

Contributions of Behavioural Decision Theory to Research in Political Science

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Cet article aborde la question de l'application de la Théorie de la Décision Comportementale (BDT) à deux domaines de la recherche en Sciences-Politiques, le comportement électoral et les relations internationales. On commence par un bref survol de la BDT, puis on passe à ce qui n'est maintenant que l'amorce de l'exploitation de la BDT dans les Sciences-Politiques. Dans le premier exemple, notre intérêt est focalisé sur les décisions prises par le public et dans le second sur celles prises par les élites politiques, mais la distinction masse-élite peut se révéler secondaire par rapport aux situations dans lesquelles émergent les décisions électorales ou de politique étrangère. Dans la présentation de ces deux exemples, on tente de replacer l'investigation reposant sur les aperçus de la BDT dans le contexte plus vaste de la recherche dans ce secteur.

This paper discusses the application of behavioural decision theory (BDT) to two areas of political science research: voting behaviour and international relations. We begin with a brief overview of BDT, and then turn to what is now only the beginnings of the utilisation of BDT in political science. In the first instance we focus on decision making by the mass public, and in the second on decision making by political elites, but, as we shall see, the mass-élite distinction may not be as important as the different situations or contexts in which voting and foreign policy decisions are typically made. In both instances, we will try to put research relying on the insights of behavioural decision theory into a broader context of research in the field.

INTRODUCTION

If much of what we would call "political" behaviour is the result of explicit decision-making processes, it is only natural that the social science that directly studies how decisions are made should have important insights for political science. It is somewhat surprising, therefore, that *behavioural*

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decision theory (BDT) is only beginning to influence research in political psychology. Consequently any statements that we can make about the contributions of behavioural decision theory to political science must be preliminary at best.

This article begins with a brief overview of behavioural decision theory, after which we review recent contributions of this approach to the study of voting behaviour and international relations. In the first instance we focus on decision making by the mass public, and in the second on decision making by political elites, but, as we will see, the mass–elite distinction may not be as important as the different situations or contexts in which voting and foreign policy decisions are typically made.

BEHAVIOURAL DECISION THEORY

Until a few decades ago, the study of decision making was limited almost entirely to economists, statisticians, and philosophers who developed chiefly normative models of how decisions ought to be made. According to the normative model, decision makers should carefully define the problem and clarify their own preferences, gather as much information as possible (given time constraints) about alternative courses of action, consider the possible consequences of each alternative and their relative probabilities of occurrence, evaluate those consequences in terms of their underlying preferences, and choose among the alternatives according to some value-maximising decision rule that takes into account value trade-offs among their different goals (Luce & Raiffa, 1957; von Neumann & Morgenstern, 1944).

With this normative model as a benchmark, scores of studies in the diverse fields of decision making have recognised that most decisions, whether mundane or earthshaking, fall short of the prescriptive ideal in a number of ways. People do not make optimal use of available information; they do not follow the guidelines of statistical theory in responding to uncertainties and probabilities; they do not always make reasonable trade-offs among conflicting values; and they do not always follow value-maximising decision rules (Edwards, 1954; Simon, 1978).

These experimental and empirical findings have led to the development of the field of behavioural decision theory, or the study of how people actually make decisions. Even a cursory review of this broad interdisciplinary field is well beyond the scope of this article (but see Einhorn & Hogarth, 1981; Slovic, Fischhoff, & Lichtenstein, 1977), and here we can only touch on a few major themes of the research in this area.

One basic theme in behavioural decision theory is that humans are *cognitively limited information processors* (Simon, 1978). People lack both the knowledge and computational skills that are necessary to achieve the

degree of rationality prescribed by normative models of choice. Instead, people develop a number of cognitive “heuristics” or shortcuts that allow them to act and make decisions that are generally quite reasonable despite their own cognitive limitations (e.g. Kahneman, Slovic, & Tversky, 1982; Tversky & Kahneman, 1974). Human behaviour is still purposeful, but it is characterised by “bounded rationality” rather than the ideal-type rationality postulated by economic theories of decision making (Simon, 1955).

