

Decision theory in the study of national action: problems and a proposal

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A theoretical analysis of national decision-making and international influence in terms of decision theory has been made recently by several political scientists, including Singer (1963), Glenn Snyder (1960), and Russett (1963). In fact, theoretical analysis in the language of decision theory seems increasingly widespread among political scientists and other social scientists concerned with international affairs.

This paper discusses a number of difficulties in the use of decision theory for actual research on national decision-making. It also discusses a modification of the decision-theory approach which may make easier the actual measurement of theoretical variables relevant to decision-making.¹

The Use of Decision Theory to Study International Influence

First, let us look at the way in which decision theory has been used by students of

international relations. Conceptualization of the behavior of national decision-makers in terms of decision theory is expressed by Singer in the following words:

Having examined the varieties of influence situations, we should notice one other consideration prior to evaluating the range of techniques available to the influencer in these situations. This is the influencee's decisional calculus: the abstract dimensions upon which he (i.e., those individuals who, alone or together, act on behalf of the target nation) weighs a range of conceivable outcomes in any influence situation. For every outcome which any decision-maker can conceive of as possible, there are at least two such dimensions. The degree to which he likes or dislikes the prospect is called the *utility* or *disutility*, and the likelihood which he assigns to its ever occurring is called the *probability*. Both of these are, of course, subjective variables: preferences and predictions of the influencee.

In the abstract, the combined judgments which the influencee makes along both of these dimensions will determine his contingent expectations and thus his response to the influence attempt [1963, p. 424].

A widely used hypothesis of decision theory states that people will maximize their expected utility. Expected utility of action 1 is represented by the equation:

¹I am indebted to Jerald Bachman, Dorwin Cartwright, Ward Edwards, Clinton Fink, Bruce Russett, J. David Singer, and Glenn Snyder for helpful comments on earlier drafts of this paper. Of course, the author alone is responsible for the views presented.

$$EU_1 = (U_a \times P_a) + (U_b \times P_b) \dots + (U_n \times P_n)$$

where: EU = expected utility

U_a, U_b, \dots, U_n are the subjective utilities² of the possible outcomes (a, b, \dots, n) of action 1.

P_a, P_b, \dots, P_n are the subjective probabilities of each of the possible outcomes (a, b, \dots, n) occurring as a result of action 1.

According to the maximization hypothesis, a decision-maker will choose action 1 over action 2 when $EU_1 > EU_2$.

This "maximization of expected utility" principle has been used by Singer to account for national reactions to threats and to promises of reward.³ Glenn Snyder and Russett use this decision theory approach to analyze the success of attempts by one nation to deter aggression by another nation. These analyses have so far been of a discursive rather than an empirical type. While no one has (to my knowledge) actually attempted to measure specific utilities and probabilities in an international situation, several writers have used utility-probability notions as a general guide for their empirical work.⁴

Decision theory has an appealing theoretical elegance when applied to the discipline of international relations, which has lacked rigorous theory. Moreover, it seems intuitively to fit what we know about na-

tional decision-making fairly well. Presidents and premiers do sit down with their advisers and weigh alternatives, consider possible outcomes of action, implicitly or explicitly assign utilities to these outcomes, and try to assess the probabilities that various outcomes will follow a given action.

Yet there have been reservations and doubts raised about the usefulness of decision theory for understanding the actions of national decision-makers. Two major issues have been raised. The first concerns the question of how "rational" decision-makers actually are. The second concerns the operational problems of trying to measure the decision-makers' subjective utilities and subjective probabilities. As we shall see, these issues are interrelated.

The Question of Rationality in Decision-Making

Concerning the assumption of "rationality" in decision-making, some cautions come from the same political scientists who have made use of decision theory as a theoretical model. Singer suggests that under certain circumstances—e.g., under conditions of threat and anxiety—decision-makers may not act "rationally," i.e., will not try to maximize the product of utility and probability (Singer, 1963, pp. 428–30).

Glenn Snyder also acknowledges that national decision-makers may act "irrationally," noting that: "Irrationality may take the form either of failing to act in accordance with one's best estimate of costs, gains, and probabilities, or of faulty calculation of these factors in the light of the evidence available" (G. Snyder, 1960, p. 174).

