Is There Method in Our Madness?
Ways of Assessing Cognition
in International Relations

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Cognition is central to the study of international affairs and underlies concepts such as power and interest. Yet, in spite of its importance, only recently have methodologies been developed to systematically analyze cognition. This essay begins by identifying the role that cognition plays in international politics; it then looks at some of the challenges faced in trying to assess cognition and how technology is assisting with these challenges. The heart of the article is a review of work from four different research programs on cognition: operational code analysis, cognitive mapping, image theory, and conceptual complexity. Each area is examined with regard to theoretical developments, methodological approaches, and the correspondence of its forecasts with observed behavior. The essay concludes by discussing the possibility of synthesizing these four approaches and by raising some unresolved issues in our understanding of cognition and its role in international phenomena.

To search for the clue to foreign policy exclusively in the motives of statesmen is both futile and deceptive. It is futile because motives are the most elusive of psychological data, distorted as they are, frequently beyond recognition, by our own interests and emotions of actor and observer alike. Do we really know what our own motives are? And what do we know of the motives of others (Morgenthau 1948 [1985]:5)?

Hans Morgenthau probably also believed that the cognitions of statesmen are as elusive as their motives. After all, how could he have hoped to determine how statesmen perceived, mentally represented, and thought about the world with the techniques available in 1948? He would have correctly considered the attempt madness. And yet, cognition has a preeminent place in his theory of international relations. Consider another of Morgenthau's (1948 [1985]:5) statements:
We assume that statesmen think and act in terms of interest defined as power, and the evidence of history bears that assumption out. That assumption allows us to retrace and anticipate, as it were, the steps a statesman—past, present, or future—has taken or will take on the political scene. We look over his shoulder when he writes his dispatches; we listen in on his conversations with other statesmen; we read and anticipate his very thoughts. Thinking in terms of interest defined as power we understand his thoughts and actions perhaps better than he, the actor on the political scene, does himself.

Indeed, realists of all stripes acknowledge a critical role for cognition in explanations of international relations. A more contemporary example is Bruce Bueno de Mesquita. He and his colleagues (Bueno de Mesquita, Morrow, and Zorick 1997:16) “agree that uncertainty and the subjective beliefs of actors are essential features of the choice process, and . . . that uncertainty makes the question of differences in perceptions central.” However, rather than trying to get into the heads of leaders, they assess a proxy variable, expected perceptions, to evaluate statesmen’s cognitions. By expected perceptions they mean what the researchers expect the leaders to perceive. The problem is that blanket assumptions about international actors do not hold. If they did, there would be no unanticipated actions by states or policymakers. All leaders do not think about power in the same way. Moreover, interests vary by individual statesmen, let alone by state.

The more fundamental point here is that power and interest—concepts that reside at the heart of the study of international politics—are cognitive in nature. Neither power nor interest is objective; rather, each emerges from the beliefs individuals hold about these concepts. Mao appears to have believed that power flowed from the barrel of a gun; Ghandi believed otherwise. Each of these men instigated consequential political transformations. Cognitions—the beliefs and reasoning processes of individuals—matter because they underlie all political behavior and form the foundation for how both power and interests are understood.

What we have said thus far is not a new revelation to students of international affairs. Credit for it must be given to a long line of researchers (e.g., Snyder, Bruck, and Sapin 1954; Boulding 1956; Sprout and Sprout 1965; Jervis 1976). Yet, awareness of the importance of cognition has not enabled scholars to solve the problem of how to measure it. Only several years ago we might have agreed with Morgenthau that research on motives and other cognitive constructs was futile madness with many obstacles. Reflect on the following: (1) Research on cognition in the international realm is forced to rely on the written and spoken words of its subjects; king or commoner, we can rarely bring our subjects into the laboratory. (2) The analysis of large volumes of text has proven labor intensive and the results hard to analyze. (3) Such content analyses have not always yielded data that were both timely and useful. But within a very short period of time, things have changed. There is now enough computing power on the desktop that the automatic content analysis of large volumes of text is becoming a reality and not a daydream. Automatic content analysis systems, ranging from parts of speech taggers to phrase analysis systems, are available for free or for under U.S. $1,000. In addition, texts of interest (e.g., speeches, interviews, press conferences) are increasingly available on CD-ROM and on the Internet. As a result, the question has become not whether we can automate the analysis of text to evaluate cognition, but if our content analysis systems are up to the job. Are there methods by which to assess our madness?