Departures from normative models of choice do not imply, however, that human behaviour is random or otherwise unpredictable (Jacoby et al., 1987). On the contrary, people select information about alternatives and combine it into choices in systematic ways (cf. Billings & Marcus, 1983; Hogarth, 1987). That is, departures from normative models of choice tend to be systematic and predictable and consequently a subject about which one can theorise. This has led to a second major concern of research in BDT—the attempt to understand the decision processes that cause these systematic deviations from the normative model, and to evaluate the relative effectiveness of various cognitive heuristics relative to normative standards.

A third major theme of research in behavioural decision theory is that decision making is context-specific. It is highly contingent on such factors as the complexity of the decision, the nature and structure of information, the expertise of the decision maker, the amount of time available and incentives for careful information processing, and so on (Beach & Mitchell, 1978). This suggests that theories of decision making must be concerned not only with general behavioural patterns but also with the specific contexts within which choices are made.

The highly contingent nature of decision making must be kept in mind as we turn to applications of BDT to research in voting behaviour and international relations, because the types of decisions faced by decision makers in these two fields are typically quite different. For example, the vote decision is what Abelson and Levi (1985) would call a “well-defined” problem: the alternatives are predetermined, clear, and limited in number; the alternatives (the candidates) typically go to great lengths to let decision makers (voters) know what they are doing and thinking; and the time when a decision must be made is clear. To be sure, the mass public vary widely in their political expertise and thus in their ability to process political information; moreover incentives for careful attention to the decision problem are generally quite low.

Decision makers in international relations, on the other hand, typically deal with what could be called “ill-defined” or “ill-structured” problems (Voss & Post, 1988). Alternative courses of action are not predetermined but must be identified and constructed by the decision maker. The number of alternatives is larger than in voting behaviour, and there is enormous uncertainty regarding the likely consequences of each of these alternatives.

The preferences and intentions of other actors are inherently difficult to assess, and this is compounded by others' attempts to conceal those intentions and in fact to deliberately manipulate others' perceptions of them (Jervis, 1970). Decision makers are typically elites, however, relatively expert in the field, and incentives for careful deliberation in the process of judgement and choice are usually quite strong.

As we shall see, these differences influence the way decision makers typically make decisions in these two areas. For current purposes, however, a more important point is that these differences also influence the theories and research strategies adopted by political psychologists studying decision making in the two fields.

VOTING BEHAVIOUR

Although the subfield of "voting behaviour" certainly covers far more than the vote decision, here we will restrict our attention to that one type of voting behaviour and this one type of political decision. The study of the vote decision in the United States has been dominated by two major (and often competing) approaches, the "social psychological" approach associated with the University of Michigan and *The American voter* (Campbell, Converse, Miller, & Stokes, 1960), and the "economic/rational choice" approach associated with the University of Rochester and *An economic theory of democracy* (Downs, 1957).

The economic or rational choice approach assumes that both voters and candidates actively choose (i.e. vote; take a stand on a policy issue, etc.) among a set of alternatives on the basis of a rational calculation of self-interest (Downs, 1957; Enelow & Hinich, 1984). Voter's preferences are assumed to be known and fixed during the choice process, and voters are hypothesised to choose among candidates on the basis of the "distance" between those preferences and the stands or "attributes" of the candidates in a value-maximising manner. Where those preferences come from is beyond the scope of the theory, and admittedly must be somewhere in the voter's background; but the focus of the rational choice approach is on the here and now, on the alternatives before the voter *in this election*. When uncertainty about outcomes or the attributes associated with alternatives is thrown into the equation, rational choice theories of voting fall squarely under the more general rubric of *expected-utility theory* (von Neumann & Morgenstern, 1944). As such, the theories have strong normative components; and they share the same strengths and weaknesses of economic theories of decision making.

