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⊟ Abstract and Keywords

This chapter focuses on the decision-making models and biases used to explain the decisions of political leaders with a particular emphasis on foreign-policy decisions. We summarize some of the key debates and criticisms of the various approaches. Various models and theories are considered: rational choice theory, bounded rationality/cybernetic, organizational process model, bureaucratic politics model, prospect theory, and poliheuristic theory. Several biases are discussed: personality and beliefs, groupthink, polythink, and summary approaches. We conclude with a detailed discussion of the rational–cognitive debate as well as some thoughts for future progress in decision-making analysis.

Keywords: rational choice model, bounded rationality, cybernetic, organizational process model, bureaucratic politics model, prospect theory, poliheuristic theory, polithink, biases

1 Introduction

Elite decision-making analysis focuses on the choices made by the leadership, whether conceived as individuals, groups, or coalitions representing nation states. There are various directions for approaching this rather broad topic. This chapter will focus on the decision-making models and biases used to explain the decisions of political leaders with a particular focus on foreign-policy decisions. The approaches covered here are applicable to many domestic decisions as well—for example, on public policy reforms, budgetary decisions, elite decisions concerning political appointments, personnel decisions, and so on (see, e.g., Jones and Baumgartner 2005). In the area of political behaviour most decisions focus on candidate evaluation and voters' response. Consequently, we highlight in this chapter the topic of leadership as it pertains to foreign policy. Throughout, we summarize some of the key debates and criticisms of the various approaches. We conclude with a detailed discussion of the rational–cognitive debate as well as some thoughts for future progress in decision-making analysis.

2 Decision models

Models of decision-making typically specify processing characteristics by describing how individuals acquire and assess information, as well as how a final choice is selected among alternatives under consideration. These information-processing characteristics and decision rules may lead to biases and deviations from an ideal rational choice. Consequently, we consider the rational choice model first.

Rational choice model

Rooted in economics (see von Neumann and Morgenstern 1947; Friedman 1953), rational choice conceives of decisions as means–ends calculations (Zagare 1990; Morrow 1997). Decision-makers choose among a variety of options on the basis of their expectation that the choice selected will serve some goal better than the alternatives. This is frequently framed in terms of a simple cost–benefit analysis; decision-makers are expected to select the choice that has greater expected net benefits (that is, benefits minus the costs) than those of other alternatives under consideration. However, many rational theories may simply posit a preference-ordering over outcomes (see Morrow 1997). For example, if alternative *X* is expected to yield *A* and *A* is preferred to *B*, a decision-maker should prefer alternative *X* to an alternative that is expected to yield *B*. The primary claim of rational choice is that choices are consistent with preferences. But, in practice, rational decisions are likely to require a good deal of time, careful and exhaustive deliberation, as well as some familiarity with the type of problem the decision aims to address. Greg Cashman (1993: 77–78) provides a useful set of steps in the rational model:

1. identify problem;
2. identify and rank goals;
3. gather information (this can be ongoing);
4. Identify alternatives for reaching goals;
5. analyse alternatives by considering consequences and effectiveness (costs
6. and benefits) of each alternative and probabilities associated with success
7. select alternative that maximizes chances of selecting best alternative (as
8. determined in step 5);
9. implement decision;
10. monitor and evaluate.

According to the rational choice model, the decision-maker is assumed to be able to rank preferences 'according to the degree of satisfaction of achieving these goals and objectives' (Sage 1990: 233). The rational actor is also expected to be able to identify alternatives and their consequences and to select from these alternatives in an effort to maximize satisfaction. In this setting, the rational economic decision-maker is expected to be able to access a set of objectives and goals. Graham Allison defines rationality as a 'consistent, value-maximizing choice within specified constraints' (Allison 1971: 30). According to Allison (1971: 29), the rational decision-maker chooses the alternative that provides the consequence that is most preferred. The brevity of this definition belies the strength of the model. The rational model is parsimonious. This means that a few rather straightforward assumptions, taken together, are thought to explain a wide range of foreign-policy decisions and actions (Schelling 1966; Bueno de Mesquita et al. 2003).