Our preliminary answer is yes. In particular, there are four bodies of research—studies focused on operational code analysis, cognitive mapping, image theory, and conceptual complexity—that offer promising ways to determine leaders’ cognitions. Whether these methods are useful to the broader international studies
community depends in great part on the philosophical orientations and purposes of individual members of that community. We, however, do believe these methods when combined with automatic content analysis systems have the potential to transform our understanding of international affairs. They could provide the preferences for game theory and the perceptions for realism and decision making. They also have the potential to help in conflict resolution by highlighting the beliefs that may prevent or enable negotiation and agreement. Moreover, they can assist in the investigation of the role of ideas in institutional approaches to world politics (e.g., Goldstein and Keohane 1993), in tracing the evolution of knowledge and identity in the analysis of security discourse (e.g., see Waever 1992; Smith 1992; Hellmann 1996), and in revealing the intersubjective in the formation of international regimes (see Hansenclever, Mayer, and Rittberger 1996). Ultimately, we believe that for understanding and forecasting political behavior, methods of this type are not only useful but necessary. The remainder of this article argues this point by reviewing four methods of cognitive analysis. We end with a proposal for the synthesis of these methods that includes a vision for the future of research on cognition in international affairs.

On the Origins of Political Behavior

There are a variety of approaches to international politics and, as David Welch (1992) has observed, attacking one research program or another on the basis of its assumptions is probably a waste of energy. What does make sense here is to discuss some of the assumptions embedded in the efforts to understand political cognition. Such assumptions are fundamentally about the origins of political behavior, specifically the actions of human beings either individually or in interaction with others that are directed toward the allocation of an entity’s (e.g., group, agency, organization, institution, state, international system) resources. Individuals are assumed to be goal directed and to act in ways that they believe will help their political entity to attain its goals. That is, individual political behavior is based on the individual’s beliefs about how the political environment works. Although there are some physical constraints on any type of action (we have yet to defy gravity, for example), most political behavior is guided by individual beliefs about what is appropriate and beneficial activity with regard to a particular political entity.

This proposition can be illustrated by considering the various traffic conventions around the world. In the United Kingdom, for example, automobile traffic drives on the left-hand side of the road while in the United States automobile traffic drives on the right. Consider what happens when someone who has driven for twenty years in the United Kingdom rents a car in the United States for a trip through rural North Dakota. This person, driving on the left, may wonder why all the traffic signs are way over on the right-hand side of the road. Until our driver encounters other traffic, this observation is of little consequence—after all, there is no natural law that requires driving on the left. When, however, drivers from the United States are encountered, the two belief systems interact with dramatic consequences. Thus, while complex and regular traffic patterns in Los Angeles may be explained “as if” traffic were compelled to always drive on the right, replacing the population with visitors from London would produce a dramatic “system transformation.” In the same way, how the distribution of power affects states’ calculations depends on the intersubjective understandings and expectations, on the “distribution of knowledge,” that constitutes their conceptions of self and other. If society “forgets” what a university is, the powers and practices of professor and student cease to
exist; if policymakers in the United States and in the Soviet Union decide that they are no longer enemies, "the cold war" is over (Wendt 1992:397).

We also assume that all political behavior originates with individuals, who often constitute themselves politically into small groups, local communities, large societies, and, ultimately, the international system. This collective behavior is dynamic, in turn affecting the individuals who comprise the unit and influencing future behavior (see Kegley 1994; Hudson 1995). Therefore, if we are interested in accurately forecasting political phenomena, we need to understand individual political behavior, both what the beliefs of specific individuals are (cognitive content) as well as how those individuals reason with those beliefs (cognitive process).

