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Prospect Theory and International Relations: Theoretical Applications and Analytical Problems

Jack S. Levy¹

In this essay I evaluate the potential contribution of prospect theory to our understanding of international relations. I begin with the implications of loss aversion, the endowment effect, risk orientation, and framing for theoretical questions relating to the stability of the status quo in international politics, deterrence, bargaining, and preventive war. I then raise conceptual and methodological problems which complicate the theoretical and empirical application of prospect theory to international behavior. I illustrate my arguments with references to some recent attempts to use a prospect theory framework to guide case studies of crises decision-making. I conclude that in applying prospect theory to empirical cases, the analyst must demonstrate not only that empirical behavior is consistent with the theory but also that the observed behavior cannot adequately be explained by a rational choice model which posits the maximization of expected value.

KEY WORDS: risk propensity; framing; status quo; bargaining.

INTRODUCTION

My earlier summary of prospect theory (1992) identified some apparent empirical anomalies of expected utility theory and demonstrated how Kahneman and Tversky (1979) have incorporated these anomalies into an alternative theory of risky choice. Prospect theory has enormous potential for explaining a wide range of international behavior and, on the face of it, a number of its hypotheses appear to provide reasonable explanations for observed behavior. But there are a number of conceptual and methodological problems which must be overcome before hypotheses based on prospect theory can be constructed and tested against

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the empirical evidence. I begin with some of the implications of prospect theory for international relations and then consider some of the difficult analytical problems which arise.

SOME IMPLICATIONS OF PROSPECT THEORY FOR INTERNATIONAL RELATIONS

The Status Quo Bias

One implication of prospect theory is that people have a tendency to remain at the status quo. The status quo is probably the most common reference point for states as well as for individuals in their framing of a decision problem, and the endowment effect (Thaler, 1980) and the loss-aversion properties of the value function imply that the disadvantages of leaving the status quo are over-weighted relative to the corresponding advantages. One manifestation of this is the tendency for selling prices to exceed buying prices by a substantial amount (Knetsch and Sinden, 1984), which results in undertrading. Samuelson and Zeckhauser (1988) label this tendency the *status quo bias*. It has been demonstrated in a number of experimental and field studies of consumer and investment behavior which show that people adhere to status quo choices more frequently than a standard expected-utility model predicts (Samuelson & Zeckhauser, 1988; Hausman, 1979; Hartman, Doane, & Woo, 1991; Kahneman, Knetsch, & Thaler, 1991). The marketing failure associated with the introduction of the "new" Coca Cola in 1985, for example, is explained in part by the status quo bias.

Our intuitive sense of international politics suggests that states are also likely to share a status quo bias (Jervis, 1989, pp. 29–35), though demonstrating this rigorously may not always be easy. States seem to make greater efforts to preserve the status quo against a threatened loss than to improve their position by a comparable amount. A state might be willing, for example, to fight to defend the same territory that it would not have been willing to fight to acquire, or to accept greater costs in order to maintain an international regime than to create it in the first place (Keohane, 1984).

As Jervis (1989, pp. 29–35; 1992) notes, there may be other explanations for the tendency for states to try harder to maintain the status quo than to change it in their favor. First, there may be an asymmetry of interests favoring the side defending the status quo. The distribution of values and territory which make up the status quo in international politics is not random or accidental but may reflect the fact that states "have generally achieved dominant influence in the areas that are most important to them" (Jervis, 1989, p. 30). Consequently, the defense of the status quo might be the defense of what the state defines as important quite

independently of any inherent status quo bias. Although this should serve as a useful caution in making inferences about international politics, we must recall that the above-cited experiments on consumer behavior are very careful to control for disparities in perceived values yet still find strong status quo effects.

The status quo might also be preferred because of its salience in tacit bargaining (Schelling, 1960; Jervis, 1989, p. 31) or because of the reputational and domestic political costs that might follow from retreats from the status quo. But these other variables may not be entirely unrelated to prospect theory, as Jervis acknowledges. Although the salience of the status quo may be important in itself, it also contributes to the tendency to define the status quo as the reference point around which to frame gains and losses, so that the salience of the status quo might affect outcomes through its impact on framing, loss aversion, and the status quo bias.

Loss aversion also helps to explain why states are more concerned to prevent a decline in their reputation or credibility than to increase it by a comparable amount, or why they worry more about falling dominoes than anticipate the benefits of states bandwagoning in their favor (Jervis, 1991). Reputation affects future utilities, and future losses hurt more than future gains gratify. Moreover, even if it were the case that the domestic political calculations of decision-makers could be better explained by expected-utility theory than prospect theory, there may be an underlying tendency for domestic publics to react more strongly to strategic or economic losses than to comparable gains, and to punish their leaders more for the former than to reward them for the latter. Loss aversion and the status quo bias would still have an impact but through their effect on public opinion rather than on political leaders directly.

Prospect theory implies that all of these effects would be reinforced if the threat of loss were perceived to be certain in the absence of corrective action, for the over-weighting of certain outcomes relative to others would further increase the incentive to undertake excessive risks in order to avoid that loss. More generally, whenever we find perceptions of certain losses, whether defined in terms of the status quo or in terms of an alternative aspiration point, prospect theory predicts particularly risky behavior (that is, greater than that predicted by an expected-value calculus) in order to avoid those losses.

Downward Trends, Framing, and Risk-Seeking Propensities

The tendency towards risk aversion in the domain of gains,² and the dampening effect this has on aggressive behavior to improve one's position, presu-

²For the sake of simplicity, I assume that the probabilities involved in risky choices are in the moderate range (above .10 or so) and ignore for now the greater unpredictability of risk attitudes for extremely small probabilities.

ably contributes to stability in international politics. Risk-acceptant propensities in the domain of losses, however, might have the opposite effect and contribute to instability under certain conditions. A state which perceives itself to be in a deteriorating situation might be willing to take excessively risky actions in order to maintain the status quo against further deterioration, even if a standard probability calculus based on expected value would lead to a preference for restraint. This would be particularly likely if the state perceived that the further deterioration in its position were certain, or if its position had already deteriorated and the state wanted to recover those losses. These possibilities are not examined in the experimental literature, which deals almost exclusively with static-choice problems.

There are numerous examples in which states appear to adopt risk-seeking behavior in order to prevent the deterioration of their international positions, although demonstrating this empirically is not always easy, as I argue later. Loss aversion might lead states in a crisis situation to take preemptive action and accept the risks inherent in war if they were nearly certain that the adversary was about to initiate a first strike, even though a standard probability-utility calculus might call for restraint (Jervis, 1989, p. 171). States may also take disproportionately risky action short of war. Ross (1984, p. 247) concludes that although Soviet leaders tend to be risk-averse,³ they are willing to engage in the “use of decisive and perhaps risky action far more readily for *defending* as opposed to *extending* Soviet gains.” McNerney (1992) provides support for this hypothesis in her case study of Soviet efforts to maintain their position in the Middle East in 1966–1967.