The source of some of the "irrationality" of behavior is suggested in a comment by Morton Deutsch. In discussing the assumptions behind the theory of stable deterrence, he says: "Behavior, particularly in a time of high tension and crisis, is more likely to

² Since the term "utility" refers to subjective value, the term subjective utility is, strictly speaking, redundant. However, since the subjective nature of the variables is important for this discussion, it is hoped that the redundancy will be tolerated for the sake of greater clarity.

³ A number of different types of decision models have now been developed. For a review of these, see Edwards (1961).

⁴ See, for example, Alan Whiting's book on the Chinese decision to enter the Korean war (Whiting, 1960, p. ix).

be determined by anxiety, stereotypes, self-esteem defense maneuvers, and social conformity pressures, than by simple rational estimates of economic loss and gain" (Deutsch, 1961, p. 64).

A number of investigators have been explicitly concerned with whether people do in fact make choices "rationally"—i.e., in accord with the utility multiplied by the probability of each outcome. These investigators have noted the intrusion of personality and other "nonrational" factors. Brim and his associates (1962) studied choices made by parents among ways of handling child-raising problems (e.g., not doing homework; masturbation). They report that their subjects did generally choose in accordance with the "maximization of expected utility (utility \times probability)" hypothesis. However, certain subjects did not choose "rationally"—i.e., in accord with their indicated utilities and probabilities—in selecting a course of action for the masturbation problem. The authors suggest that this is because these people are more "emotional" about the masturbation problem. The Brim study also indicates some association—though not a powerful one—between "rationality" of choice and such personality factors as belief in the predictability of life. In addition, this study indicates that decisions made by groups are more likely to approximate the utility-probability model than are decisions made by individuals.

Scodel, Ratoosh, and Minas (1959) found in a laboratory study of gambling choices that people who differ in need for achievement and in fear of failure will choose different combinations of payoff and probability. For example, people with high need for achievement chose bets of intermediate probability (and moderate payoff) more of-

ten than did those with low need for achievement.

Further suggestion of the importance of "irrational" factors in choice behavior comes from the work of French and his associates. In analyzing coercive power, this group conceptualized the "induction force" exerted on an individual in terms of the "valence" of the punishment for nonconformity and in terms of the probability that punishment will follow conformity or nonconformity. They state that the strength of the coercive power (induction force) depends upon the magnitude of the negative valence of the threatened punishment multiplied by the perceived probability that the person can avoid the punishment by conformity (French and Raven, 1959, p. 157). Substitute the word "utility" for the word "valence"—a substitution which retains the essential meaning—and the formulation is now closely similar to that of decision theory. But for French and his co-workers, following Lewin, this is only half the story. The other half is the "resistance force." French and Raven state: "The direction of the resultant force on P will depend on the relative magnitude of the induced force set up by the act of O, and the resisting force in the opposite direction which is generated by that same act" (p. 152).

The nature of this resistance force is indicated by some of its operational measures—e.g., agreement or disagreement with statements like, "I thought the superior's evaluation was unfair" and "I resented the threat of being fired." In empirical studies of coercive power and of coercive power compared to reward power, French, Morrison, and Levinger (1960) and Zipf (1958) find resistance to be an important factor in reducing conformity to influence. But the concept of resistance stands outside the

valence-probability framework used to conceptualize the induction force. It therefore appears, in the work of French and his associates, to have the status of an interfering "irrational" factor.

Data on the use of threat, reported by Deutsch and Krauss (1962), seem closely related to the "resistance" phenomenon studied by French's group.

Now what are the implications of these data on "irrational" factors for the use of decision theory? It may be noted first that the term "rational" as applied to various influences on decision-making may be misleading. There is really nothing less sensible, or reasonable, about trying to increase one's sense of self-esteem, or to reduce one's feeling of anxiety, than there is about trying to increase the territorial size of one's country. In this respect both kinds of motivation are equally rational.

Secondly, it is not necessary that behavior be rational, in the sense of trying to maximize practical benefits, in order to be describable by the hypothesis that people tend to maximize expected utility. It is possible for the theorist to consider, for example, outcomes like personal prestige, satisfaction of revenge motives, self-respect, etc., in the same conceptual terms as the practical outcomes of a decision. Each of these nonpragmatic outcomes may have a certain subjective utility and a certain subjective probability of resulting from a given decision.

Consciousness of Utilities

There is, however, a very crucial difference between the nonpragmatic outcomes and the pragmatic ones. This difference is that the utility and the subjective probability of the nonpragmatic motives are often totally or partially unconscious. They are not calculated and considered in the same way that pragmatic outcomes are.