**On Forecasting Political Behavior**

Why are we interested in forecasting political behavior? Why not simply focus on explanation or understanding? We have two practical interests in being able to forecast. The first is more academic: how can we assess the relative merits of one research program over another if we can neither prove nor disprove their assumptions? On this point we derive our criteria from Imre Lakatos (1970), namely, which is better at the generation of novel content. The second is more mundane: to gain some control over the consequences of our actions—which we assume to be desirable—requires that we know how our actions influence our interactions with others. Such information is not only useful in our own lives but in the "lives" of states. Thus, our criteria for evaluating research on cognition in international studies is at once pragmatic and instrumental.

Forecasting international political behavior is a difficult problem even for those who focus on unitary and rational state actors. It is an even more difficult problem for those who assume that state behavior is guided by the thoughts and personalities of a large number of individuals who cannot be brought into a controlled setting for study. After all, if political behavior originates in the cognitions of individuals with larger patterns of behavior—including the activities of states and the international system—resulting from the actions and interactions of these individuals, do we have to understand each and every individual? Thankfully no, or, at least, not as a starting point.

Although each person matters in the flow of history and the construction of the current milieu, much of the political behavior of states is controlled in the short term by a small number of people. Thus, the initial problem centers on determining whose positions count at a particular point in time and inferring the cognition, both content and process, of this relatively small number of individuals in isolation and in interaction. Larger-scale, or long-term, forecasting requires the assessment of correspondingly greater numbers of individuals as well as the pathways that have developed to facilitate their communication and interaction. In this review essay our focus will be on examining the cognitions of that small number of leaders in important positions in collectivities who are responsible in the short term for making choices about the allocation of political resources.

**On Individual Cognition: Content and Process**

When we talk about individual cognition, what do we mean? Cognition refers to people’s interpretations of their environment and the attitudes, beliefs, scripts, and schema that develop as a result of their experiences (e.g., Sprout and Sprout 1956; Holsti 1976; Tetlock and McGuire 1985). Individuals often use their cognitions as heuristics in anticipating how to react in a new situation (e.g., Khong
Moreover, the ways in which they represent the problems they face are based on these perceptions of reality (e.g., Jervis 1976; Larson 1985; Sylvan and Thorson 1992; Sylvan and Voss forthcoming).

Research on cognition has generally had two foci: (1) cognitive content, and (2) cognitive process (see Markus and Zajonc 1985; Tetlock and McGuire 1985). By the content of cognition is meant what individuals believe, that is, their declarative knowledge. For example, the sky is blue, the president is a truthful person, or Saddam Hussein will use chemical weapons if given the opportunity. In a complementary manner, cognitive process refers to how such knowledge is used both consciously and unconsciously. For instance, some people only think about color when buying a car, whereas others may include fuel efficiency and other factors in their deliberations. That is, their cognitive processes may be relatively simple or relatively complex.

Despite the tendency of various research programs to focus more heavily on either content or process, knowledge of both is necessary for understanding and forecasting political behavior. The nature of this interdependence can be illustrated with a mathematical example. If we consider numbers to be the content of mathematics with operations—such as addition or multiplication—the corresponding processes, is it more important in achieving a correct answer to assess the content or the process? For certain content configurations, there will be no difference in outcome regardless of whether one focuses on content or process—both $2 + 2$ and $2 * 2 = 4$. However, for other configurations where one focuses can change the outcome—$2 + 3 = 5$ but $2 * 3 = 6$. The problem is similar for the study of cognition. Unless our means of assessing both cognitive content and cognitive process are valid, any combinations are suspect; thus research on content and process must proceed simultaneously and interactively.