In contrast, the social psychological or Michigan approach holds that party identification, learned early in life on the basis of simple reinforcements from the family, has the most important influence on the

vote decision. Party ID not only affects the vote choice directly (for those people who do not have the time or interest to consider anything else), but also indirectly, in that it acts as a “perceptual shield” to bias perceptions of more proximal influences on the vote decision, like the candidates involved and their issue stands. Although party is widely recognised as declining in importance in American elections as a newer, “candidate-centred” politics begins to predominate (Nie, Verba, & Petrocik, 1976; Wattenberg, 1991), the general Lewinian framework laid out in *The American voter* still guides much empirical research on voting behaviour (see Kinder & Sears, 1985, pp.682–692, for a review). From the perspective of the social psychological approach, the most important influences on the vote decision are group-based (granted a relatively stable party system), and historical in nature rather than contemporaneous with a given election campaign. To be sure, voters are assumed to select the most highly evaluated candidate, but the gist of the model is party ID, and party ID comes from the past—from the voter’s social locations.

Psychological Criticisms of the Two Major Paradigms

In part because its underlying premises are quite different—economic rather than psychological—and in part because its adherents occasionally claim superiority (e.g. Riker & Ordeshook, 1973), psychologists have been far more critical of the Rochester approach than the Michigan approach. Typical criticisms focus on the assumption of “complete information” about alternatives, and on unrealistic cognitive demands that the presumed algorithms for calculating candidate preferences make on the human mind (Hastie, 1986; Lau, 1990). These criticisms are based on a literature in cognitive psychology delimiting the capabilities of human memory (e.g. Simon, 1979) and the way in which those cognitive limitations are reflected in the processing of social information (Fiske & Taylor, 1991; Lau & Sears, 1986).

Another set of challenges questions the assumptions that voters’ preferences are fixed throughout the processes of choice, that voters have transitive preferences over candidates, and that preferences between two alternatives cannot depend on minor variations in how those alternatives are presented or on the introduction of a third alternative (*procedural invariance*).

Experimental research has found that these assumptions are frequently violated by the behaviour of actual decision makers (Grether & Plott, 1979; Lichtenstein & Slovic, 1971). The best known instance of these violations of assumptions of utility theory are the effects of the “framing” of alternatives on preferences (Tversky & Kahneman, 1981, 1986). For example, Quattrone

and Tversky (1988) asked subjects to choose between two alternative economic policies that had differential effects on jobs and inflation. The effects of the policies on jobs were described either in terms of employment rates or unemployment rates. Nonetheless this simple manipulation caused a dramatic shift in preference between the two competing proposals—a clear violation of procedural invariance.

Stroh and Moskowitz (1992) replicated these results in an experiment about candidate choice in a hypothetical senate election by manipulating how information about the two candidates was displayed: in a comparative format (side-by-side, on the same page) or an individual format (information about one candidate first, an intervening task, then information about the second candidate). The display manipulation interacted with candidate factors, again illustrating that minor variations in how information is presented dramatically affect preferences among alternatives. These framing effects are a central component of prospect theory, which we examine later in this paper.

The social psychological model does not have the formal structure of the rational choice paradigm that simultaneously provides its deductive power and makes it psychologically (or behaviourally) unrealistic as a description of how decisions are actually made. But when researchers from the Michigan paradigm attempt to model the vote decision they too are drawn into making unrealistic assumptions about how decisions are actually made (e.g. Markus & Converse, 1979; Miller, Miller, Raine, & Brown, 1976). More specifically, all existing political science models of the vote decision, including those based on the social psychological approach) assume a *compensatory* decision process (Lau, 1995). That is, positive aspects about a particular candidate (or policy) are assumed to compensate for negative aspects of that candidate (or policy), thereby leading the voter into a series of difficult “value trade-offs” when making the vote decision.