Loss aversion and risk-seeking also help explain why states frequently find themselves continuing to follow failing policies far longer than a standard cost-benefit calculus might predict (Jervis, 1992), in the desperate hope that they might recover their sunken costs. Examples of futile military interventions or prolonged wars (Vietnam and Afghanistan, for example) come immediately to mind. This parallels the familiar tendency in economics for individuals to hesitate to sell at a loss because of a psychological entitlement to a formerly prevailing price—as evidenced both in declining real estate markets and in stock markets (Sherrin & Statman, 1985; Kahneman, Knetsch, & Thaler, 1990, p. 1345).

Gains and losses need not be defined exclusively, or even primarily, in terms of a state's international security and influence, for state officials are also concerned about their domestic political positions. They may be tempted to engage in forceful action against external enemies in order to secure a diplomatic or military victory that might pacify their domestic enemies or otherwise distract

³This conventional wisdom regarding Soviet risk orientation is reflected by Pipes's (1973, p. 11) argument that “Soviet leaders act according to the proverb, ‘If you don't know the ford, don't step into the river. . . .’ They rarely gamble.”

attention from domestic problems. The temptation toward such diversionary action may be enhanced by risk-acceptant attitudes in the domain of losses created by a deteriorating domestic situation (Levy, 1989a, p. 274). This hypothesis is reflected in Mayer's (1977, pp. 220–21) argument that beleaguered political elites often adopt a "fortress mentality [and] are particularly inclined to advocate external war for the purpose of domestic crisis management even if chances for victory are very doubtful." The combination of perceived external decline and internal insecurity may be particularly conducive to risk-seeking, as McDermott (1992) shows in her case study of the U.S. decision to attempt a hostage rescue mission in Iran in 1979. In other situations, however, there may be difficult trade-offs between military/strategic/diplomatic risks and domestic political risks (Lamborn, 1985).

Prospect theory implies that the magnitudes of the losses involved need not be that large in order to induce risk-seeking behavior, particularly if the losses were perceived to be certain. A setback might be minor compared to a state's overall position, but because it is evaluated with respect to the current reference point rather than one's net asset position, its effects tend to be evaluated in absolute rather than relative (to total assets) terms. More importantly, because of the anticipation that any such setback will involve significant reputational costs, falling dominoes, and a disproportionate domestic political reaction, even small losses appear to have significant consequences.

These considerations lead Jervis (1989, p. 170) to suggest that the very fact of a loss is often more important than the magnitude of the loss and that large losses may not be that much worse than smaller ones. (This depends, of course, on the precise shape of the loss curve and the metric that is used.) Consequently, political leaders may be inclined to engage in relatively risky behavior in order to avoid or recoup even small losses or retreats from the status quo. This tendency is all the greater for a state which perceives itself to be in a zero-sum relationship with its adversary, which might occur for the two leading states in a bipolar system or for an enduring rivalry.

The destabilizing tendencies of loss aversion might be particularly great if two adversaries both perceived themselves to be in a deteriorating situation. This could occur either because one set of political leaders focused on their state's relative external decline while the other focused on its deteriorating domestic situation, because they focused on different dimensions of power, or because one misperceived the situation. If any of these situations occurred, loss aversion might drive both toward riskier strategies than warranted by straightforward cost-benefit calculations. I have suggested that this may have been the situation for France and Germany in 1870, and perhaps for the United States and Japan in 1941 (Levy, 1987, p. 93). It might also have been true for the United States and Iraq in 1990–1991: the U.S. feared Iraq's acquisition of nuclear and biological weapons, and Iraq may have feared a deterioration of its position in the context of

Soviet decline, unconstrained American hegemony and its hostility toward Iraq, and the possibility of a diplomatic realignment in the Middle East.

The simultaneous perception by each of two states that it faces a domain of losses, and the mutual risk-seeking tendencies which are likely to follow from it, can also be induced by the effects of framing in a changing situation. States might identify different reference points to frame their respective decisions, and this might lead both to perceive that they are defending the status quo. Consider a situation in which state A has just made a tangible gain at state B's expense, say through the seizure of territory or control over a vital operational area. The endowment effect suggests that A will accommodate its gains much more quickly than B will accommodate its losses. Consequently, B will attempt to recover its losses and restore the old status quo, and A will attempt to maintain the new status quo against B's encroachments. Each will accept larger-than-normal risks in order to maintain its version of the status quo.

In such a situation it is likely that instability will be further fueled by misperceptions. If B perceives that A is thinking in terms of gains rather than losses, B might underestimate A's resolve because B will erroneously expect A to be risk-averse. B will then see A's unexpectedly aggressive stance as an indicator of hostile intent rather than as a defense of the new status quo, and this will help fuel the conflict spiral and increase the likelihood of miscalculated escalation (Jervis, 1976, ch. 3).

This behavior leads Jervis (1989, p. 171) to suggest that a *fait accompli* strategy is more dangerous than George and Smoke (1974, pp. 536–40) imply, because the target will make a greater effort to recover its loss than one might expect on the basis of a straightforward calculation of costs and benefits. Possible illustrations of this might include Britain's resolve to recover the Falklands after their seizure by Argentina in 1982 and the American determination to roll back Iraq's invasion of Kuwait in 1990–1991. It is also interesting in this regard to consider whether the Argentines saw a possible withdrawal from the Malvinas (or whether Saddam saw a possible withdrawal from Kuwait) as a return to the status quo or a retreat from it. The former would have been easier psychologically in each case. Of course, if the initiator conceives of its *fait accompli* as an attempt to recover old possessions rather than make new acquisitions, its resolve will be all the greater, as evidenced by Argentina's determination to recover the Malvinas.

The timing of an attempt to reverse a *fait accompli* might also be an important variable. The longer a *fait accompli* is allowed to stand before action is taken to reverse it, the greater the likelihood that the initiator has accommodated to the new status quo, and the greater its resistance to any reversal. The time factor might be even more important for third-party accommodation to the new status quo over time and consequently for the diplomatic costs associated with any action. Because of the status quo bias, immediate action is more likely to be

perceived as a legitimate defense of the status quo than action which is delayed. Thus Austria-Hungary's delay in responding to the assassination at Sarajevo decreased the perceived legitimacy of its action against Serbia in the eyes of Europe and made great power intervention and a general war more likely (Levy, 1990/91).

The changes which induce these framing effects may be gradual rather than sudden. Consider a situation in which A is gradually gaining in power at the expense of B, and the two states try to negotiate a settlement over a conflict between them. It is possible that A might frame his reference point at some future asset level based on the assumption of the continued improvement in his position, treat any point short of that aspiration level as a loss, and be willing to undertake inordinately risky actions to reach his target position. (Recall, however, that the endowment effect appears to be stronger for actual possession of a good than for a property right to future possession, much less a chance for future possession [Levy, 1992].) Meanwhile, B is likely to use the current status quo as the reference point and to be risk-seeking in order to maintain it.

This logic is fully consistent with, and in fact helps to reinforce, the theory of relative deprivation and the phenomenon of the revolution of rising expectations. The argument is that the likelihood of violence is greatest not under conditions of greatest suffering, but instead when the level of material benefits or rate of improvement falls behind expectations (Davies, 1962; Gurr, 1970). Given rising expectations, whether based on the extrapolation of past trends or on conceptions of justice, people define their reference point at some future and higher level of satisfaction, frame any point short of that as a loss (regardless of recent accomplishments), and are willing to take excessively risky actions to reach that aspiration level. The situation is not symmetrical, however, and falling expectations do not have a comparable effect because people are much slower to accommodate to losses than they are to gains. Similar arguments apply to theories of status inconsistency or rank disequilibrium in international politics (Galting, 1964; Midlarsky, 1975).