**The Methodological Challenge**

How easy is it to infer policymakers’ cognitive content or processes? In a utopian world, we would bring leaders into a controlled laboratory environment where we could have them answer a battery of tests and engage in a set of experiments designed to elicit exactly the information we were seeking. Unfortunately, such a process is highly infeasible; as a result, scholars have learned to rely on the observation, at a distance, of leaders’ words and to a lesser extent their actions.

We assume that policymakers monitor the situations in which they find themselves and engage in decision making that is guided by their cognitions. In this process, they make public speeches to explain and justify their actions; they respond to questions from the press; they may write letters to prominent newspapers in their own countries or abroad; and, as Yasser Arafat did recently, seek appearances on CNN’s *Larry King Live*. Each of these activities can be captured in a written transcript which provides a record for analysis. These records generate a three-part methodological challenge: (1) to develop theories relating cognition to authoring, (2) to use these theories to create content analysis methods to infer the cognition of the subject from his or her authored texts, and (3) to utilize these inferences as inputs to theories of decision making to produce policy forecasts. If all has gone well, the forecasts will bear some correspondence to the observed policy actions of the individual.

At this point, it is relevant to ask if public texts—leaders’ public statements—are suitable material from which to infer cognitions. Even though all texts flow from cognitions, including those that are lies, the relationship between a leader’s statements and his or her underlying cognition is rarely straightforward. Factors, such
as deception and the use of speech writers, make one-to-one inferences problematic (for a more thorough discussion of these problems, see Holsti 1977). Several strategies exist for handling this problem, however, such as examining a large number of source texts across a variety of different types of situations and kinds of material (Hermann 1983, 1987a), distinguishing between texts that are more and less spontaneous in nature (Hermann 1987a), checking for the stability of expressed beliefs over time (Young 1994), and analyzing the arguments in individual texts using pragmatics (Tucker 1997; Duffy, Frederking, and Tucker forthcoming). How important this issue is to the researcher depends on the question under examination. If the researcher is interested in exploring the kind of stories leaders are telling in their efforts at propaganda, image enhancement, or public education, leaders’ declaratory statements are probably the best sources to study. But if the researcher is intent on inferring just how a particular leader views the world, leaders’ statements may reveal only public, and not privately held, beliefs. It is more imperative in the latter than the former case to carefully consider the nature of the texts that are available.

If we can accept that leaders’ public statements are expressions of their beliefs, is it reasonable to believe that meaning can be extracted by anyone other than the author? It is difficult to deny that much of social reality (our expectations about the world and others’ behavior) is constructed from experience and interaction with the objects in our environment. Moreover, it is hard to refute that this experience is not completely shared and, therefore, only partially intelligible to others—the words are the same but the meaning is not (Sylvan and Thorson 1992). If this is true, can we trust a text to have the same meaning for the author that it has for us? Consider, for example, the multiple meanings attached to “the lessons of Pearl Harbor” by the various branches of the armed services (Durfee 1990) or the difficulty of defining the term “democracy” in current academic debates about the democratic peace hypothesis (Chan 1997). Once again, we recognize the problem, but the fact that we can communicate at all suggests that we are able, at least to a limited extent, to get inside the heads of others—after all, some messages, hopefully including this one, are comprehensible.

Overall our response to most of the theoretical concerns about the adequacy of text as an evidentiary base is pragmatic and, perhaps, a little primitive; the proof lies in our ability to forecast. To the extent that we can use texts to infer cognitions and generate forecasts that are accurate, we remain committed to this approach.

The Methodological Arsenal

As a result of a relatively enduring concern for cognition, scholars interested in understanding how foreign policy is made have developed four different approaches to meeting the methodological challenge we have just posed: (1) the operational code framework originated by Nathan Leites (1951), (2) cognitive mapping based on work by Robert Axelrod (1972), (3) image theory, which first gained rigorous expression in the writings of Richard Cottam (1977), and (4) conceptual complexity, which was adapted for political analysis in different ways by Peter Suedfeld (see, e.g., Suedfeld and Rank 1976) and by Margaret Hermann (1977). The remainder of this article describes and evaluates the theoretical and methodological contributions of the research to date that has built on each of these approaches. We consider directions that future research should take as well as attempt to integrate the four approaches. In particular, we review the available literature guided by the following sets of questions:
1. Theory. What is the cognitive construct under investigation? Is the focus on content or process? That is, what cognitive elements or processes are being studied, and why, from a theoretical perspective, are those elements or processes investigated and not others?