However, there is a very large literature in behavioural decision theory which suggests that human decision makers do everything they can to avoid making value trade-offs. For example, decision makers “satisfice” (by adopting a sequential search process and selecting the first alternative that is “good enough”) rather than optimise (Simon, 1976). They also adopt noncompensatory decision rules that eliminate difficult value trade-offs (Axelrod, 1976; Beach & Mitchell, 1978), a tendency that is also widely recognised in the decision making literature in international relations (Jervis, 1976; Steinbruner, 1974). For example, one common noncompensatory decision strategy is “elimination by aspects” (Tversky, 1972), where alternatives are eliminated from consideration on the basis of a single criterion without regard to other criteria. The failure to make value trade-offs may ease the burdens of choice but can lead to suboptimal decisions.

Process Tracing Studies of the Vote Decision

The disparity between what political science models of the vote decision *assume* voters do and what behavioural decision theory research *finds* that decision makers do, has led Lau and Redlawsk to adopt *process tracing models* to studying political campaigns (Lau, 1995; Lau & Redlawsk, 1992). Process tracing models record the information acquisition patterns of decision makers, which in turn can be used to infer the decision or choice strategies by which the decisions are actually made.

One of the most popular process tracing methodologies, “information boards” (Payne, 1976), presents decision makers with a matrix of information about m different attributes associated with n different alternatives or brands. The actual information must be physically “accessed” (by turning over a note card on a bulletin board or clicking a mouse on a computer screen) which allows a record of the *content* of information accessed and the order in which it is accessed. Although this technique provides a good analogue to consumers selecting between different brands of a product on a supermarket shelf, Lau and Redlawsk (1992) argue that it is a poor analogue for a political campaign, where information about candidates is neither uniformly easy to access nor always available whenever a decision maker would like it.

As an alternative, Lau and Redlawsk developed a “dynamic” information board in which a variety of different types of information (the m attributes) about six candidates (the n alternatives) scroll down a computer screen to simulate the ongoing nature of political campaigns. Only a small subset of the total information is available at any given time, and different types of information are more or less difficult to obtain (i.e. the odds of their ever appearing on the screen vary). These researchers present preliminary support for a model of political decision making in which “task demands” (the difficulty of the decision task itself) and expertise influence information acquisition patterns and actual decision strategies, which in turn affect the normative quality of the decision that is reached. Lau (1995) notes, however, that while compensatory decision rules may be preferable normatively, and may in fact contribute to “better” decisions, they are rarely possible in actual political campaigns and only irregularly adopted even when they are available.

Taber and Steenbergen (1995) have gone so far as to try to simulate the decision strategies assumed by nine different political science and psychological models of decision making by developing what they call a “computational process tracing” methodology. Taber and Steenbergen began by writing computational algorithms of how different models of decision making assume the vote choice is actually made. Then a group of subjects were asked to learn about two hypothetical congressmen, and to

select the one they would “vote for” if they were eligible. The amount of information available about the two candidates (10 or 28 distinct bits of information) was varied between subjects. The values or preferences of the subjects had been previously recorded, and these preferences were used as inputs for the different computational algorithms. The results indicated, first, that all of the decision rules did a fairly good job in predicting actual candidate choices. (Compensatory rules did significantly better than noncompensatory rules in predicting *evaluations* of individual candidates, however.) Second, there was a tendency for the computationally more complex decision rules to do less well when the decision task itself was more difficult (the high information condition). The obvious inference is that subjects were more likely to use simpler decision rules when the task was complex. Third, although simple decision rules predicted equally well for politically sophisticated and unsophisticated subjects, the complex decision rules tended to predict the actual choices of sophisticated subjects better than the choices of unsophisticated subjects.

Needed: A New Model of Voting Behaviour

Taken together, the various challenges to the conventional models of the vote choice point to the need for a new type of model of the vote decision, one based on a view of limited human cognitive abilities and largely heuristic-based decision making. No such model exists yet (although Popkin, 1991, makes a start), but we can briefly sketch out what such a model would look like. The “next generation” of voting models will document the cognitive shortcuts that people use to gather information (see various chapters in Ferejohn & Kuklinski, 1990; Lau & Redlawsk, 1992) and make inferences about candidates and their policies (Conover & Feldmann, 1986, 1989). These newer models must then focus on the decision rules by which voters combine the information they have gathered and the inferences they have made into a candidate choice using (to borrow a term coined by Popkin) *low information rationality*.