Deterrence and Bargaining

The framing of a decision problem can also affect behavior with respect to deterrence and other forms of bargaining. Influence attempts based on coercion are more likely to be successful if the adversary one is attempting to influence sees itself in the domain of gains, and is contemplating an effort to improve its position, than if the adversary sees itself in the domain of losses and is considering how to prevent its position from deteriorating further. The loss aversion hypothesis would suggest that the adversary is likely to be more willing to take excessive risks in the second situation than in the first. This helps explain why it

is generally easier to deter an adversary from initiating an action she has not yet taken than to compel her to undo what she has already done or to undertake actions which she would prefer not to do (Schelling, 1966, pp. 69–91; Jervis, 1989, p. 29).

This does not imply, of course, that deterrence is always easy. Potential initiators do not always define their reference point in terms of the existing status quo, and consequently they do not always see themselves in the domain of gains. Moreover, they might see the target as particularly attractive or the status quo as particularly unattractive. Lebow and Stein (1987), for example, argue that deterrence often fails because initiators are often driven to aggressive external behavior by a deteriorating domestic political environment.

The issue of deterrence leads to another interesting question relating to framing. Consider a situation in which one state threatens military action against another. This initial threat of military action in itself changes the status quo in terms of utilities because of the reputational and perhaps domestic political costs involved (Levy, 1989b, pp. 126–27). What happens if the state making the threat is then confronted by a deterrent threat from the target or the target's protector? Does the first state frame a possible withdrawal of the threat (or failure to implement it) as a retreat *to* the old status quo or a retreat *from* the new status quo? The second frame is more likely to induce risk-seeking behavior and the escalation of the conflict.

These types of behavior are a manifestation of a more general tendency created by the endowment effect, the irreversibility of indifference curves, and loss aversion. If actors in a bargaining situation treat their own concessions as losses and the concessions they receive from their adversary as gains, they will overvalue the concessions they make to the adversary relative to the concessions they receive from the adversary. This leads to a greater tendency of both parties to risk the negative consequences of a possible deadlock in order to minimize their concessions. This can result in a reduction in the size of the bargaining space of mutually advantageous exchanges (Knetsch, 1989, p. 1283). This leads Kahneman, Knetsch, and Thaler (1990, p. 1345) to suggest a "concession aversion," or a reluctance to accept a loss on any dimension of an agreement in multi-attribute negotiations. If true, this would further undercut the possibility of compromise based on issue linkages (Morgan, 1990).

There is some evidence to support this hypothesis (Tversky & Kahneman, 1986, p. S262). Bazerman (1983) found that subjects who bargained over the allocation of losses more often failed to reach agreement and more often failed to find a Pareto-optimal solution than subjects who bargained over gains. Morgan and Wilson (1989) find a similar pattern in their experimental test of a spatial model of crisis bargaining in international relations: subjects sought agreements when the payoffs were positive but were more likely to risk war to avoid a loss

when the payoffs were negative, even though in each case the preferred option was the one with the lower expected value.

This asymmetry in bargaining over gains and losses is likely to be minimal, in routine economic transactions (Kahneman & Tversky, 1984, pp. 348–49), or where goods are acquired for later sale rather than use (Kahneman, Knetsch, & Thaler, 1991, p. 200). This implies that if concessions involve a “bargaining chip,” and especially if the items or resources involved were acquired or created with that purpose in mind, the asymmetry of value attached to concessions given and compensation received is likely to be much less. As a result, the bargaining space, and the likelihood of a successful compromise, would be larger.

These considerations lead Janice Stein (1992) to argue that recent theories of cooperation in international politics are biased because they generally deal only with situations characterized by cooperation in the distribution of gains. Stein hypothesizes that cooperation should be more difficult when the situation involves cooperation in the distribution of losses, and she has initiated a research program to test this hypothesis.

In the preceding discussion I have considered some of the consequences for international relations of the conditional hypothesis that *if* actors perceive themselves to be in the domain of losses, they tend to engage in riskier forms of behavior than might be predicted by a probability calculus based on expected utility. Prospect theory suggests another hypothesis as well: actors perceive themselves to be in the domain of losses more often than we would normally expect. What an “objective” analyst might see as a domain of gains, the actor in question might define in terms of losses. This makes it imperative that the analyst attempt to determine the definition of the situation and the framing of choice in the eyes of the actor. This is a complex and demanding task, but it is made somewhat easier by the fact that political leaders often speak explicitly in terms of gains or losses, as evidenced by the McNerney (1992), McDermott (1992), and Farnham (1992) case studies in this issue.

As noted above, little research has been done on the framing process itself, and we have no well-developed theory to guide us. It is useful to note, however, that it might be necessary to go beyond the actor in question to understand how he/she frames a particular choice problem. Because of the importance of framing, one actor might try to influence the behavior of another by influencing how the second frames a particular choice problem—in particular, how he/she defines his/her reference point, and whether a possible outcome is seen as a gain or as a foregone loss.

The manipulation of frames applies to internal actors as well as external adversaries. An individual or organizational unit within a state might try to influence foreign policy behavior in this manner, as Maoz (1990) recognizes in his study of “framing the national interest.” It might be easier to influence a

strategy choice by manipulating how a decision problem is framed than to influence that strategy directly. If one prefers a cautious approach, for example, one might try to frame the problem as a choice between foregone gains rather than between actual losses. Note also that framing is not restricted to the identification of a reference point. One might also affect choice through the manipulation of the agenda, redefinition of the issue-area (as primarily political, economic, military, etc.), or in other ways, which might in turn affect perceptions of losses or gains.

It is often difficult to demonstrate empirically that actors attempt to manipulate the framing of a decision or that this manipulation has a causal impact. In order to avoid the danger of circular reasoning, it is necessary to measure manipulation independently of the policy outcomes one is trying to explain. It is particularly hard to assess the causal effects of manipulation, because it is difficult to demonstrate the counterfactual of what would have been done in the absence of manipulation (Maoz, 1990).

ANALYTICAL PROBLEMS IN THE APPLICATION OF PROSPECT THEORY TO INTERNATIONAL RELATIONS

Can We Generalize from Laboratory Experiments?

We can see that prospect theory has some intriguing implications for international relations. But the application of the theory also raises difficult conceptual and methodological issues which are not always given adequate recognition, and it would be useful to consider some of these problems here. An understanding of these potential problems will suggest how we might construct research designs to overcome them and thus facilitate the rigorous application of prospect theory to international relations.