2. Method. How are inferences made about cognition? What specific method has been used? Is the method well grounded and empirically supported? Are new, cutting-edge ways of assessing the cognitive construct being tried? If so, have they been successful?

3. Correspondence with Observed Behavior. Are there explicit connections to behavior? How effectively is the connection demonstrated? What types of behavior have been considered as dependent variables? Is there evidence that the correspondence to behavior is causal as opposed to correlational?

Operational Code

A political leader’s beliefs about the nature of politics and political conflict, his views regarding the extent to which historical developments can be shaped, and his notions of correct strategy and tactics—whether these beliefs are referred to as “operational code,” “Weltanschauung,” “cognitive map,” or an elite’s “political culture”—are among the factors influencing that actor’s decisions (George 1969:197).

Policymakers in Washington immediately after World War II were confused by Soviet bargaining behavior which was disrupting negotiations and endangering the positions of the West. Trying to make sense of this puzzle, the Rand Corporation asked Nathan Leites to analyze Soviet bargaining behavior in more detail than had been done to date. What emerged from this research was the “operational code” concept, a term that had first been used by Robert Merton (1940) but was made more prominent by Leites’s (1953) study of Bolshevism. Leites’s work had practical, theoretical, and methodological implications, all of which were far reaching. It presented policymakers in the United States during the early days of the Cold War with a description of the politico-strategic thinking of their opponents in the Soviet Union and, at the same time, provided academics with a construct for analyzing leaders’ belief systems (see, e.g., Holsti 1970; McClellan 1971; Stuart and Starr 1981; Starr 1984). In the forty-five years since Leites’s early work, the operational code construct has undergone important theoretical transformations. But it has always maintained the objective of uncovering patterns in the thinking of leaders that have an idiosyncratic effect on their political behavior.

Theory. In his work on the Soviet Politburo, Leites (1951, 1953) argued that ideology, socialization, and leadership pressures result in a consistent, identifiable set of behavioral patterns in Soviet foreign policy. He did not limit his analysis to the cognitive dimensions of Soviet behavior but also explored the psychoanalytic and psychocultural sources of Soviet actions, although cognition certainly played an important role. Leites (1951:xii) organized his findings around a set of “rules” that were linked to particular types of actions, for example, “Effective Action,” “Deception,” and “Resistance to Attack.”

Alexander George, concerned that others were frustrated by the complexity of Leites’s approach (particularly the psychoanalytic dimensions of it) as well as the limits to its generalizability, substantially reformulated the operational code in 1969. He was interested in making the construct more parsimonious and user friendly. For George, this redefinition meant essentially discarding the psychoanalytic dimensions of the operational code and making it primarily cognitive in focus. Cognition, he believed, was more amenable to rigorous investigation and to
increasing comparability among studies. George reviewed Leites’s work and distilled from it ten different “beliefs” formulated as questions, the answers to which, he argued, essentially captured the operational code of the Bolsheviks. The ten questions included five “philosophical” questions and five “instrumental” questions (George 1969:201ff). The philosophical questions pertained to beliefs about other political actors and about the political universe in general, while the instrumental questions examined how political actors planned to achieve their goals.

The following are the five philosophical questions:

1. What is the “essential” nature of political life? Is the political universe essentially one of harmony or conflict?
2. What is the fundamental character of one’s political opponents?
3. What are the prospects for the eventual realization of one’s fundamental political values and aspirations? Can one be optimistic on this score?
4. Is the political future predictable? In what sense and to what extent?
5. How much “control” or “mastery” can one have over historical development? What is one’s role in moving and shaping history in the desired direction? In other words, what is the role of “chance” in human affairs and historical development?