These new models must also consider how information about the candidates (the input for the vote decision) is *structured* by the media (e.g. Kern & Just, 1994; Neuman, Just, & Crigler, 1992), and how such information structures influence the type of heuristics and decision strategies employed to make choices. And they should also more explicitly incorporate notions of uncertainty into the vote calculus. Voting behaviour involves uncertainty not only because the attributes of the alternatives (i.e. the candidates’ policy stands) are often ambiguous, but also because the future success of those policies is often impossible to predict.

Although uncertainty is undoubtedly important in voting decisions, it is probably even more important in foreign policy decisions, and international-

relations scholars have begun to be much more explicit about incorporating uncertainty into their models of decision making in international relations, the topic to which we now turn.

INTERNATIONAL RELATIONS

Whereas the field of voting behaviour has a much older history of borrowing explicitly from psychology, it is only in the last two decades that the international relations field has systematically begun to utilise some of the concepts and methods of social psychology to construct more explicit and rigorous psychological models of foreign policy decision-making and strategic interaction. One can now find many attempts to incorporate cognitive dissonance theory, attribution theories, information-processing theories, motivational models, and learning models into explanations of foreign policy in general and crisis decision-making in particular (e.g. George, 1969; Holsti, 1972).

Although a variety of psychological models have been applied to international relations, one that has recently begun to attract particular attention among international relations scholars is prospect theory (Kahneman & Tversky, 1979). This increased attention is due in part to the facts that expected-utility and game-theoretic models have become increasingly popular in the study of international conflict (Buono de Mesquita, 1981; Buono de Mesquita & Lalman, 1992), that prospect theory is one of the leading alternatives to expected utility as a theory of choice under conditions of risk, and that many of the individual-level findings on which prospect theory is based (such as loss-aversion) seem to resonate in the world of international behaviour.

Summary of Prospect Theory

Prospect theory was developed in response to observed behavioural violations of normative theories of choice based on expected-utility theory. Kahneman and Tversky (1979) demonstrate these empirical anomalies in a series of laboratory experiments involving risky choice. Some of their key findings (also summarised by Tversky & Kahneman, 1986, and Levy, 1992) are as follows.

First, people are generally more sensitive to gains and losses from a *reference point* (often the status quo but possibly some other *aspiration level*) than to net asset levels, contrary to expected-utility theory. Second, people treat losses differently than they do gains in two respects. They are generally risk-averse with respect to gains but risk-acceptant with respect to losses. There is also a tendency to give more weight to losses than to equivalent gains, which is known as *loss aversion*. There is a related tendency (the *endowment effect*) to over-evaluate goods that one currently possesses

relative to those that one does not, and consequently to demand more compensation to give up a good than one is willing to pay to acquire it in the first place. The endowment effect helps to explain the well-known “incumbency bias” in the outcomes of Congressional elections.

People have a tendency to *accommodate* to gains much more quickly than they do to losses. This implies that after making gains people will be risk-acceptant in an effort to maintain those gains against possible losses, whereas after suffering losses they will be risk-acceptant in an effort to recover these losses and return to the status quo. Because of these asymmetries in behaviour with respect to gains and losses, a critical issue is how people *frame* a choice problem by identifying the reference point. Whether people define a problem in terms of a loss or a foregone gain, for example, can be quite consequential. Although many choice problems are clear-cut, others are much more “ill-structured” and subjective and consequently leave much more leeway for individual framing effects. Finally, people tend to respond to probabilities in a non-linear fashion, contrary to expected-utility theory: people tend to overweight outcomes that are certain relative to outcomes that are merely probable (the *certainty effect*), and to overweight small probabilities relative to moderate and high probabilities.