For example, in Zipf's experiment, the persons who had, in effect, to decide how hard to work undoubtedly considered quite consciously the value of the money rewards or fines and their probabilities. It is very doubtful if these subjects consciously considered the utility and probability of such outcomes as "hurting the boss," maintaining their own self-respect, and expressing their anger—i.e., the expected utility of "resistance." It is this difference in the conscious calculation of utilities and probabilities that is the important difference between what has been called the "rational" and the "irrational" in decision-making.

Those who have attempted to understand international events in terms of decision theory have recognized that decision-makers are interested in more than pragmatic gains like military and trade advantages. But they have limited their analysis to situations in which any nonpragmatic motives are considered in a deliberate and fully conscious manner. Thus Glenn Snyder writes:

... "rationality" may be defined as choosing to act in the manner which gives best promise of maximizing one's value position, on the basis of a sober calculation of potential gains and losses and the probabilities of enemy actions. This definition is broad enough to allow the inclusion of such 'emotional' values as honor, prestige, and revenge, as legitimate ends of policy. It may be perfectly rational, in other words, to be willing to accept some costs solely to satisfy such emotions; but if such emotions inhibit a clear-eyed view of the consequences of an act, they may lead to irrational behavior [1960, pp. 173-174].

It is clear from the phrase "sober calculation" in this passage and from many other passages in Snyder's article that, while nonpragmatic utilities can have a place in the analysis, this place is that of consciously calculated ends.

While Singer does not systematically consider the theoretical place of such utilities as honor, prestige, and revenge, he appears also to restrict his analysis to the conscious, problem-solving aspect of decision-making. Thus he sees a decision theory analysis as losing its applicability where the "problem-solving capacity" of the decision-maker is impaired, as under great stress.

Russett notes the possible importance to the defender of "intangible" values such as prestige and self-esteem, but states: "A defender's decision whether to pursue a 'firm' policy that risks war will depend upon his calculation of the value and probability of various outcomes" (p. 106). Again the nonpragmatic values are limited to the part which they play in conscious calculation.

While much of the decision-making of national leaders is undoubtedly based on conscious calculation of relevant factors, the experimental studies on decision-making cited above caution us not to overlook the role of less conscious factors. It is difficult to obtain direct evidence concerning the relative importance of conscious versus partly-conscious motives for national decision-makers. But it is not hard to imagine partly-conscious motives being important in some international situations.

Take, for example, the value of maintaining self-esteem which, on the basis of experimental evidence, Deutsch considers important in accounting for resistance to threat. A Khrushchev or a Johnson may coldly calculate the advantages to his nation's prestige, but does he really consciously assess the possible effects on his own self-esteem of a successful or unsuccessful move? And how about the potential effects of a foreign policy move on his own political fortunes? If he were suitably Machiavellian, he might indeed be able to

include this fully in his calculations. But will a Khrushchev or a Johnson or a de Gaulle fully admit to himself that he may be willing to take some gamble with the lives of his countrymen rather than face a serious political setback? It seems likely that such considerations of personal aggrandizement remain rather shadowy and semiconscious on the fringes of his mind. The point is not that the decision-maker is completely unaware of such motives. It is rather that, because such motives are less socially desirable than others, the decision-maker may not be aware of the magnitude of their importance to him. One could go on to make similar arguments about the at least partially unconscious role that other factors may play—such as personal anger, personal anxiety, and the need for achievement.

Partly-Conscious Motives and Decision Theory

If, in fact, partly-conscious motives may play an important part in some national decisions, can such motives be handled by a decision theory analysis? In terms of the applicability of decision theory, e.g., of the hypothesis that people tend to maximize expected utility—the answer is yes.

The presence of unconscious or partly-conscious motives does not make invalid the decision-theory hypothesis. As Friedman and Savage (1948) point out, it is no more necessary for the decision-maker to consciously maximize all relevant utilities and probabilities than it is for the expert billiard player to be aware of the mathematical equations which describe his choice of angles and speeds on the billiard table. In both cases, it is sufficient that the observer is able to account for the behavior in these theoretical terms—not that the actor himself be able to explain his behavior in those terms.

However, the presence of partly-conscious motives does present formidable difficulties for decision theory as a tool for research into and measurement of decision processes. These methodological difficulties introduced by the presence of partly-conscious motives complicate what are already serious practical difficulties of measuring subjective utility and subjective probability.

