and

exchange, (b) option generation, and (c) evaluation of information and options. The President's functions are determined by the presidential participation variables and those of the National Security Advisor by the NSC staff function variables.

DIFFERENTIATING HISTORICAL ADMINISTRATIONS

Although space does not permit a full presentation, we believe it is possible to represent major features of the NSSS systems in the Truman through Ford Administrations by assigning each system's values on the variable cluster described above. Moreover, the configuration of values of these variables for each NSSS system will, we believe, capture some of the important differences between administrations. As one possible illustration consider the following quotation from Moose (1969: 81).

> The staffing practices of the Kennedy Administration contrast sharply with those of the Eisenhower Administration in several major respects: First, the Kennedy staff devoted very little energy to the National Security Council per se, and the council's supporting mechanisms were abolished; second, the staff concentrated heavily on what was happening at the moment, in part because so many critical situations arose which demanded the President's personal attention, but primarily because the President himself reached down and out for so many issues; and third, many staff members had direct and personal access to the President, and this became channels for a type of guidance that had previously flowed through traditional channels from the President to his department and agency heads.

The downplaying of the NSC in the Kennedy Administration as compared to the Eisenhower Administrations would be reflected in the simulation by reducing the President's option of simultaneous interactions with all advisers. It would also result in eliminating the NSC staff function of recommending modifications in agency options to maximize their clarity and feasibility. The direct presidential involvement would be represented by giving the President access to the organizational base of the agencies through the appropriate NSC staff function. Direct

presidential access to the NSC staff organizational base in the simulation would be the equivalent of an individual NSC staff member's access to President Kennedy. It should be emphasized that the primary purpose of a NSSS simulation would not be simply to reconstruct key aspects of previous actual support systems—although that capability appears possible. It is rather to know what the consequences of different organizational arrangements—whether historical or as yet untried—might be on policy outputs given different problem areas.

PRODUCTION SYSTEM SIMULATION

Thorson, Anderson, and Thorson (1975) have utilized some of the problem-solving orientation typified by Newell and Simon (1972) in a decision-making simulation of a foreign policy process. More specifically, their simulation "is an effort at elucidating the internal mechanisms by which governments generate behaviors" (Thorson et al., 1975: 3). The type of simulation employed involves an engineering framework elaborated by Simon (1969) and Thorson (1974). Called a production system simulation, it seeks to create a computer simulation for the investigation of the consequences of alternative policies. Governments are treated as goal-seeking systems for which goals can be multiple and changing. One of the simulation's features is to permit a user or operator to interact with the system without knowledge of a special computer language.

The production system simulation consists of linearly ordered lists of action and condition statements. Serving as an input to an element of the system, an action statement triggers some aspect of the memory or state of knowledge of the system. This state of knowledge or condition section is dictated by circumstances that have developed during the simulation's operation as well as from the prechosen scenario. (In a hypothetical NSSS simulation the conditions would reflect the organizational behavior configuration and the selected issue area.)

Table 2 illustrates the most elementary components of a production system simulation using content that might be found if it were designed to model features of a NSSS. The four columns of the table correspond to the basic building blocks of such a simulation. To begin the process an input sentence or action is selected by the simulation user or triggered by some other aspect of the program. In the example the first input or action statement is a recommendation from the director of the Arms Control and Disarmament Agency. The second column, labeled "state transition," is a channeling device built into the simulation that indicates to which part of the program's memory a particular type of action statement applies. In this instance, given the conditions labeled SK 1 and SK 2, the action is routed to SK 3, which is shown in this illustration to be the opposition of the Chief of Naval Operations (CNO) and the Secretary of the Navy. The fourth column of the table, or "logic of the situation," indicates the consequence that the simulation generates from the combination of actions and conditions. The programming of the logic of the situation column depends on the knowledge built into the simulation, using in this instance the understanding drawn from national security and organizational behavior materials and experts. In sum, the illustrative logic of the situation column states that in the situation type labeled "new program and weapon system," with a Kennedy-style NSSS organization, and a CNO and Secretary of the Navy who oppose Trident delays, the Assistant for National Security Affairs will ask the Secretaries of State and Defense and the Chairman of the Joint Chiefs of Staff to offer their opinions. Presumably that will trigger new action or input statements for determining whether any resolution of differing views is required.

Several considerations should be noted in considering the example in Table 2. First, the input sentences can be overridden by the user. If they are not countermanded by the operator, they will trigger the associated state knowledge or conditions and the results prescribed by the logic of the situation. Second, state transition and logic of the situation statements are the basic elements of a theory—in this case a theory of U.S. national

TABLE 2

Example of Production System Format for a NSSS Computer Simulation

Action of Input Sentences	State Transition	Conditions or State Knowledge in Memory	Logic of Situation
IS 1 ACDA Director recommends stretching out rate of Trident sub production	IS 1→SK3	SK1 Situation = New Program & Weapon Systems SK2 Kennedy style NSSS organization	SK1+SK2+SK3→IS 2
IS 2 NSC Advisor requests opinions of secretaries of State and Defense and Chairman of JCS		SK3 Secretary of Navy & Chief of Naval Operations oppose delays	

security policy behavior. Running the simulation and analyzing the results constitutes a test of that theory. Altering state transition and logic of situation statements creates a variation in theory. Changing initial statements of actions or conditions (state of knowledge) does not modify the theory, but rather leads to tracing the implications of alternative assumptions through a given theory.