Prospect theory incorporates these behavioural patterns into an alternative theory of risky choice. After identifying the basic parameters of a choice problem, an individual assesses the value of each option (or prospect) in terms of the product of an S-shaped *value function* (which is concave above the reference point, convex below it, and steeper for losses than for gains) and a *probability-weighting function*. Prospect theory helps to explain some puzzling patterns of behaviour which are not fully consistent with expected utility theory. It has been applied to gambling, insurance, consumer economics, and investment behaviour and it also has some interesting implications for foreign policy and international relations (and potentially for voting behaviour and other aspects of domestic political behaviour as well), to which we now turn.

Implications of Prospect Theory for International Relations

Because of loss-aversion, the endowment effect, and the tendency to frame many choice problems in terms of the status quo, losses incurred in leaving the status quo are overweighted relative to otherwise equivalent gains, which results in a *status-quo bias* (Samuelson & Zeckhauser, 1988). This bias may explain why states seem to make greater efforts to preserve the status quo against a threatened loss than to improve their position by a comparable amount—why they may fight to defend a certain territory which they would

not have fought to acquire, for example. For similar reasons states are often more concerned about preventing a decline in their credibility than about enhancing it, about avoiding falling dominoes than about securing new allies, although there may be explanations of these patterns that do not involve loss aversion (Jervis, 1989).

The status-quo bias also helps to explain frequent deadlocks in negotiation and bargaining. If individuals (or states) treat the concessions they offer as losses and those that they receive from the other party as gains, they may overvalue the former relative to the latter. The result is a "concession aversion" (Kahneman, Knetsch, & Thaler, 1990, p.1345) and a greater willingness of actors to risk the negative consequences of non-agreement (which might include a strike in labour-management negotiations or an escalating crisis or war in international relations) in an attempt to avoid losses.

The status-quo bias may help to reinforce stability in international relations, particularly under conditions that are relatively static. When conditions are changing, however, framing and loss aversion may produce the opposite result. A state facing deteriorating conditions might be willing to resort to highly risk-acceptant behaviour (that is, more risky than prescribed by a standard cost-benefit analysis based on expected value) in an attempt to avoid further losses. A state might be more inclined to undertake risky military action if the expected result of inaction is an almost certain loss, as plausibly illustrated by Japan in the face of a painful oil embargo in 1941 and by Iraq in the context of serious economic problems in 1990. A state declining in strength relative to its adversary might be more inclined to undertake a preventive war now rather than to accept the consequences of declining influence and a possible war under less favourable circumstances later, as illustrated by both Germany and Austria-Hungary in 1914 (Levy, 1987). Similarly, the temptation for political elites (particularly those seeking re-election) to embark on external military adventures in order to bolster their domestic political support may be enhanced by risk-seeking tendencies under deteriorating domestic conditions, as illustrated by the Argentine junta in the Falklands/Malvinas crisis of 1982.

This tendency towards risk-seeking, in conjunction with evidence that people accommodate to gains more quickly than to losses, might also extend to the recovery of losses already incurred. A state that loses territory will be inclined to define its reference point as the status quo *ex ante* and be risk-seeking in its behaviour to recover its losses. Similar considerations help to explain why states that are involved in a losing war effort and which are determined to recover sunk costs often find it difficult to admit defeat and withdraw, as illustrated by American behaviour in Vietnam and by Soviet behaviour in Afghanistan.

The destabilising tendencies of loss aversion might be particularly

significant if two adversaries each perceive themselves to be in a situation in which all of their choices involve negative outcomes. Although a situation characterised by the mutual perception of losses could occur as a result of misperceptions, it might also be induced by asymmetries in the framing process.

If nation *A* makes a gain at nation *B*'s expense, *B* is likely to frame around the old status quo and be risk-seeking in its efforts to recover its losses while at the same time *A* is likely to accommodate to the new status quo and be risk-acceptant in its efforts to hold on to its new endowment. This may help to explain why Argentina was so determined not to give up the Malvinas after it initially seized them in 1982, why Saddam Hussein was willing to accept extreme risks in order to hold on to Kuwait, and why Britain and the United States were each so determined to restore the old status quo in these cases.