First of all, we must recognize that the findings upon which prospect theory is based emerge from highly structured conditions generated by simple but ingenious research designs. Subjects are generally given a choice between a certain outcome and a lottery which involves two or more possible outcomes, the values and probabilities of which are known. The two prospects or alternatives have expected values which are known and easily compared. The evaluation of prospects is facilitated by the use of monetary outcomes—or in some cases mortality or survival rates or inflation and unemployment rates—which are measurable on an interval scale and which can be roughly scaled into utilities. The possible effects of extraneous variables are minimized by strict experimental controls and by the randomization of those effects over a large number of subjects, so that threats to the validity of causal inferences are minimal.

The experiments are designed in order to eliminate the possibility that a preference for one prospect over another is due to the fact that one was inherently

more valuable than another in terms of a straightforward expected value calculation. More specifically, the experimental designs are such that expected-utility theory and prospect theory give different predictions as to likely choices. This facilitates a test of the hypothesis that the combination of the value function and probability-weighting function lead individuals to prefer a prospect in spite of its lower expected value than the alternative. Moreover, subjects are generally given a one-time choice, and outcomes are not affected by choices made by an adversary. The framing of the choice problem is usually inherent in the problem presented by the experimenter, and when framing itself is a variable it is usually clear how the subject frames an outcome and why he does so in that manner.

Few of these conditions are satisfied in the highly unstructured choice problems which foreign policy decision-makers typically face. These choices rarely involve one riskless and one risky option, but rather two risky options, and which is more risky is often difficult to define conceptually or measure empirically. The utilities of the payoffs for each outcome are not given but instead are highly subjective. Factors such as power and territory are notoriously resistant to the type of interval-level measurement required by either expected-utility theory or prospect theory, and the fact that the net value of an outcome is affected by bureaucratic and domestic political as well as international considerations compounds the problem of constructing a one-dimensional utility or value function. The probabilities for each of these outcomes are not given, but must be estimated by the decision-maker. Technically, most choices in international relations are made under conditions of uncertainty rather than risk.⁴

The choice problem is compounded by the fact that outcomes are determined not only by one state's choice, but also by the choices of others and by random shocks. It is also complicated by the fact that current choices have future consequences which are themselves risky or uncertain and which need to be incorporated into one's current risk calculus. This is particularly true for international behavior, which is so concerned with future power, wealth, influence, and reputation. The uncertainty surrounding both the value of outcomes and their probabilities means that it is extraordinarily difficult to evaluate and compare prospects, and to rule out the alternative explanation that one prospect is chosen over another not because of framing, loss aversion, and the overweighting of certain outcomes, but rather because it is more valuable in terms of a standard cost-benefit calculus for a risk-neutral actor.

⁴There is considerable controversy over the meaning and measurement of uncertainty and the distinction between uncertainty and risk (Kahneman & Tversky, 1982). For the sake of simplicity in this study, I assume that decision-makers make some form of subjective probability assessment. Decision-makers' degree of confidence or *ambiguity* about their subjective probability assessments is potentially an important variable in itself. Ambiguity includes both the amount of ambiguity and one's attitude toward it (comparable to attitudes toward risk) (Ellsberg, 1961; Einhorn & Hogarth, 1985), but for the sake of simplicity I do not deal with that issue here.

The Analysis of Framing

Unlike laboratory situations in which the experimenter sets the frame, framing in international relations is much more problematic. The status quo itself is continuously changing along several dimensions, so aspiration levels and extrapolations of current trends compete with the status quo itself as a reference point around which decision-makers might code a choice problem. Consequently, questions of accommodation or renormalization become more important. Cancellation, combination, and other editing operations are also less predictable. Thus the framing of the choice problem is as critical to decision-making as is the evaluation of prospects, and requires intensive examination by the analyst. Evidence regarding precisely how an actor frames a choice problem must be independent of the outcomes the analyst wants to explain, of course, in order to avoid circular reasoning.

In addition, the question of *why* an actor frames a choice problem in a particular way is also important if we are to make causal inferences. One of our central hypotheses is that framing around a reference point shifts the value function, which, in conjunction with the probability-weighting function, causally determines preference and choice. If the same underlying conditions influence both the framing of a choice problem and the behavior we want to explain, an inference that framing and loss aversion causally determine choice might be spurious. For example, if internal and external decline lead decision-makers to frame their alternatives as losses, and if their deteriorating situation also leads them to risky policies in an attempt to reverse their fortunes, it is not necessarily the case that framing causally influences behavior (unless one could show that the behavior was riskier than predicted by a standard cost-benefit calculus). These considerations lead Jervis (1992) to note that it is necessary to rule out the possibility that the same forces which determine the reference point also lead directly to the risky behavior.

The empirical demonstration of how foreign policy decision-makers frame a choice problem is one of the strengths of recent case studies in which apply prospect theory to international relations. McInerney (in this issue) shows convincingly that Soviet leaders accommodated to the new status quo in Syria in 1965–1966 (the pro-Soviet provisional command); perceived that threats to their position (external threats from Israel, internal threats to the stability of the Syrian regime, and Chinese challenges to Soviet legitimacy in the Third World) created a situation of nearly certain losses; and believed that they faced a choice between two alternatives that were each unattractive relative to the status quo. Because Soviet leaders saw themselves in the domain of losses, McInerney argues, they were willing to pursue a policy that involved considerable risks of a regional war in an attempt to avoid what they regarded as the virtually certain costs of inaction.

McDermott's analysis elsewhere in this issue of how the Carter administration framed its decision regarding the Iranian hostage rescue mission is also fairly persuasive. She effectively uses memoirs and some interview material to show that different expectations about the future by Vance, Brzezinski, and Carter led each of them to frame the issue in slightly different ways; that Carter believed that he faced unattractive alternatives in the context of a deteriorating international and domestic political context; and that he wanted to recoup his losses. McDermott acknowledges, however, that Carter believed that a successful rescue mission might not only allow him to recover his losses but also bring some domestic political gains as well.

This possibility raises an interesting question. The experimental literature focuses primarily on choices involving either the domain of losses or the domain of gains but not a combination of the two. That is, it focuses on "pure lotteries"—where either all possible outcomes are negative, or all possible outcomes are positive—but not on "mixed lotteries," where there are both positive and negative outcomes. There is little evidence as to whether loss aversion and the reflection effect are equally strong for "mixed lotteries" as for "pure lotteries" (for an exception see Fischer et al., 1986).

Farnham also provides here a convincing analysis of framing in the case of Roosevelt's perception of and response to the Munich crisis in September 1938. She uses an impressive set of primary sources to demonstrate that Roosevelt perceived that the international situation had deteriorated from one period to the next, that by the second phase of the crisis he perceived that war was certain, and that he faced two relatively unattractive options. She makes a very strong case that Roosevelt's emotional response to the likelihood of an imminent war led to a fundamental change in his representation of the crisis, quite independently of any change in the objective situation.

Farnham's analysis of framing is particularly useful because it contributes to the meager literature on the sources of framing. She argues that Roosevelt's change in frames was due to affective rather than strictly cognitive variables—to his emotional reaction to the prospect of war and to Hitler's apparent eagerness for it. Farnham also provides a useful analysis of the possibility of reciprocal relationships between affect and framing: not only does one's emotional state affect how one frames a decision, but how one frames a decision might affect one's emotional response as well. McDermott also contributes in this issue to the theoretical literature on framing by providing a useful discussion of the impact of historical analogies on the framing of a decision problem.