Any NSSS simulation should differ in at least two respects from the production system approach outlined by Thorson et al. (1975). One difference is the scope of their assumption that "internally governments are organized hierarchically" (Thorson et al., 1975: 1089). We clearly agree with the general thrust of the comment; that is, we agree that the President, the other NSC principals, and their staffs operate at different levels within a hierarchical system. Some aspects of a NSSS simulation, however, must concern interactions completely within the level of the NSC principals. Thus, a number of the relationships with which it deals would not be hierarchically based, although the degree of overall hierarchy is a variable which could be subject to manipulation. The other difference is the contextual definition of external environment. In the case of a NSSS simulation the immediate environment is primarily domestic as opposed to foreign. Whereas Thorson and his associates have been primarily concerned with a government's attempts to control and respond to other external international actors, the simulation discussed here deals largely with interaction among national security principals and their departments. Modifications such as these would not alter the basic approach or assumptions of the production system simulation.

This "production system" approach has many features that recommend it for our simulation purposes. First, it is an effort to model the internal structure of government. Second, it allows for the pursuit of multiple goals. It also allows for the "redundancy of potential control" and considers governments to be event-based. "Redundancy of potential control" refers to a situation in which lines of authority and authoritative communication can at times fail to be mutually exclusive. In other words, a

particular task can be accomplished by multiple means or can be obstructed by conflicting directives emanating from alternative sources. The advantage of treating governments as event-based entities is that it allows for decision-making processes to be affected by the timing of other events or occurrences in the evolving situation rather than on a rigorous sequence determined by clock or calendar time.

A third important strength of the NSSS production system simulation is its abilities in the area of theory building. Such a simulation can serve as a vehicle for constructing theory of foreign policy decision making. The computer program itself represents at least one theory. It is an excellent vehicle for drawing out the logical consequences of the elements of a theory taken together.

Finally, it should be stressed that one of the advantages of a production system simulation is its ability to deal with the complexity of foreign policy making in a way that can be traced or monitored. The highly restricted segment in Table 2 cannot illustrate this feature without making the table itself too involved for our purposes. It should be remembered, however, that most foreign policy decision situations could not be represented with a maximum of three items in any of the basic columns. Adding just a few more conditions or actions would necessitate positing a large number of state transition and logic of the situation equations. Each subsequent relationship between a condition and an action must be evaluated in terms of all previously stated relationships. The systematic communication of the relationships between large number of conditions and actions—a crucial type of complexity—can be accomplished by a production system simulation. Few if any alternative modes of addressing foreign policy problems can deal with such complexity and exhibit the desired flexibility. Production system simulation exhibits the ability to trace through the implications of both alternative theories of foreign policy behavior and alternative actions, given a particular theory.

We shall now relate the variables discussed earlier in this article to the production system approach. As has been men-

tioned, a first step entails developing a profile of the types of situations or problems (e.g., negotiations, crises) in terms of the dimensions of a problem (e.g., decision time, technical information, external collaboration). Table 1 performs this function. Next, the types of situations (which have not been profiled) are cross-referenced with core organizational variables (e.g., interagency information exchange, presidential participation). Selected sets of values across an array of organizational variables are grouped together and labeled as given organizational arrangements (e.g., low interagency information exchange, little presidential participation, and the like constitute a "Nixon-like" organizational arrangement). Each combination of situational and organizational variables (e.g., a negotiation under a particular organizational arrangement) dictates what type of scenario results from a given action or input sentence. That process is captured in a "logic of the situation" statement such as the one in Table 2. Such statements, therefore, include organizational and situational variables as elements on the left side of the statement.

How the production simulation just introduced can deal with interaction dynamics, option generation and selection, and treatment of personal leader styles will now be discussed.

REPRESENTATIVE OF INTERACTION BETWEEN PRINCIPALS

A production system simulation would not represent the interaction dynamics between the principal actors in a National Security Support System in great detail. Procedures for interaction and their outcomes would be calculated from programmed relationships. A particular input sentence and stored state of knowledge would activate a programmed "logic of the situation" decision rule that would determine the results of the interaction. In other words, a given action in a prescribed scenario dealing with a particular issue area would generate a list of the principals who would be involved, their initial positions on the issue, those that would exchange information and views, and—if the system

being represented required resolution of any differences among advisers—that outcome would be calculated.