MacDonald (2003: 552) summarizes the three parts of the rationality assumption. First, actors are assumed to employ purposive action motivated by goal-oriented behaviour and not simply by habit or social expectations. The decision-maker must be able to identify an a priori goal and move with the intention of reaching that objective: for example, an unemployed person looking for a job is behaving purposively if he or she actively searches for work. Second, actors display consistent preferences as manifested in the ability to rank the preferences in transitive order. Transitivity means that, if alternative 1 is preferred over alternative 2, and 2 is preferred to 3, then 1 is preferred to 3. For example, if diplomacy is preferred to sanctions and sanctions are preferred to use of force, then diplomacy is preferred over the use of force. Invariance means that a decision-maker's preference holds steady in the face of various means of information presentation (McDermott 2004b: 52–7). For example, sometimes information can be framed in a particularly leading manner. William Riker (1995: 24) observes that preference ordering is a hallmark of purposive behaviour so that, taken together, these first two assumptions mean that actors must know what they want and be able to rank outcomes in relation to the goal. In other words, you need to know your destination if you hope to get there. Finally, and as noted by Allison (1971), utility maximization means that actors will select the alternative that provides the greatest net benefit.

Bounded rationality/cybernetic models

Simon (1957) proposed a model of bounded rationality. According to the model, individuals are thought to possess cognitive constraints on their information-processing capacities such that it is impossible for a decision-maker to identify all potential alternatives and adequately assess their implications. If a dynamic model of sequential decision-making is considered, the problem is further complicated. Thus, in order to overcome the cognitive and organizational costs associated with choice search and analysis, individuals frequently make suboptimal decisions. Simon suggests that a decision made today may yield satisfactory results for one problem, but actually work against an optimal outcome in subsequent decision problems. For example, US efforts to arm the mujahedeen in Afghanistan against Soviet forces promoted US goals during the 1980s, but helped establish the rise of al-Qaeda.

The model of bounded rationality/cybernetic decision-making (Steinbruner 1974) assumes an order-sensitive search process by which the sequence in which alternatives are considered will influence the selection of a choice. Rather than maximize with respect to a goal, decision-makers are thought to employ a satisficing selection rule—the first alternative that is deemed satisfactory is adopted. In terms of information-processing, the model assumes that decision-makers limit the amount of information considered at any given time to that deemed relevant to the single alternative under consideration, eliminating the complexity associated with pair-wise comparisons of all available alternatives (Steinbruner 1974: 66). Empirical research evaluating the bounded rationality/cybernetic model with respect to foreign-policy decision-making offers qualified support (see Ostrom and Job 1986). Perhaps the most prominent example is Ostrom and Job (1986); they apply a cybernetic model of decision-making to presidential decisions to use force, finding that presidents tend to dispatch military forces when faced with difficult political circumstances at home.

Organizational process model

An outgrowth of Simon's work (1957) on bounded rationality is the organizational process model. The seminal work here is Cyert and March (1963); they argue that the alternatives available for addressing a given problem are typically determined ex ante by organizational routines and standard operating procedures. The organizational role of a decision-maker is likely to influence foreign-policy decisions via predetermined routines and areas of responsibility. A problem cannot be addressed with resources or processes that do not exist; the choice is likely to be one that is organizationally feasible and promises adequate success with respect to implementation.

Although the organizational process model had existed for some time, and bedrock studies of foreign-policy decision-making (Snyder, Bruck and Sapin 1954, 1962) posited the importance of organizational roles, Allison (1969; 1971: ch. 3) was perhaps the first to apply the model to a foreign-policy decision in his analysis of the Cuban Missile Crisis. He argues that the decision to blockade Cuba can be understood as an available option—that is, such options as a 'surgical' air strike were not said to be available as a routine option—with a pre-existing plan for implementation. Since Allison's 1971 work, however, relatively little effort has been made to apply the organizational process model to foreign-policy decisions. Welch (1992) suggests that this may be the case because there has been some conflation of the organizational process model with the bureaucratic politics model.

Bureaucratic politics model

The bureaucratic politics model has its roots in research on bureaucracies and foreign policy (e.g. Huntington 1960; Hilsman 1967). According to Allison's formulation (1971) of the model, foreign-policy decisions are made by a collective executive (a cabinet), with each member of the group possessing his or her own bureaucratic interests. The position/choice advocated by any group member is likely to be one that serves his or her bureaucratic interests. Specifically, they seek to 'promote the positions their organizations have taken in the past' that 'are consistent with the interests their organization represents' (Feldman 1989: 13). The process by which decisions are made can be characterized by the 'pulling and hauling' of group bargaining (Allison and Halperin 1972: 43). The choice selected by the group is likely to reflect the preferences of the group member(s) who is best able to garner 'bargaining advantages, skill and will in using bargaining advantages, and other players' perceptions of the first two ingredients' (Allison and Halperin 1972: 50). Much of the empirical support for the bureaucratic politics approach was produced through the analysis of defence

policy decisions (Allison and Halperin 1972; Halperin 1974), finding that US decisions concerning arms production and limitations were consistent with the bureaucratic approach.