The five instrumental questions are:

1. What is the best approach for selecting goals or objectives for political action?
2. How are the goals of action pursued most effectively?
3. How are the risks of political action calculated, controlled, and accepted?
4. What is the best “timing” for action to advance one’s interests?
5. What is the utility and role of different means or tactics for advancing one’s interests?

These ten questions have become the basis for all subsequent operational code analyses. They are what George (1979:97) later called “generalized principles about political life.” In essence, in answering these ten questions analysts capture leaders’ core beliefs about politics. George (1979:103) labeled the philosophical beliefs “diagnostic propensities” and the instrumental beliefs “choice propensities.” The former propensities “influence (the leader’s) diagnosis of the situation in certain directions,” while the latter “lead him to favor certain types of action alternatives over others.”

In defending the nature of the ten-question construct, George (1979:97) has differentiated the operational code beliefs from political attitudes. Policymakers’ political attitudes, he suggests, are object-specific, often fleeting, and bound by situation and context. The operational code, in contrast, involves “central beliefs” that comprise a “belief system” in which individual beliefs are “bound together by some form of constraint or functional interdependence” (George 1979:100).

Several other theoretical additions have been made to the operational code construct since George’s reformulation in 1969. Two are found in Loch Johnson’s study of Senator Frank Church. First, Johnson (1977:88) suggested that answers to the operational code questions can be arrayed along a continuum; for example, a leader could see the political universe as conflictual, harmonious, or someplace in between. In this way, answers to the operational code questions could be made amenable to the use of ordinal or interval-level scales, although Johnson himself does not use quantitative data in his analysis. Being able to place leaders along a continuum facilitates comparison among political actors.
Second, Johnson (1977:89) conceived of the operational code as "a flexible structure . . . susceptible to differential states of gradual or rapid expansion or collapse as the political actor modifies his beliefs in response to the changing mix of psychological and situational pressures upon him." One can imagine that leaders may differ in the extent to which their operational codes change; some may exhibit little change, while others may change noticeably. Johnson, for example, found substantial continuity in Church's code, but also pointed out how some dimensions did respond to environmental stimuli (e.g., his role in the Senate, pre- and post-Vietnam rhetoric).

A third theoretical change is found in research by Stephen Walker and the two co-authors of this review essay (1998). Based on an operational code of Jimmy Carter, this study discerned that a leader's belief system may be topical and target-specific, rather than general, in nature. While Carter changed his operational code to reflect more conflictual beliefs toward the Soviet Union after the latter's invasion into Afghanistan, he maintained a more cooperative set of beliefs in consideration of issues of human rights. These results do not mean that generalized operational codes are not useful. In fact, they are probably particularly important in analyzing a leader in an ambiguous situation, where more specific beliefs have yet to develop. However, the data from Walker, Schafer, and Young do suggest that if target- and topic-specific operational code data are available, the researcher's understanding of the policymaker is likely to be more precise.

Method. Leites (1951:xii) set the methodological precedent for operational code analysis that has been followed, with some adaptations, in all but a couple of subsequent studies. He derived his rules of Bolshevik behavior primarily from the writings of its two most important early leaders, Lenin and Stalin. Essentially, his methodology requires the subjective, interpretive review of texts. Most operational code studies since Leites's have followed this methodology. Some (e.g., McLellan 1971; Johnson 1977) have been able to use material from interviews with the leaders and their colleagues in addition to public and private communications. In several cases, researchers (e.g., Johnson 1977; Walker 1977; Stuart and Starr 1981) were interested in materials produced prior to the leader taking office and have examined honors theses, interviewed parents and classmates, and explored personal papers from this period. In each of these projects, George's ten operational code questions served as the organizing framework. Researchers reviewed the selected material, looking for evidence that would provide answers to George's questions. The methodology resulted in a rich, in-depth analysis of the subject at hand (including Dean Acheson, John Foster Dulles, and Henry Kissinger). There are, however, several shortcomings associated with this way of doing an operational code.