A specific example may clarify how the production system simulation would deal with the dynamics of interaction between national security principals. Assume that the organizational components of the simulation are configured to resemble a national security system with considerable authority delegated to the Secretary of State who acts as the major conduit for advice to the President. In this arrangement the simulation notes that other principals know that their views are unlikely to be thoroughly considered by the President unless supported by the powerful Secretary of State. (In simulation terms, this design involves certain structures of interagency information exchange, option coordination, and so on.) From a repertory of possible problem areas for the simulation, the operator has chosen a crisis in which a major hostile foreign power has indicated that it is prepared to initiate an extremely provocative act toward the United States unless certain issues are resolved to its satisfaction. The organizational base supporting the Secretary of Defense dictates that (s)he hold a different view from the Secretary of State as to the appropriate response. The program generates a statement that the Secretary of Defense channels information to the Secretary of State (an interaction), but after certain programmed checks triggered by the interaction, the Secretary of State's position is unaltered and transmitted as the sole recommendation to the President (the output of the simulation).

GENERATION OF OPTIONS AND RELATED ADVICE

In the production system simulation a full set of all permissible options has been programmed in advance for every combination of issue area and organizational configuration. From that list the computer determines the option or options recommended to the President based on decision rules governing two broad areas. Decision rules in the first area determine the preferred position of each principal adviser. The calculations are based on (a) the organization's mission, (b) closeness to his/her

supporting organization, and (c) programmed personal values and style (i.e., an abbreviated operational code). The second area of decision rules concern procedures to be followed if the organizational structure were to dictate that advisers disagree on their recommendations. These decision rules will vary depending on the organizational configuration of the national security advisory system being simulated.

PERSONAL STYLES OF INDIVIDUAL ADVISERS

There can be little doubt that individual qualities of actual principals in any national security system affect the procedure for option search, option selection, information exchange, and option evaluation. As new individuals assume key roles, some differences in the treatment of variables relevant to the proposed study can be expected. Although it is not the intended purpose of the NSSS simulation described here to study the effect of personality differences on the NSSS, some limited attention to selected personal attributes seems prudent.

The production system simulation could be structured to represent selected personal style variables judged to be pivotal for the operation of an organizational support system. Literature from psychology, organizational behavior, and foreign policy decision making would be drawn on to determine the key variables. For example, Driver and Mock (1975) advance a series of decision-style categories that might be applicable. As an illustration, consider how one of their categories, integrative style, could be programmed. One of the characteristics of that individual style is that the person desires extensive amounts of information in making a decision. To incorporate that feature in a simulation, an integrative type of actor could be programmed to choose, ceteris paribus, an option that included an extensive information search over one that did not. Other individual characteristics that might be particularly salient for the NSSS simulation are interpersonal style (see Hermann and Hermann, 1978) and several variables incorporated in the operational codes (George, 1969).

CONCLUSION

This study has identified a set of factors that have a probable effect on the national security policies of the United States and whose effects under varying conditions have not been systematically compared. Not only does the organizational support system for presidential involvement in national security influence the substance and style of policy, but it also can be modified to some degree by the policy makers themselves. In fact, it is clearly the case that recent presidents and their principal advisers have elected to modify the support system from time to time. Because many of the other forces that impinge on the national security policies of the United States can be altered by policy makers only with great difficulty—if at all—those that can be changed, such as the organizational support system, deserve careful study.

Serious costs would obviously be incurred from experimenting too extensively with actual organizational support systems. Accordingly, this study has explored the feasibility of examining the effects of different organization configurations through the use of simulation. Our conclusion is that whereas no simulation model now exists that can be used in exactly its present form to explore the problem, at least one—and perhaps others—could be adapted to serve as constructive research tools. Indeed, we believe the production system simulation offers one quite promising model for representing interactions among the six sets of organizational variables that seem pivotal in any simulation of the national security system. The seven clusters of organizational variables we have introduced concern the organizational base for each major department or agency, the linkage between a secretary or director of a bureaucracy and his/her organizational base, the exchange of information between agencies, the degree to which options and support materials are coordinated between agencies, the functions of the Assistant to the President for National Security Affairs and his/her staff, the nature of the President's participation, and the functions played in the decision process.

In short, a scheme for conceptualizing the topic of national security organization has been offered. Variables capturing

types of situations or problems, dimensions of a problem, and core organizational variables have been included. A production system simulation approach has been explicated and advanced as a fruitful way to deal with these thorny but crucial issues of U.S. national security organization.

NOTES

1. Destler (1972) reviews eleven major public and private studies of the American foreign affairs machinery since World War II. To that list would have to be added several items prepared since Destler's book was published, including Allison and Szanton (1976) and the U.S. Commission on the Organization of the Government for the Conduct of Foreign Policy (the Murphy Commission) [1975].

2. Although it is clearly desirable to select organizational variables that one has reason to believe have an effect on policy when considered in isolation, it may not be possible to determine what that effect will be when a given variable interacts with others included in the simulation. Indeed one of the attractive features of a computer simulation is the opportunity it affords to explore complex interaction sequences that may produce unexpected results and, on some occasions, results that seem counterintuitive using a simpler mode of analysis.

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