Problems of Research and Measurement Using Decision Theory

To illustrate the methodological problems attendant on use of decision theory, let us consider the circumstances surrounding Khrushchev's decision to break up the "summit conference" which met in Paris on May 16, 1960. The reader will recall that, shortly after a Khrushchev "goodwill" visit to the United States, the Soviets shot down a U-2 spy plane over Russian territory. This occurred on May 1, 1960. A frank and unusual admission by President Eisenhower that our planes were in fact flying over Russia for spying purposes brought a barrage of outraged attack on this US policy by the Russians. Khrushchev then went to Paris only long enough to demand an apology from President Eisenhower for the U-2 flights. Not obtaining such an apology, he left the conference and withdrew his country's invitation to President Eisenhower to visit the USSR. Such, in brief outline, are the well-known facts of the U-2 affair and its immediate aftermath.

Among the questions which may be asked about these events are the following: (1) Why did Khrushchev decide to precipitate a break-up of the long-awaited summit conference? (2) Could we have predicted what Khrushchev was likely to do, prior to his actual action in Paris?

Let us consider how one would approach these problems of explanation and predic-

tion using a decision theory (utility-probability) framework. Presumably the researcher could distinguish the most relevant outcomes of alternative actions in the situation—e.g., increased threat of war, Khrushchev retaining his hold on the Soviet government, embarrassment of Eisenhower, defending Soviet "honor," etc. One would then attempt to find out what the utility of each relevant outcome was to the decision-maker (Khrushchev) as well as his subjective probability that each possible outcome would follow a given course of action. Appropriate formulas which combined these utilities and probabilities would then tell us what move to expect Khrushchev to make.

How could we have known what Khrushchev's utilities and subjective probabilities were?⁵ At the time at which the decisions in question were being made, it is plain that those outside the Politburo could not obtain this information from Mr. Khrushchev himself. In fact, therefore, we could not have used the utility-probability approach to predict his action in advance of occurrence. This is a very serious practical deficiency of the decision theory approach. However, ten or twenty years later perhaps, one might gain access to relevant Russian government records, including what Khrushchev said at the crucial time. Perhaps one might also be able to obtain a fairly candid retrospective interview with Khrushchev and with other people who were involved in the decision-making meeting. Such a post-facto analysis of decision-making, though not using decision theory, has been made for such important decisions as the US decision to resist aggression in Korea (R. Snyder and Paige, 1958) and

⁵ For the sake of simplicity, this discussion assumes that it was Khrushchev and not a group of persons who made the crucial decisions. The actual historical facts may be somewhat different.

for the decisions of European leaders in the days just before World War I (e.g., Zinnes *et al.*, 1961).

However, even if one could get decision-makers to cooperate fully with the researchers, it is far from certain that one could find out from them the real subjective utilities of relevant outcomes. The reason is, as discussed previously, that the true utility of some outcomes may not be fully conscious.

To return again to the example of the U-2 affair, suppose that we had transcripts of everything Khrushchev said to his associates concerning the action he might take at the Paris summit conference. It is unlikely that he would have admitted that personal prestige had a high utility for him in the circumstances. It is still less likely that he would state that a desire to express his anger at Eisenhower, to "get even" with him for an alleged personal "doublecross," had a high utility for him. If such outcomes of breaking up the summit conference did have high utility for Khrushchev, this high utility—especially for the outcome of revenge—may not have been fully conscious or fully expressed to colleagues.

To adequately measure subjective utility and subjective probability we would have to make use of the more sophisticated methods which are beginning to be developed for this purpose (e.g., Davidson and Suppes, 1957; Suppes and Walsh, 1959). The effort to measure utility has usually involved some procedure whereby persons choose between different options. For example, in the notable Davidson and Suppes approach to utility measurement, the situation faced by the subject may be diagrammed as follows:

	Option 1	Option 2
$p = 0.5$	x	u
$p = 0.5$	y	v

The entries in the table (x, y, u, v) represent possible outcomes. If the subject chooses Option 1, he has an even chance of getting either x or y . If he chooses Option 2, he has an even chance of getting u or v . Davidson and Suppes demonstrate that where the subject is indifferent between the two options, i.e., chooses each 50 percent of the time, then the difference in utility between x and v is equal to the difference in utility between y and u .