Prospect theory

Unlike the rational choice approach, prospect theory assumes that preferences over alternatives are not transitive, but depend on net asset levels vis-à-vis a reference point—gains and losses from a frame of reference (Kahneman and Tversky 1979: 277). Decision-makers treat gains and losses asymmetrically, overvaluing losses relative to commensurate gains. This asymmetry produces a non-linear utility function characterized by greater steepness on the loss side than on the gain side. Consequently, decision-makers pursue a strategy of loss aversion, which has been corroborated in a number of studies (Kahneman and Tversky 1979). The central implication of framing and loss aversion is that decision-makers will pursue riskier strategies to reverse losses, but eschew risk when gains have been accumulated. In foreign-policy decision-making, risk-taking in order to avoid (or reverse) losses has been shown to be associated with decisions involving crisis situations (see, e.g., McDermott 1992; Berejikian 2002).

Poliheuristic theory

An effort to integrate cognitive and rational approaches to decision-making is poliheuristic theory (e.g. Mintz and Geva 1997; Mintz et al. 1997;). Poliheuristic theory postulates a two-stage decision-making process in which leaders utilize a dimension-based search of the alternatives, ruling out those that fail to satisfy requirements on a key, non-compensatory dimension in the first stage of the process. In the second stage, a final choice is made through the analytic (that is, rational) comparison of the remaining alternatives (see, e.g., Payne, Bettman, and Johnson 1993; Mintz et al. 1997; Mintz 2004). The non-compensatory heuristic (cognitive short cut) employed in the first stage reduces the menu of alternatives to a manageable set, reducing the mental effort required in the search for a choice. This procedure is thought to mirror the process by which individuals make decisions (Payne, Bettman, and Johnson 1993). However, for political *leaders* the political dimension is often the non-compensatory dimension.

The use of the non-compensatory principle for the elimination of unsatisfactory/unlikely alternatives is also useful for scholars in analyses of leaders' foreign policy and national security decisions—in both theory-testing and forecasting projects. Poliheuristic theory is thought to account for a variety of phenomena, including crisis decision-making (e.g. Mintz 1993; DeRouen and Sprecher 2004), international bargaining (Astorino-Courtois and Trusty 2000), and the influence of political advisers in foreign-policy decision-making (e.g. Mintz 2005a).

3 Decisional biases

Psychological approaches to foreign policy and/or national security decision-making also point to how attributes of leaders and their information-processing behaviour in various settings influence decisions. Such features are thought to produce decisional biases, which result when decision-makers overlook or intentionally disregard relevant information.

Personality and beliefs

Research on leaders' personalities suggested that means employed for achieving the specified ends of a decision problem may serve other purposes altogether, producing biased decisions. For instance, decision-makers may possess ethnocentric or nationalistic attitudes learned from their own socialization, which may influence their choices if they seek to satisfy a need to affirm national/ethnic superiority rather than the ends of policy (Levinson 1957). A set of studies by Margaret Hermann (1974, 1980) identified a set of personality traits—nationalism, control over events, dogmatism, and cognitive complexity—that corresponded to overall foreign-policy orientation and behaviour of leaders.

Research on personality has evolved into two additional research agendas. The first explores the impact of leadership styles on foreign-policy decision-making (Kissinger 1966; Hermann et al. 2001). This approach argues that leadership style influences decisions via delegation–management arrangements. Leaders who tend to delegate and take advice seriously can be expected to have less of an impact on the decision than micro-managers. The second research agenda is the operational code approach. Operational code analysis argues that decision-makers' beliefs, as 'subjective representations of reality' in political life, critically influence (that is, distort, block, and recast) incoming information (Leites 1951; Walker and Schafer 2006: 4–6). Given a stimulus from the external environment, beliefs may steer decision-makers towards some courses of action and away from others (George (1979).