First, this type of analysis is costly in terms of time (consider that Kissinger's undergraduate honors thesis alone was over 500 pages long). As Walker and Lawrence Falkowski (1984:244) have noted, this methodology is "slow and laborious." Second, it is difficult to determine the reliability of such analyses. While some researchers (Walker 1977; Walker and Falkowski 1984) have attempted to assess reliability, the methodology is, by nature, virtually impossible to replicate. Most scholars using the approach simply report their sources and procedures and leave questions on reliability in the hands of the reader. Third, it is quite hard to compare and contrast the results of the various operational code analyses. Because the methodology is, by definition, idiosyncratic, very few of these "thick" analyses have been done. The net result is that we have a small number of cases, each of which has been studied by a different researcher.
Largely in an attempt to reduce the subjectivity and to increase the comparability in operational code analysis, Ole Holsti (1977) constructed a coding manual composed of sets of items whose answers were intended to assess George’s belief-system questions. Moreover, Holsti proposed organizing the answers to the operational code questions into a typology. Subjects could be placed into one of six types according to their answers to two core questions: (1) What is the fundamental nature of the political universe—harmonious or conflictual? and (2) what is the fundamental source of conflict—human nature, attributes of nations, or the international system? Although Holsti’s (1977) work was an important contribution to the development of the way of assessing the operational code, it has received little follow-up attention. One reason may be that the questionnaire is long and cumbersome. Moreover, while organizing George’s construct into a refined set of questions, it still requires subjective analysis—researchers generally still need to peruse and interpret texts to try to identify answers to the operational code questions.

Stephen Walker and Lawrence Falkowski (1984) turned Holsti’s (1977) questionnaire into an inventory that could be filled out by others either associated with or studying particular political leaders. Interested in developing operational codes for three presidents and their secretaries of state, they asked biographers of and advisers to these leaders to complete the inventory. Although Walker and Falkowski (1984:244) call this method “more expeditious,” it nonetheless has its own set of limitations. The subjectivity of the analysis remains high but takes on a different form. Among the problems that arise are selective remembering, post hoc justifications, and respondents who do not normally think about the subject in operational code terms.

In an effort to make operational code analysis less subjective, more reliable, and less labor intensive, Walker, Schafer, and Young (1998) have recently developed a content analysis coding scheme to answer George’s questions that is based on linguistic patterns in policymakers’ public comments. Their Verbs in Context System (VICS) focuses on leaders’ verb-based attributions. For each attribution, these researchers identify the subject and target as well as whether the verb is transitive or intransitive, word or deed, cooperative/positive or conflictual/negative. Then each transitive attribution is coded on a seven-point, cooperative/conflictual scale based largely on the World Event Interaction System (McClelland 1976).

Walker, Schafer, and Young (1998) specify seventeen different indices based on these codings to answer the operational code questions. For example, the leader’s view of the essential nature of political life in terms of harmony and conflict (George’s first philosophical question) is answered by the ratio of positive to negative attributions the leader makes toward others; this ratio is, they argue, essentially a measure of how cooperative and conflictual the leader sees “others” in the political universe. As another illustration, consider their answer to the fourth philosophical question concerning how much control a leader believes he or she has. This question is answered by finding the percentage of transitive attributions ascribed to self as opposed to others. (See Walker, Schafer, and Young 1998 for the complete list of indices and their theoretical justifications.)