I have discussed these studies of framing appearing in this issue in order to demonstrate that the successful analysis of framing is a time-consuming task and one which requires a significant amount of data regarding the perceptions of actors. Unlike laboratory experiments, empirical studies cannot take framing for

granted but must devote considerable efforts to this task. The McInerney, McDermott, and Farnham studies provide good models for how this should be done.

Ruling Out Alternative Explanations: Expected Value and Rational Choice

Now let us turn to the evaluation phase of the choice problem. Technically, in order to explain a choice in terms of prospect theory one would have to identify how the actor (1) defines the reference point, (2) identifies the available options, and assesses the (3) value and (4) probability of each outcome. The analyst would then have to (5) modify the subjective probabilities by an appropriate probability-weighting function, and, finally, (6) show that the resulting value of the preferred prospect or option exceeds the value of alternative prospects. Needless to say, these are very demanding tasks because utilities, expected probabilities, and these other variables are extremely difficult to measure empirically.⁵ It is largely for this reason that social psychologists adopt the method of hypothetical choices in highly structured laboratory conditions so that other variables can be strictly controlled (Kahneman & Tversky, 1979, p. 265).

Of course, the resistance of utilities, probabilities, and related variables to direct and easy empirical measurement also affects the empirical test of expected-utility theories of foreign policy (Stein & Tanter, 1980). But expected-utility theory has slightly less stringent data requirements than does prospect theory. Although expected utility requires information on the actor's perception of available options, the possible outcomes associated with each option and the subjective probability attached to each, and assessment of relative value, it requires no information on framing (because it assumes that a single utility function is valid across the full range of situations or "frames") and requires no additional weighting of subjective probabilities. Moreover, expected-utility theory can be derived from a small set of assumptions which are normatively appealing, whereas prospect theory makes no normative claims (Tversky & Kahneman, 1986, p. S272) and includes an editing component which has not been theoretically developed, much less formalized. Thus expected-utility theory is more parsimonious than prospect theory.

In evaluating the relative merits of an explanation of a particular case based

⁵Objective measures of state utilities for war and nonwar outcomes have been constructed from systemic patterns of formal alliances (which presumably reflect the similarities of state interests) and have been very useful for large-n statistical studies of international conflict behavior (Bueno de Mesquita, 1981). They have also been used by Huth et al. (1992) to analyze whether risk-seeking in the domain of losses affects conflict behavior. Although the use of the objective indicators of state utilities makes it easier for Huth et al. (1992) to control for the expected value of alternative choices, the gain in statistical controls and generalizability admittedly comes at some cost in terms of the construct validity of the empirical measures of utility.

on prospect theory with one based on a conventional rational choice or expected-utility model, the primary criterion must be one of empirical fit. Is the empirical evidence more consistent with one theory than another? But if observed behavior were equally consistent (or approximately so) with both expected-utility theory and prospect theory, the expected-utility explanation would be preferable on grounds of its greater parsimony and normative appeal.

This suggests that it is not enough for the analyst to demonstrate that the observed behavior is consistent with prospect theory. It is also necessary to demonstrate that prospect theory provides a *better* explanation of that behavior than does expected-utility theory.⁶ That is, the analyst must come to terms with an important alternative explanation: the decision is made, not because of framing, loss aversion, and the over-weighting of certain outcomes, but instead because it is more highly valued in terms of a straightforward expected value calculation or perhaps an expected utility calculation based on a relatively simple utility function (preferably one without an inflection point),⁷

There are no obvious operational criteria to specify the point at which the data favors one theory over another. Recall, however, that experimental and empirical research on prospect theory suggests that the *magnitude* of risk-seeking tendencies in the domain of losses or risk aversion with respect to gains is fairly substantial. That is, individuals are often willing to tolerate a prospect which is significantly lower in expected value than an alternative in order to avoid a certain loss or secure a certain gain. This, in conjunction with the parsimony argument, suggests that the burden of proof is on prospect theory to demonstrate

⁶These criteria for the evaluation of theory are consistent with the familiar argument that theories are to be evaluated with respect to other theories as well as with respect to the empirical evidence (Lakatos, 1970). Empirical data alone is insufficient to falsify or test a theory. Other relevant criteria include the logical coherence of a theory, the degree of its empirical confirmation in a number and variety of other cases, and whether it can be subsumed under another well-confirmed theory (Hempel, 1966).

⁷One rather intractable analytic problem which complicates the task of comparing a prospect theory explanation based on risk attitude and a straightforward expected-value explanation is the fact that risk is conventionally defined in terms of marginal utility, that is, in terms of the curvature of the utility function. Decreasing marginal value is equivalent to risk aversion and increasing marginal value is equivalent to risk acceptance.

This means that an actor's *intensity of preference* for an outcome is conceptually impossible to distinguish from his or her *intrinsic risk aversion*, or "nervousness" (Bell & Raiffa, 1988, p. 384) deriving from uncertainty itself. The preference for \$50 with certainty over a 50/50 lottery between 0 and \$100, for example, might simply reflect the fact that the difference between 0 and \$50 has a greater value than the difference between \$50 and \$100, quite independently of the nervousness one feels about taking a gamble. Thus Rhodes (1989, pp. 54–55) distinguishes attitudes toward "surprise," which reflect how much one "worries" about the consequences of uncertainty, from risk attitudes.

This problem has led some analysts to decompose the standard Von Neumann-Morgenstern utility function into a riskless measurable value function and a risky utility function (Dyer & Sarin, 1979; Bell & Raiffa, 1981; Fischer et al., 1986). These theoretical advances have not become part of the dominant paradigm in utility theories, however, and I will not deal with them here.

that because of framing, loss aversion, and probability weighting decision-makers pursue policies characterized by noticeably lower expected utilities than their alternatives.

On the conceptual level, this criterion requires that we qualify our theoretical arguments and evaluate predictions based on prospect theory not in absolute terms, but relative to a rational choice model based on a straightforward expected-value calculus. We should say, for example, not that an actor pursued a risky policy because she was in the domain of losses, but that because of risk-seeking with respect to losses she adopted a more risky alternative than predicted by a standard expected-value calculation. Jervis (1989, 1992) is very careful about this and consistently qualifies his arguments with such statements as a certain option "would not seem as attractive as standard utility maximization theory implies" or that the risky option might be taken "even if the standard probability-utility calculus calls for restraint." Similarly, Quattrone and Tversky (1988, p. 724) distinguish their risk-based explanation of the incumbency bias in voting behavior from the alternative explanation that one candidate is perceived to be better than another. Huth et al. (1992) are careful to control for expected value in their large-*n* statistical study of risk propensity in great power conflict behavior, though some may question their empirical measures.