One's beliefs about international objects (that is, actors, events, and the decision environment) may be referred to as the decision-maker's cognitive structure. For example, operational codes, schemas, and cognitive maps all refer to naive theories held by policy-makers (see, e.g., Axelrod 1973). Such cognitive structures drive decision-makers' perceptions and responses to international events, aiding the organization and interpretation of data. Information that appears to contradict a decision-maker's preconceived beliefs may initially be ruled out (e.g. Axelrod 1973; Jervis 1976), resulting in biased decisions. But when the bulk of information contradicts the initial beliefs, decision-makers may become increasingly vigilant and seek additional information in the evaluation of available options (Pruitt 1965: 411–414).[1]

Group decision-making

Because leaders must contend with a variety of issues, policy-making tends to be largely an organizational endeavour. Research on the organizational roles of decision-makers suggests that alternatives advocated by a given group member are likely to be dictated by his or her own organizational routines or organizational interests (Allison 1971). But group dynamics can influence how information is processed and decisions are ultimately made. For example, group features such as size, role of the leader, and decision rules have an impact on the outcome of deliberations (Hermann and Hermann 1989). Perhaps the most detrimental consequence of group decision-making arises when members of the group seeks consensus at the expense of thoroughly exploring other alternatives—groupthink.

Groupthink, which was introduced by Janis (1982), occurs when members of the group come to disregard information that does not conform to the majority position. Indeed, the overarching goal for each group member is to achieve conformity, resulting in self-censorship and the stifling of dissent. Groupthink situations are more likely if the group is isolated from outside input. It is also more likely if the group lacks an impartial leader who can tolerate dissent. A lack of norms or procedures for decision-making also leaves the group vulnerable to a groupthink dynamic. Groupthink provides safety and security for decision-makers, and these qualities can be inviting if the situation at hand is a crisis or has moral overtones, or if there was a recent policy failure. Consequently, it is not surprising to find that decision-making during major crises are susceptible to groupthink, because members rely on each other for support and validation. Janis notes several reasons why groupthink is normally expected to be deleterious to decision-making. The most obvious problem is that the search for information and alternatives is inadequately carried out. Outside experts are not solicited and thinking is conformist. After a decision has been made, it is not likely to be vetted for possible problems and undesired outcomes. Because the group often has an unrealistically high opinion of itself and its ability to succeed, it is less likely to have a back-up plan in case of failure or the ability to monitor past decisions.

More recent work on group decision-making has refined and expanded the groupthink model to include additional group processes and pathologies. In *Beyond Groupthink*, Paul 't Hart, Eric Stern, and Bengt Sundelius (1997a) point out that small groups working in an advisory process are varied in composition and role, and that there are political and institutional factors that operate above the level of the group and that define and shape its role. The authors raise additional questions ('t Hart, Stern, and Sundelius 1997b) regarding the groupthink model. First, it is unclear how applicable the model is. Most of the extant research on the model is confined to the USA, raising the question of the model's applicability outside the presidential system and its rather unique presidential advisory system.

't Hart and colleagues (1997b: 11) caution that the groupthink bias is not the only possible result of group decision-making. Indeed, George's multiple-advocacy model (1980) points to conditions under which the quality of a decision may be enhanced in a group setting. The model posits a loose decision structure in which the leader moderates a diversity of views within the group of advisers. The leader advocates competition between agencies or individuals (Dougherty and Pfaltzgraff 1990: 472–473) and chooses from the several policy options that have been openly debated. George and Stern (2002) argue that the multiple-advocacy model is likely to produce desirable decisions when an advisory group represents a diversity of opinions, advisers have equal access to resources, the leader actively monitors the debate, and there is little time pressure.

Another alternative to groupthink is polythink (Mintz, Mishal, and Morag 2005; Mintz and DeRouen 2010: ch. 3), which is characterized by varied and multiple views, opinions, and perceptions of the same goals and alternatives among group members. In contrast to the homogenous, uniform, monolithic world view of group members that characterizes groupthink, polythink reflects group heterogeneity. Some of the distinguishing features of polythink are independence of thought and the existence of contradictory interests among group members. These may create a situation in which it becomes virtually impossible for group members to reach a common interpretation of reality and common policy goals.

Summary approaches

Recent research (see Thaler and Sunstein 2009; Kahneman 2011) presents an integrated view of cognitive psychological approaches as they influence everyday decision-making. Such research begins with the distinction between two separate 'operating systems' within each decision-maker: an automatic/fast system and a reflective/slow system. When a decision-maker is in the automatic/fast mode, he or she tends to reason 'from the gut'—make choices consistent with easily retrieved information. When operating in the reflective/slow mode, decision makers are more deliberative and logical.[2] Thaler and Sunstein (2009) explain that many choices made by individuals are not in their best interests. Indeed, individuals operating in the automatic/fast mode tend to be myopic, self-indulgent, and subject to peer pressure. Consequently, the quality of decision-making can be improved by manipulating the presentation of choices such that decision-makers can choose desirable courses of action.[3]