In their empirical studies, Davidson and Suppes had subjects choose between options which involved different sums of money and different classical phonograph records. Using the utility values obtained by this method, along with measured subjective probability values, the authors are fairly successful in predicting further choice behavior. Evidently, then, their measurement of the utility of simple outcomes in laboratory situations is reasonably good.

Now suppose we wanted to use this general method to assess the relative utility to Khrushchev of various outcomes, such as personal political failure and war, at the time of the 1960 summit conference. We might wish to present him with options of the following kind:

	Option 1 Go ahead with summit	Option 2 Break up summit
$p = 0.5$	No change in personal position now; no war within 10 years.	Personal success now; war within 10 years.
$p = 0.5$	Personal failure now; no war within 10 years.	No change in personal position now; no war within 10 years.

By getting Khrushchev to make meaningful choice among a series of such options, we might theoretically be able to obtain reasonably good measures of the relative utility to him of various outcomes.

There are, however, a number of obvious problems in obtaining such choices. First, one would hardly expect to get Khrushchev to submit to such testing during the time period that the options are most meaningful (i.e., prior to the summit conference). But even if one could, the choice between options such as illustrated would be hypothetical and not real. This is because the real outcomes among which Khrushchev chooses contain many additional sub-outcomes, each having its own utility. For example, wrecking the summit conference might not only risk war; it might also help maintain Khrushchev's leadership in Russia, keep the Chinese in check, embarrass Eisenhower, etc. When presented with the necessarily simplified and hypothetical options shown above, Khrushchev might not express his real preference. To admit that he really preferred Option 2 would be to admit that he gives greater weight to personal success than to the lives of millions of his countrymen. This would be a difficult admission to make even to himself. Similar problems of the candidness of preference would apply if Khrushchev were retrospectively choosing among these options ten years after the event.

In short, because of the practical difficulties both of data collection and of the partly-conscious nature of some motives, it would be exceedingly difficult to measure the subjective utilities which help determine actual national decisions—either before such decisions are made or afterward. If this is true, it may help explain why, despite the popularity of decision theory ideas, no serious attempts have been made to apply the utility-maximization principle to the study of actual decisions.

A Possible Alternative Approach to Decision-Making

It may be that the motivational theory

proposed by Atkinson⁶—one which is in many ways similar to decision theory—provides a more useful theoretical guide to research in this area. Atkinson has proposed and offered some experimental evidence (Atkinson, 1957, 1958) in support of the proposition that:

Aroused motive to perform act $X = f(\text{Motivational disposition} \times \text{Incentive} \times \text{Expectancy})$

Motivational disposition represents a relatively permanent disposition (personality trait) to value incentives (rewards or punishments) of a certain kind.

Incentive is the magnitude of the specific reward or potential satisfaction offered should the expected consequence of act X occur. Incentives vary in the extent to which they satisfy a particular motivational disposition.

Expectancy is indicated by the probability that the performance of act X will have a certain consequence.

(In his most recent work, Atkinson [1964, p. 279] discussed the need to add a Habit variable to the motivational equation. Habit is concerned with such things as whether the response is one which the person has performed frequently, and which therefore has prominence in his repertoire.)

The key difference between this formulation and that of decision theory is that the "utility" term of decision theory is split into two parts. One part, motivational disposition, is concerned with enduring needs and values of the actor; the other part, incentive, is concerned with aspects of the environment which are relevant to satisfying these needs or values. $\text{Motivational disposition} \times \text{Incentive} = \text{Utility}$ (Atkinson, 1961). Both theoretical models treat the factor of probability (or expectancy) in similar fashion.

⁶ Atkinson's theoretical model is in the mainstream of psychological work, having strong similarities and explicit connections to the work of Lewin, Tolman, and Rotter, as well as to decision theory.

Now in what ways does this modification help in solving the research and measurement problems which we have discussed? It may be useful first to see how we could use the $M \times I \times E$ model to understand our illustration—Khrushchev's decision to precipitate a breakup of the summit conference. The theory directs our attention away from the wholly subjective variables of Khrushchev's utilities to more situationally-based variables—the incentives facing him. We would therefore attempt to assess the *situation* faced by Khrushchev in terms of the incentives and probabilities existing for him.