Others have been less sensitive to this problem in their applications of prospect theory to international relations, though admittedly it is more difficult to compare the predictions of the two theories in empirical studies than to acknowledge the problem in conceptual treatments. Consider McDermott's (1992) explanation for Carter's decision to select the risky rescue mission rather than the certainty of the continued deterioration of his domestic and international positions. She argues that Carter believed that a successful rescue would not only recoup his losses, but that it might also generate some gains, and that he perceived that the chances of success were fairly high. (CIA estimates were lower, suggesting that cognitive or motivational biases may have led Carter to exaggerate the chances of success.) But if the expected probability (and value) of such a positive outcome were high enough for Carter, and if the downside risks tolerable, then the decision for the rescue mission might be satisfactorily explained by a standard cost-benefit calculus, quite independently of risk orientation. McDermott's interpretation may be correct, but it would be more compelling if she made an explicit effort to come to terms with this plausible alternative explanation.

Such an effort can be found in Farnham's (1992) study of Roosevelt's change from a policy of nonintervention to diplomatic intervention in the Munich crisis. Farnham goes to considerable lengths to argue that a rational choice model cannot account for the variations in Roosevelt's behavior. Her controlled comparison of successive phases of the crisis demonstrates that a sudden increase in Roosevelt's assessment of the probability of war did not lead to a change in

policy to avoid that war. She also demonstrates that Roosevelt did not change his assessment of the relative costs of intervention and nonintervention outcomes for the United States. He continued to perceive that intervention could bring significant domestic costs as well as diplomatic costs if it was ineffective, and he was still convinced that Britain and France would win any war and that the United States would not be directly threatened by the war. What did change was Roosevelt's emotional state. Farnham argues persuasively the idea of war became emotionally compelling to Roosevelt in the second phase of the crisis, and this led him to change the way he framed the problem. This frame change led to a change in Roosevelt's risk propensities and consequently to a preference for a risky interventionist policy in an attempt to avoid the certain losses that would follow from nonintervention.

Thus Farnham demonstrates that an explanation of Roosevelt's policy change based on framing and loss aversion is more persuasive than one based on a strict maximization of expected value. By demonstrating that an explanation based on prospect theory is not only consistent with the empirical evidence, but that it is also superior to a leading alternative explanation, Farnham provides a useful model of how applications of prospect theory to international relations ought to proceed.

The success of Farnham's study should not conceal the fact, however, that foreign policy decisionmakers rarely evaluate various policy outcomes along anything approximating an interval-level scale in order to make the tradeoffs required by an expected utility or prospect theory framework. Or if they do, they leave few empirical traces, so that it is extremely difficult to reconstruct their utility or value functions from the empirical evidence.

The Assessment of Probability and Risk

Although decision-makers rarely articulate their assessments of value with any degree of precision, they are sometimes more explicit about their subjective probability assessments. (McDermott's analysis of the Carter administration's estimates of the likelihood of success of various phases of the proposed rescue mission provides a good example of this.) Political leaders are frequently clear as to whether they perceive outcomes in terms of gains or losses, and this is often reflected in their language. This suggests an alternative, though somewhat weaker, set of criteria by which the empirical validity of prospect theory might be evaluated. This alternative would focus on the question of framing and on probability assessments rather than weighted utilities (Stein, 1992). Because of the certainty effect, outcomes perceived as certain should be over-weighted relative to risky outcomes. Risk-seeking in the domain of losses should lead decision-makers to take disproportionate risks to avoid certain losses, and risk aversion in

the domain of gains should lead decision-makers to be excessively eager to secure certain gains.

This approach directs the analyst toward the following questions: (1) In terms of *framing*, do decision-makers perceive their options to involve losses or gains (or a mixed lottery of losses and gains)? Do they appear to dwell more on potential losses than potential gains and possibly exaggerate the dangers through psychological bolstering (Janis and Mann, 1977)? Do they consider alternative frames, and why is one selected over another? (2) In terms of *probability assessments*, do any of these assessments approach certainty?⁸ If so, is there evidence that they give disproportionate weight to these outcomes? Do they take excessive risks to avoid certain losses? Are they surprisingly cautious when they have the opportunity to secure a certain gain?

If no outcome is perceived as certain, this criterion cannot be applied. If an outcome is expected with near certainty, and if the observed behavior is not in the predicted direction, that should be sufficient for us to conclude that behavior is inconsistent with prospect theory. If the predicted behavior is observed in the context of expectations of certainty, one could conclude that it was consistent with prospect theory. It is still possible, of course, that the prospect selected is also the more preferred one on the basis of a straightforward probability calculus, and the analysis should still do as much as possible to rule out that possibility.

These criteria may sound simple enough, but they give rise to several additional problems. Unlike laboratory experiments in which one option is guaranteed to lead to a certain outcome, political leaders rarely perceive that any given policy option leads to a particular outcome with certainty (unless, through editing operations, they do not differentiate among the possible outcomes of a particular policy option, but instead collapse them into a single outcome, treat it as a certain gain or loss without attaching to it a more specific value, and evaluate the transformed prospects). Instead, each policy option involves some degree of risk and uncertainty, both in its immediate effects and its future consequences.

This raises the extremely difficult problems of defining what we mean when we say that one prospect is riskier than another and determining how decision-makers actually compare relative risks among options. If actors evaluate probabilities and values along an interval scale, then an expected utility calculation provides the optimal criteria for evaluating risky choices. In the absence of cardinal (or interval) utilities, however, there are a number of alternative decision criteria that an actor might utilize. Does a risk-averse actor adopt a minimax criteria and act to minimize the maximum loss she might suffer? Or does she select the option which minimizes the range or variance in possible outcomes? Or

⁸It is striking how often decision-makers speak explicitly in terms of the inevitability (and not just high probability) of war. This tendency can be explained by a number of cognitive and motivational biases (Jervis, 1976; Janis & Mann, 1977).

does she adopt a minimax risk (regret) or some alternative criteria (Luce & Raiffa, 1957, pp. 278–86). It is not always clear which prospect or strategy involves the greatest risks or how the actor evaluates the relative risks.

The problem would be simplified under the following conditions: An actor sees herself in a mixed domain of losses and gains, with one option which could lead only to negative outcomes and another which could lead to either negative or positive outcomes. (Note that we cannot specify which is preferable on expected-value terms in the absence of information of how extreme each of these outcomes is.) If the decision criterion is to avoid a certain loss, the actor might then choose the second option. This is a plausible interpretation of Carter's decision to approve the rescue mission, in that inaction could only lead to losses, whereas the rescue mission held out the possibility of gains. (Recall that McDermott assumes a domain of losses rather than a mixed lottery involving both losses and gains.)

Many cases in international politics involve the additional complexity of trade-offs between immediate and future risks (and uncertainties). This raises a difficult theoretical problem and one which has not received much attention in the literature on prospect theory. In the formal decision-theoretic literature, future utilities are discounted and then combined with present utility into a single utility function and hence a single-risk attitude. George (1969, pp. 214–15) questions the validity of this assumption in international relations, suggests that risk orientation is a multidimensional concept, and argues that political leaders often evaluate risks sequentially. Decision-makers not only focus on the level of risk, but also assess when the risky outcomes are likely to arise, and the extent to which they (decision-makers) will be able to control the sequence of events leading to those risky outcomes (see also George & Smoke, 1974, pp. 527–30).

Thus the assessment of which options involve the greatest risks, and by how much, is rarely easy, either for the actor or for the analyst. Some analysts might assume that war, or the use of force short of war, always carries the largest risks, perhaps because of the "fog of war" and the inherent danger that war might escalate. This might be consistent with a minimax criterion, for a devastating defeat in war is reasonably regarded as the worst possible outcome, however small its probability of occurrence might be.