4 The rational–cognitive debate

Perhaps the most prominent debate within the subfield of foreign-policy decision-making is between advocates of rational choice and those advancing cognitive psychological approaches. The debate has tended towards three issues: (1) the importance of process relative to outcome; (2) the large variety of cognitive models; and (3) deductive versus inductive theory construction. Regarding the first issue, cognitive psychological approaches to foreign-policy decision-making tend to privilege the role of process over outcome, focusing on how framing, beliefs, schemata, and (among other things) information-processing influence decision-making. Rational choice approaches tend to focus on preferences and outcomes (Hudson and Vore 1995; Rosati 2000). Initially, the cognitive critique of rational choice involved the characterization of a decision-maker as a cool-headed 'superhuman' capable of identifying all possible goals and alternatives and carrying out precise expected utility calculations in order to arrive at the 'best' choice (see, e.g., Simon 1957). According to critics, such a characterization of decision-makers was patently unrealistic, providing an erroneous account of the decision-making process. In response to these claims, rationalists argue that the account of rationality typically set forth by critics refers to procedural rationality rather than instrumental rationality (see, e.g., Zagare 1990). While the former refers to an ideal type developed to avoid errors in judgement, the latter type of rationality relies on fewer assumptions and allows for miscalculations, which are thought to occur commonly in foreign policy.

Despite the forceful restatement of instrumental rationality's assumptions, cognitivists renewed their calls for greater process validity. Following the discoveries of Kahneman and Tversky (1979) in particular, cognitivists argued against the utility of a theory whose assumptions appeared to be largely disconfirmed in experimental psychology and economics. In response, rationalists point to the long-standing tradition that the usefulness of the rational choice assumptions lies in the accuracy of the predictions deduced by the assumptions. If the predictions are accurate and the model outperforms its competitors, decision-makers can be treated 'as if' they are rational (see Friedman 1953).

A related defence of the rational model concerns parsimony. From only a few simple assumptions, the rational choice model is capable of explaining a variety of political decisions. The capacity for abstraction is regarded as a virtue. Simplifying assumptions are not intended to recreate actual

behaviour, but to generate accurate and robust predictions. Consequently, the rational choice model is devoid of psychological factors. Indeed, rationalists point out that the consideration of psychological variables tends to contribute little to the explanatory power of the rational model, reducing parsimony (Danilovic 2003).

As a result of the relative emphases on process or outcome validity, the rational and cognitive approaches have developed largely in mutual isolation, each dominant in its own realm (see Kaufmann 1994; Hudson and Vore 1995; Rosati 2000). Such mutual isolation, however, does not bode well for scientific progress. In order to evaluate theories relative to their competitors, one must be able to draw direct comparisons between them (Lakatos 1970). If one approach focuses primarily on one type of phenomenon (for example, process) while a competing approach focuses on another (such as outcomes), they may be incommensurable (see Kuhn 1970), complicating useful comparisons and progress in theory development and testing (see Kaufmann 1994).

The second issue concerns the large variety of cognitive models. Some argue that the cognitive approach is fragmented and consists of islands of theory with 'no dominant decision rule' (Stein and Welch 1997: 53). In contrast, the rational choice model seems to have attained the status of a unified framework for understanding decision-making (see, e.g., MacDonald 2003). While the former claim can be supported by the myriad mechanisms identified by cognitivists (that is, schemata, heuristics, and so on), the latter is difficult to defend. There is no single rational choice theory. Recent advances in non-cooperative game theory highlight the variety of models employing the basic rational choice assumptions. For instance, rational choice models vary according to the number and preferences of the actors, the number and type of alternatives, the number of moves each player makes, the completeness of information, and so on. Each model is implicitly embedded in a particular situation with a variety of psychological factors assumed: 'actors do what they believe is in their best interest at the time' (Morrow 1997: 12). Rather than account for the origins of beliefs and interests, these concepts are treated as exogenous. Moreover, rationalists continue to be at odds with each other over appropriate solution concepts for identifying predictions in game theory models. Most political scientists are familiar with the Nash equilibrium as a solution concept. However, this solution concept—and, indeed, other refinements—do not always provide a unique solution for a game. Consequently, scholars have developed new solution concepts to narrow down the number of equilibrium outcomes in a given model (see, e.g., Danilovic 2003). Overall, the rational choice approach is no more coherent or unified than the cognitive approach.