Analytical Limitations in the Application of Prospect Theory

Although prospect theory generates some intriguing hypotheses for international relations, it also raises some conceptual and methodological issues which make it very difficult to examine these hypotheses empirically and to demonstrate convincingly that prospect theory provides a better explanation for a given behaviour than do competing explanations. These issues have been addressed in greater detail elsewhere (Jervis, 1992; Levy, 1997), but a few brief comments would be appropriate here.

The main problem is that the descriptive generalisations on which prospect theory is based emerge from experimental research in highly structured laboratory settings, which are very unlikely to be replicated in the empirical world of international relations. In the laboratory subjects are given a one-time choice between a certain outcome and a lottery that involves two or more possible outcomes with known values and probabilities and therefore with expected values that are easily compared. The experiments are designed so that the possible effects of extraneous variables are strictly controlled and randomised, the framing of the reference point is basically given, and expected utility theory and prospect theory predict different choices.

These conditions are rarely satisfied in the highly unstructured choice problems that foreign policy leaders typically face. There are usually two risky options rather than one, and which is more risky is often difficult to define conceptually or measure empirically. The probabilities and utilities of outcomes are not given but instead are highly subjective and must be estimated by political leaders. These risks are compounded by the fact that each option has future consequences which require a balancing of present

and future risks, and by the fact that these consequences are a function of others' choices as well as one's own. Moreover, it is rare that we can say that two alternative options involve expected values that are equivalent or even comparable. Whereas laboratory studies focus on the evaluation of prospects under static conditions involving simple risks, foreign policy decision-making involves the critical tasks of defining the situation, editing the choice problem, and then evaluating options under dynamic and interactive conditions of present and future uncertainties. Thus much of the "action" in international relations involves the way in which decision makers transform ill-defined problems into the well-defined problems that constitute the point of departure for experimental work in the laboratory.

How decision-makers perform these tasks is not transparent or easily measured. It is extremely difficult for the analyst to determine whether an actor selects a particular option because of framing, loss aversion, risk orientation, and the overweighting of low-probability or certain outcomes, or simply because it is more highly valued in terms of a standard cost-benefit calculus based on expected value. That is, it is often very difficult to differentiate empirically between a rational choice explanation and a prospect theory explanation of international behaviour.

CONCLUSION

We have examined applications of behavioural decision theory to voting behaviour and to elite decision making in international relations. Although considerable experimental research has already been conducted on voting behaviour, we need much more behavioural evidence before we can be sure that the results of controlled laboratory experiments are replicated in more realistic campaign settings; more hard thinking before we can know what findings we can expect to replicate and what findings we can expect to be very different; and much more theoretical work to help explain how and why decision making in actual political campaigns presents humans with relatively unique challenges, and what people have done to cope with these challenges.

Applications of behavioural decision theory in international relations pose a different set of problems. Although prospect theory advances plausible interpretations of a number of significant patterns of behaviour in international relations, a great deal of theoretical and empirical research needs to be done before we can be confident that prospect theory provides a complete and valid explanation for significant patterns of international behaviour. Conceptually, we need a theory of framing that attempts to specify the individual, institutional, and environmental factors that influence how individuals identify the reference point around which they frame their choice problems. We also need to develop theories that explain how

individual decisions driven by framing, loss aversion, risk orientation, and non-linear response to probabilities get aggregated into collective decisions for the state through the foreign policy process, and how strategically interdependent states interact in international politics.

On the empirical level, we need to develop research designs to help identify actors' reference points. Unless reference points can be empirically identified independently of the choices that result from framing, loss aversion, and risk orientation, prospect theory can provide little explanatory power. Given the methodological problems confronting the measurement of framing and other aspects of problem representation, researchers might consider the application of some of the experimental methodologies that have been utilised in the study of voting behaviour. This would permit analysts to explore whether the robust findings of choices in well-defined but apolitical problems in the laboratory can be generalised to the political and high-stakes contexts within which foreign policy decisions are made.

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