But nonaction and the continued deterioration of the status quo also involves substantial risks, and in some situations these may be perceived to be greater than the risks of war. Political leaders are often quite confident that they can achieve a rapid and complete victory with minimal costs (White, 1968; Jervis, 1976; Levy, 1983) and thus underestimate the risks involved in the use of force. At the same time, they may exaggerate the possible internal and external threats that might arise from their failure to act (Mayer, 1977). Exactly how decision-makers will evaluate and compare these risks is highly uncertain, and consequently it is difficult to predict how a risk-seeking (or risk-averse) actor will behave.

It not at all clear, for example, that U.S. decision-makers regarded the

military, diplomatic, and domestic political risks of military action in the Persian Gulf in 1991 as greater than the risks involved in continuing economic sanctions, holding the diplomatic coalition together, and allowing Saddam Hussein more time to acquire nuclear and biological weapons. Nor is it clear, returning to the McDermott study, that Carter, given his high estimates of success of a rescue mission, perceived that a rescue mission involved more risks than did allowing the hostage crisis to continue, with all of its unpredictable consequences for his own upcoming reelection campaign as well as for the image and influence of the United States in the world. If this were true, it is not clear whether the decision for the rescue mission is best explained in terms of (1) risk-seeking behavior to avoid the certain losses inherent in the continued deterioration of the status quo, (2) risk-averse behavior to avoid the enormous risks and uncertainties inherent in the continued deterioration of the status quo, or (3) the maximization of expected value based in part on Carter's expectation of a successful rescue mission.

The problem of evaluating perceptions of relative risks also applies to crisis bargaining. "Spiral theorists" generally believe that the uncompromising demonstration of resolve through threats is the riskiest (in terms of the probability of escalation to war) strategy in a crisis because of the security dilemma and the psychological dynamics associated with it. "Deterrence theorists," on the other hand, believe that a policy of firm deterrent threats is the least risky strategy because it clarifies commitments, demonstrates resolve, and minimizes the likelihood of miscalculation (Jervis, 1976). Decision makers may also have different ideas (in terms of risks) as to whether hardline bargaining tactics (and conciliatory gestures) ought to come early or later in the negotiating process, as Rogers (1991) shows in his analysis of images of escalatory dynamics and optimum bargaining tactics.

The Preventive War Problem

The complexities of relative risk assessment are also evident for a state which is in relative decline and which faces a decision whether (1) to initiate preventive military action against a rising challenger while the opportunity is still available, or (2) to accept the continued deterioration of its international position (along with the domestic costs that it might entail).

As I noted in an earlier study (Levy, 1987, pp. 101–3), war now involves uncertainties regarding the probability of victory (presumably over 50% for a declining but still stronger state in a bilateral war), its costs, and the likelihood and costs of escalation or the intervention of third states. Delay involves uncertainties regarding whether and how far one's position will continue to deteriorate, what the adversary will do once it achieves a position of superiority (or before), the feasibility of securing diplomatic support to contain the adversary, the possibility of appeasing it, and particularly the likelihood and costs of a future war. In domestic terms, war now could generate for the elite in power either the

domestic benefits of a victorious war or the potentially fatal costs of defeat, whereas delay might generate a gradually increasing discontent but the opportunity to pass the potential costs of war onto the elites' political successors. A further complication for prospect theory is that the possibility of gains from war creates a situation of mixed losses and gains rather than a domain of pure losses for the declining state. (I assume here that the declining state defines the present status quo as its reference point. The rising challenger might focus on a higher—that is, future—aspiration level.)

It is difficult to say which of these two prospects—preventive war or continued decline—involves the greatest risks, at least in the eyes of decision-makers, and therefore which way a risk-seeking actor in the domain of losses would be inclined if the decision were not compelling on expected-value grounds alone. Assessment all depends on the criterion decision-makers use to compare relative risks. If decision-makers adopt a minimax criteria, they might prefer to delay and avoid the worst possible outcome, defeat in a preventive war. Alternatively, because war might bring gains as well as losses and thus involve a mixed lottery, decision-makers who want to avoid the near-certain losses inherent in the continued deterioration of their position might prefer war now, given their perception that inaction would lead to continued decline. This second interpretation might be reinforced by another consideration which follows from the endowment effect: states will probably try to hang onto their current entitlements longer than they should on the basis of a rational calculus.

A criterion based on the range or variance of possible negative outcomes, on the other hand, might lead to a different result. It would suggest that the risks of delay are greater than the risks of war now, for the number and magnitude of negative outcomes presumably increases as one's relative power declines. This would create an incentive for a risk-acceptant actor to delay but for a risk-averse actor to prefer preventive action now. This tendency for risk-acceptant dominant states to prefer inaction, but for risk-averse states to prefer war now, is precisely what Kim and Morrow (1991) derive from their formal theoretical model of war decisions during power transitions; moreover, this hypothesis receives some support from their empirical analysis for the period since 1815.

Unfortunately, neither the theoretical nor experimental literature proves much guidance for an analysis of the trade-offs between risks now and risks later. No analysis of this kind can be definitive in the absence of auxiliary assumptions about the decision criteria adopted by policy-makers and the extent to which they discount future utilities.

Risk Propensities When Probabilities Are Small

Another problem (though perhaps a lesser one) with nearly all applications of prospect theory to international relations is that they treat as unconditional the hypothesis that actors are risk-averse with respect to gains and risk-acceptant

with respect to losses. But recall that risk orientation is determined not only by the value function but also by the probability-weighting function. For small probabilities the over-weighting of probabilities works in the opposite direction as the value function and encourages risk-seeking in the domain of gains and risk aversion in the domain of losses. Which of these counteracting tendencies will dominate depends on the precise shapes of these functions over this range of small probabilities.

This indeterminacy is further compounded for prospects involving extremely small probabilities, where observed behavior is quite erratic and where the probability-weighting function is therefore indeterminate. The problem is compounded also in situations which involve catastrophic losses (which presumably involve very small probabilities), where studies have shown that the tendency toward risk-seeking may be reversed (Payne et al., 1981; Tversky & Kahneman, 1986, p. S258).

Thus we must be very cautious in making assumptions about risk attitudes in situations involving small probabilities and/or catastrophic losses. Such situations may be fairly common in international relations, particularly those involving decisions on war and peace, and particularly in the nuclear age. It may be true that states would be less likely to risk a nuclear war to improve their position than a standard-probability calculus might suggest, or more likely to risk one if they thought the adversary was about to attack and that there was a small chance they could escape unscathed by preempting (Jervis, 1989, p. 171), but we should remember that under some conditions prospect theory would make the opposite predictions. Similarly, the argument that deterrence against an expansionist adversary is reinforced by the presumed aggressor's risk aversion with respect to gains may not be true, for the over-weighting of a small probability of a large gain might (depending on the respective shapes of the value and weighting functions) lead to risk-acceptant behavior.