The third issue in the debate concerns the merits of deduction relative to the pitfalls of induction—a practice ascribed to cognitivists. Simply put, induction relies on the incorporation of observed relationships and phenomena into a theory, while deduction involves the construction of a theory from abstract and frequently unobserved assumptions that are used to develop hypotheses. Deduction is thought to be the superior technique for theory construction because it avoids problems associated with selection and sample bias, avoiding erroneous conclusions. Rationalists point out cognitive theories incorporate assumptions that were obtained through experiments, surveys, or archival materials (Morrow 1997). As a consequence, such cognitive models are merely descriptions of observed phenomena. In contrast, rational models begin from first principles and formulate assumptions before examining the phenomena of interest. Cognitivists defend their practice on the basis of added scientific realism. But the differences between these methods for theory construction are rather narrow in practice. When developing a model, rationalists typically attempt to explain as many known phenomena as possible (see Bueno de Mesquita et al. 1999). Indeed, much of the formal rational literature during the 1970s and 1980s consisted of analyses of single cases in which the outcome was known and the purpose of the analysis was to induce the preferences of the decision-makers. Even models that attempt to explain a large number of cases must be constructed such that they account for known phenomena. Alternatively, cognitivists identify (that is, deduce) implications of their theories and test them in research settings external to the cases(s) in which the theory was developed. Thus, theory is not constructed in a vacuum for either school, and deduction leads to novel hypotheses that are then tested.

Despite these seemingly insurmountable issues, the rational–cognitive debate has spawned some cross-fertilization between the approaches. For instance, with poliheuristic theory, Mintz and colleagues have fruitfully incorporated expected utility into a cognitive model of decision-making, enhancing the precision of predictions (that is, outcome validity). Similarly, scholars working within the operational code research programme have integrated the theory with game theory. Specifically, operational code analysis has made explicit the strategic nature of the theory through the use of subjective games rooted in the rules of play developed by Brams (1993)—the theory of moves (TOM). For example, Walker (1977) argued that Kissinger's belief system led to preferences akin to the logic of the prisoner's dilemma game. Recent operational code research has relied extensively on formal modelling using 2 × 2 games and simulations (see, e.g., Walker and Schafer 2006). Rationalists have also incorporated psychological factors in their models such as perceptions and beliefs (see, e.g., Kim and Bueno de Mesquita 1995).

5 Conclusion and new directions

As this chapter has demonstrated, there are a number of decision approaches and biases that are applicable to leadership decision-making. Most of the models and theories discussed in this chapter are applicable to both domestic policy-making and to foreign-policy decision-making. Scholars often disagree on an overarching theory of political decision-making, however. These controversies provide fertile areas for future study. For example, the poliheuristic decision model is posited as a hybrid approach involving elements of both the rational and cognitive schools. While much work on political decision-making has been done from experimental approaches, there is much more that can be done using statistical methods. In order to do this, more empirical data are needed.

Wilkenfeld and colleagues (Wolak, Jonas, and Wilkenfeld 2012) have created the International Crisis Behavior (ICB) dataset, which is built around international crises since 1918. The dataset includes several interesting decision-making variables such as size and structure of decision unit that can be looked at alongside crisis variables such as duration, intensity, and outcome. A study of decision-making during mediation would make a strong contribution to the literature. For example, one could study the decision by rebels and government to accept mediation. Similarly, studies of political reform, civil-war onset, war termination, peace marketing, and peace agreement implementation could each benefit from decision-making approaches.

Three areas are particularly promising for future research:

1. Effective elite decision-making. Academic research can contribute not only to explaining and forecasting decisions by political elites (e.g. Bueno de Mesquita 1984; Mintz 2005b), but also to producing high-quality decisions of leaders.

2. Elite decision-making and neuroscience—for example, understanding how the brain affects decisions on war and peace and how certain decisions affect the mind (see, e.g., McDermott 2004a).

3. Genetic influences on decision-making—understanding the role of genetic variables in decision-making (see, e.g., Fowler and Schreiber 2008).

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Notes:

(¹) See also Staw and Ross (1989) and Brockner (1992) summarizing the escalation of commitment perspective.

([2]) Note that the two-stage process is not unlike that postulated by poliheuristic theory described above.

([3]) Thaler and Sunstein's work (2009) reportedly influenced leaders and officials at the 2012 London Olympics. For example, rather than employ command-and-control policies such as those used at the 2008 Olympics in Beijing, Londoners and spectators were 'nudged' into public transport by receiving travel passes with event tickets (*The Economist* 2012).

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