Assessing Incentives and Probabilities

The variables of incentive and probability in the Atkinson formula are not wholly objective. It is the actor's perception of the incentives and probabilities which will determine his behavior. Nevertheless, it may be possible to handle this problem in an adequate way without getting involved in the difficulties associated with trying to obtain subjective data. A possible solution is to analyze the situation in terms of the information which is available to the decision-maker. Thus, in trying to predict Khrushchev's action at the 1960 summit, we would attempt to determine what information is available to him concerning matters such as the likely US response to various actions; the likely Chinese response to various actions; the likely response of "world opinion," etc. What concessions concerning Berlin has the US indicated it will agree to, or not agree to, if the summit meets? What have the Chinese said in their government publications about how they would interpret a Russian meeting with Eisenhower in the face of the U-2 affair? Whom are the governments of neutral

countries blaming for the possible collapse of the summit talks?

Not all of the information available to Khrushchev was available to us at the time of his decision to break up the summit conference, and some of it may never be known to us. For example, we do not know what other members of the Soviet Politburo may have told him about the probable domestic repercussions of going ahead with the summit. However, the US government did know at the time a great deal about the situation faced by Khrushchev and the information available to him. We knew the contents of the diplomatic exchanges between Washington and Moscow and between the other Western capitals and Moscow. We knew that the Chinese press was opposing Russian-Western accommodation; that an international conference of Communist parties, at which Russia would try to maintain her control over the world Communist movement, was to meet soon; that the leaders and press of "neutral" nations were urging on Khrushchev a certain course; from ambassadors and intelligence sources, we may even have known something of what was going on behind the scenes in the Kremlin. On the basis of this objective, even though incomplete, information about the situation as it impinged on Khrushchev, we could have attempted systematically to assess the incentives and probabilities which accompanied each of several courses of action open to him. We could also have assessed the "availability" of various response patterns on the basis of Khrushchev's previous behavior.

This proposed research strategy is similar in some ways to that proposed by Fink. After expressing some doubt about the current feasibility of measuring subjective factors, Fink says:

One approach which does not depend so directly on the motivational model starts with the postulate that the behavioral outcome of the deterrence situation is determined by the total pattern of communicative influence attempts (threats, promises, and suasion) directed at A's decision-makers after A threatened to attack P. It can be assumed that some of these messages will be favorable to the attack, and that others will oppose it; it can also be assumed that some countries will not attempt to influence A in a particular case, thus by default communicating permissiveness. It can also be assumed that the impact of each message will be a function of the power of its sender; thus each message can be weighted according to some index of the sender's power, and a weighted sum of favorable, unfavorable, and permissive messages can be obtained. A's response can be predicted from the ratio of the total strength of unfavorable messages to the total strength of favorable messages, perhaps modified by the total amount of permissiveness present in the situation. The link between these factors and the motivational model is contained in the assumption that M_0 [A's motive *not* to attack P] is positively correlated with the total strength of unfavorable messages, and that M_1 [A's motive to attack P] is increased by the occurrence of favorable messages and perhaps by the presence of permissiveness [Fink, 1965, p. 64].

The present proposal is similar to that of Fink in suggesting the possible advantages of relatively objective data. It differs from Fink's in proposing that all objective information confronting the decision-maker (direct messages plus other information) be considered and that these be analyzed in terms of incentives and probabilities relevant to different actions, rather than in terms of favorableness or unfavorableness toward those actions. This type of analysis, while probably more difficult than what Fink suggests, has the advantage of being directly connected to a motivational theory.

Assessing Motivational Dispositions

A further important methodological problem in using the Atkinson theoretical ap-

proach is that of measuring the motivational dispositions of the decision-maker. How strong was Khrushchev's motive for personal political tenure, as compared to his motive to avoid war, or to "get even" with Eisenhower? The incentives and probabilities which we might isolate from situational information have greatest meaning in relation to these and other motives.