What this means is that analysts who apply prospect theory need to be quite sensitive to the probabilities which decision-makers attach to various outcomes. If probabilities are in the moderate range, the standard prospect theory hypotheses based on the value function can be applied. But if probabilities are small, one cannot apply these hypotheses directly without making assumptions about the respective shapes of the value and probability-weighting functions. The analyst's task is complicated further by uncertainty regarding the transition point from over-weighting to under-weighting of probabilities, particularly for the more complex choice problems typically found in international relations.

Other Determinants of Risk Propensity

Most of our discussion, along with most applications of prospect theory to international relations, assumes that the risk orientation of decision-makers is determined primarily by the framing of losses or gains around a reference point.

But this is a very strong assumption, and probably not a very reasonable one, for attitudes toward risk can also be affected by idiosyncratic, cultural, political, ideological, and other decision-making variables as well as framing effects. Recall that the reflection effect found in laboratory experiments typically applies to about 60% to 80% of the subjects. Although this consistency level is quite high by any social science standards, and although these findings have been found to be valid for a wide variety of subjects, including business executives (MacCrimmon & Wehrung, 1986) and the medical community, it does raise the questions of who the other 20% to 40% are and why they behave differently.

Nonconforming behavior of this order of magnitude may be of lesser significance than majority tendencies in situations which involve large numbers of individuals in market situations, but it can have enormous impact in international relations. General Tojo's remark a few weeks before Pearl Harbor is reminder enough: "There are times when we must have the courage to do extraordinary things—like jumping, with eyes closed, off the veranda of the Kiyomizu Temple" (quoted in Morgan, 1977, p. 153). The behavior of the deviant 20% to 40% is itself a critical issue for research in international relations.

It is clear that individual characteristics such as personality, age, race, gender, education, income, and profession can all have an impact on risk attitude, as a number of empirical studies have shown (for sources see MacCrimmon & Wehrung, 1986, p. 49). The influence of most individual-level attributes may be effectively randomized in large-*n* laboratory studies so that we can reasonably assume that risk orientation in those studies derives exclusively from framing around a reference point. But there is good reason to believe that attitudes toward risk are one factor which distinguish political leaders from the population at large and which facilitate their rise to high-level political positions, so that we cannot dismiss these other sources of risk orientation in the analysis of foreign policy behavior.

The question of the risk attitudes of political leaders is a complex issue, for recruitment processes in some political systems may be more biased than others toward risk-seeking individuals (Morgan, 1977, pp. 153–64). Highly bureaucratized systems might reward individuals with risk-averse attitudes, whereas dictatorial or revolutionary regimes might be more conducive to risk-seeking leaders. As Mussolini asked, perhaps with some exaggeration, "have you ever known a prudent calculating dictator?" (quoted in Morgan, 1977, p. 153). These possible effects of political structure may be tempered by those deriving from small group dynamics: the "risky shift" hypothesis suggests that risk-seeking propensities tend to increase in the context of group decision-making, although more recent literature is more balanced on the question of the magnitude and direction of choice shifts (Pruitt, 1971; Kirkpatrick et al., 1976; Janis, 1982).

Political culture may also influence risk attitudes. Nearly all experimental work on framing, the reflection effect, and loss aversion has been conducted on American subjects, frequently college students. It would be interesting to exam-

ine whether observed tendencies are as prominent in European, Latin, Middle Eastern, or Eastern cultures. Ideological variables may also be significant. George (1969) argues that individual approaches to risk are an important component of operational code belief systems and that because of the Bolshevik operational code Soviet leaders have a different (and more differentiated) approach to risk than U.S. leaders. Adomeit (1982, p. 56) also emphasizes ideological factors and argues that Soviet risk-taking tends to occur in leftist periods in Soviet history and risk avoidance in rightist periods.

Thus it is quite possible that individual, institutional, cultural, and other variables have a significant influence on risk orientation. An analysis of the role of risk propensities in international relations should not be confined to framing around a reference point but should be expanded to include other variables as well.

The analysis of other influences on risk propensity is admittedly a data-intensive task, but it is particularly important for individual case studies, where it is more difficult to control systematically for other sources of risk attitude and where a premium is placed on construct validity. Although there is no guarantee that risk propensities are invariant across time and issues, an analysis of a political decision-maker's orientation toward risk in previous situations might be a useful indicator of present risk attitudes, and for this reason political biographies can be a useful source of data on risk propensities. The George and George (1956) study of Woodrow Wilson is a good example here.

CONCLUSION

Recent attempts to apply prospect theory or some of its key hypotheses to international relations make a significant contribution to the field in a number of respects. First of all, by emphasizing the potential importance of risk propensities, they direct additional attention to an important variable which only recently has begun to attract rigorous and systematic research by international relations scholars (Bueno de Mesquita, 1981, 1985; Morrow, 1987). The fact that the scholars applying prospect theory in international relations come from a different research tradition than the more formally oriented scholars noted above makes this renewed emphasis on risk propensity all the more significant.

The assumption that actors in international relations define value in terms of deviations from a reference point rather than in terms of net asset or power position, and the proposition that gains are treated differently than losses, are also significant contributions to the literature. These ideas have enormous potential in helping to explain the repeated tendency for actors to expend extensive resources and effort to resist even small changes in the status quo contrary to their interests, to make limited changes in order to preserve the overall structure of the status quo, and to persist in losing ventures longer than a rational calculus might

predict. Moreover, the framing of a decision problem can affect not only the definition of the reference point but also the evaluation of the utilities of various outcomes. Thus the focus on framing gives renewed emphasis to the old question of the definition of the situation in foreign policy decision-making (Snyder, Bruck, & Sapin, 1962).

In spite of their enormous potential contribution to international relations, applications of prospect theory face a number of potentially difficult conceptual and methodological problems. These difficulties are effectively overcome under highly structured and controlled experimental conditions, but they are much less tractable in the empirical study of international relations through case study or aggregate data methods.

It is not always clear how a decision-maker identifies the reference point; how she defines her available policy options, the possible outcomes that might result from each, and the values and probabilities she attaches to each of these outcomes; which option she perceives as the more risky one; or how she balances immediate versus future risks. For these reasons, it is often difficult to determine whether the preference for one option over another derives from framing, loss aversion, and the over-weighting of certain outcomes; from the adoption of an alternative decision criterion regarding risk; or from a simple utility-maximization criteria. The possible reversal of risk propensities at low probabilities and the highly indeterminant behavior expected at extremely low probabilities further complicate the analysis under certain conditions.

Of course, excessive concern for all of these problems is as likely to lead to paralysis as to better research. We are at an early stage in the application of some of these hypotheses to international relations, and the attitude of the critic should be one of openness and encouragement. Farnham's (1992) conclusion regarding her own study can be fairly applied to the other case studies in this issue as well: "With respect to the theoretical significance of these findings, at the very least they support the demand of prospect theory to be acknowledged as a legitimate alternative for explaining decision-making behavior."

At the same time, however, it is reasonable to suggest that it is not enough for an analyst to demonstrate that observed behavior is consistent with prospect theory. It is also necessary to make a serious effort to rule out the alternative explanation that the observed behavior is also consistent with a rational choice model which posits that decision-makers select the option that has the higher expected value in terms of a standard probability calculus.

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