The problems of getting good motivational measures—especially for noncaptive subjects—are very great. Yet it may prove possible to get such measures on the basis of objective information. One approach is to analyze projectively verbal materials—such as informal interviews, speeches, articles, letters, etc. A second, and perhaps more promising, method is to analyze conditions of reward and punishment in a person's past history which are known to contribute to various motives. For example, we might be able to assess the strength of Khrushchev's motivation to avoid war on the basis of our knowledge of his past experience with war. Did he suffer personally in the past wars? Did he lose a son? Did he witness horrible scenes? His motivation for personal success and achievement might be assessed from knowledge of the learning conditions of his own childhood, if such information is available; or if it is not, one could rely on knowledge of the child-raising practices of the Ukrainian peasant society from which he came.⁷

One can attempt to validate measures of motives obtained by such indirect methods against more direct measures like question-

⁷ Jerald Bachman has pointed out to the author that if the researcher could measure incentives and probabilities existing for the decision-maker in a number of past choice situations, he could then infer from actual choices made (and the $M \times I \times E$ formula) what the strength of the motivational dispositions were.

naire responses or behavioral choices.⁸ Thus, using subjects like college sophomores, one might attempt to validate an indirect measure of strength of motivation for personal success, derived from analysis of past learning conditions, against more direct questionnaire, projective, and behavioral data. Such an indirect and validated motivational measure could then be applied to the assessment of actual world leaders like Khrushchev. It may be noted that validation of objective measures of utility appear to be less feasible. Whereas motivational dispositions (e.g., to achieve, to express anger) are usually of a fairly general nature and relevant to most people, utilities are concerned with outcomes specific to given individuals. Since the utilities with which Khrushchev might have been concerned (e.g., keeping control of the world Communist movement) were specific to his own life situation, measures of these could not be validated with data obtained from other people.

Laboratory and Simulation Studies

In addition to its advantages over decision theory for measurement in practical situations, use of the Atkinson $M \times I \times E$ model appears to offer some strategic advantages for laboratory studies. One advantage is that one is led to study separately the effect on decision-making of systematic variations in situational rewards and punishment (incentives) and of internalized motives and values (motivational dispositions). A decision theory model, by encompassing both motive and incentive in the concept of utility, directs our attention away from separate consideration of situational and personal factors.

⁸ That childhood learning conditions may be clearly related to adult motives is demonstrated by work on the achievement motive (see McClelland *et al.*, 1953).

In this context, the $M \times I \times E$ model seems more appropriate for the exciting new work on simulation of international relations. Simulation may prove useful for understanding the behavior of national decision-makers and even for predicting such behavior in advance. A major theoretical and methodological problem in much simulation work is to "match" the simulation participants with real national decision-makers (e.g., Hermann and Hermann, 1962). Such a matching on motivational dispositions fits smoothly into the $M \times I \times E$ theoretical framework, but is not explicitly taken into account in a utility-probability framework. Furthermore, for simulation to be a valid method of understanding the real world, "essential" features of the real world must be represented in the simulation. The $M \times I \times E$ theoretical approach provides a possible theoretical rationale for isolating these essential features—i.e., in terms of the incentives and probabilities in the situation. It may prove useful to conceptualize the situation in terms of these variables, thus linking our conceptualization of the situation directly to a motivational theory.

Summary and Conclusions

This paper has considered problems in the use of decision theory as a theoretical tool for predicting and explaining the behavior of national decision-makers.

First, some evidence indicating the possible importance of nonpragmatic, so-called "irrational" factors in decision-making was reviewed. The significance of the unconscious or partly-conscious nature of many nonpragmatic motives was indicated. It was pointed out that writers who use decision theory to explain national decision-making have tended not to take account of utilities which are not deliberately considered and weighed by the decision-maker.

It was argued that while decision theory could incorporate partly-conscious motives into its theoretical framework, there are formidable operational problems of measuring partly-conscious utilities. These measurement problems complicate already serious operational problems encountered by a decision theory analysis—problems of gaining access to the data required to assess the subjective variables of utility and probability.

An alternative, though similar, analytic approach was proposed which makes use of Atkinson's theory of motivation. The variables of motivational disposition, incentive, and expectancy in this theory are also ultimately subjective variables. However, it was argued that they are easier to estimate by objective methods than is the variable of utility. Other advantages of the research strategy proposed are that it enables us to analyze separately the effects of situational and personal variables and that it may be of more help in simulation studies.

What has been proposed is a rather general research strategy. To test its effectiveness, considerable work would have to be done on some of the operational problems mentioned—especially the assessment of incentives, probabilities, and motivational dispositions from objective data. It may turn out that the measurement problems using such a theory are also too great for this approach to be of practical use. Or further work may reveal the need for revision of the theory or use of a better theory. However, it appears that work in this general direction—of using theories whose variables appear fairly susceptible to measurement and of separating situational from subjective factors—promises greater eventual payoff in explanation and prediction

than does the decision theory approach which is currently so popular.

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