The content analysis scheme just described yields quantitative data that make comparisons among leaders’ operational codes more feasible, and increases the possibility of exploring the links between political actors’ operational codes and their political behavior. Moreover, it facilitates studying more than one leader at a time. There is, however, an important drawback associated with this new methodology. As with all quantitative projects emerging out of the behavioralist school, what frequently gets lost are the idiosyncrasies of the case which, at times, may be critical to understanding why a leader is acting in a specific manner. Much of this richness is lost in a numbers-based approach.
Correspondence with Behavior. Operational code researchers seem generally agreed that beliefs ought to have some effect on political behavior: beliefs should influence policy positions. Only rarely, however, has the link between the operational code and behavior been made explicit. More common are studies that describe a subject’s operational code and offer plausible explanations for how the code influenced behavior. In general, most of the theoretical and empirical work on the operational code has focused on ascertaining the nature of a leader’s belief system and not on behavior as the dependent variable. Nevertheless, it is worthwhile to explore how different researchers have tried to make connections to policy.

Three of the early operational code studies (Leites 1951; Holsti 1970; McLellan 1971) made no significant attempts to differentiate beliefs from behavior. In other words, they looked for evidence of the operational code not only in the subject’s inferred beliefs, but also in his behavioral patterns. Holsti (1970:153) states this explicitly: “Both expressions of belief and policymaking behavior were used as evidence in reconstructing his [Dulles’s] operational code.” He correctly acknowledges the problematic nature of this “circular reasoning” but goes on to argue that the problem is not inherent in operational code analysis and can be corrected “by taking careful steps to ensure that no datum is used as evidence of both beliefs and the subsequent behavior one is trying to explain” (Holsti 1970:154).

Two studies have explicitly attempted to examine the linkage between a leader’s operational code and his political behavior: Johnson’s (1977) assessment of Senator Church and Douglas Stuart and Harvey Starr’s (1981) examination of John Foster Dulles, John F. Kennedy, and Henry Kissinger. Johnson designed his research to avoid the endogeneity problem noted above. He specified Church’s operational code through September 1972, using a variety of methods, and then analyzed Church’s policy statements in the subsequent six months. Johnson (1977:116) found that Church’s “responses were entirely consistent with beliefs he had been expressing and refining for years.” Stuart and Starr (1981) derived the operational codes of Dulles, Kennedy, and Kissinger using qualitative techniques. These operational codes served as the independent variable to explain differences in the rhetoric of these three political actors toward the Soviet Union captured through evaluative assertion analysis (Osgood, Saporta, and Nunnally 1956). They reported that the operational code was generally a good predictor of the differences in evaluative assertions of the Soviet Union made by these three policymakers. The operational code analyses predicted that Dulles would behave most negatively toward the Soviet Union, followed by Kennedy and then Kissinger. The codes also anticipated that Kissinger would be more open-minded regarding the Soviets, with his rhetoric varying with incoming information. Both of these hypotheses were supported by the evaluative assertion analysis.

The Stuart and Starr (1981) study raises some concerns about what is involved in linking the operational code to behavior. Their research demonstrated a link between preexisting beliefs and subsequent rhetoric. But is rhetoric the same as political behavior? In fact, evaluative assertions may make more sense as a different type of independent variable in studying political behavior (see the discussion of evaluative assertion analysis in Winter and Stewart 1977). Stuart and Starr (1981:3) recognize this limitation in their research design, and suggest evaluative assertion analysis may be one way to assess the validity of the operational code.

The most consistent attempt to connect the operational code to policy behavior is found in the work of Walker and his colleagues (Walker 1977, 1983, 1990, 1995; Hoagland and Walker 1979; Walker and Murphy 1981/1982; Walker and Falkowski 1984). Early in his own study of operational codes, Walker (1977:132) explicitly took
on the reservations expressed by others about trying to link beliefs to behavior, and stated that “the objective of this study is to attempt to establish connections between Kissinger’s operational code and American foreign policy behavior.” Using qualitative procedures similar to his predecessors, Walker specified Kissinger’s operational code and generated explicit behavioral hypotheses based upon it. Then, using event data, he demonstrated how, with two exceptions, U.S. behavior during the Vietnam War matched dimensions of Kissinger’s operational code. Walker (1977:150) talked about U.S. behavior as “moves” either toward or away from settlement. This study was the first in the series of studies listed above in which Walker incorporated the language of games and bargaining (behaviors, moves, tactics, strategies, and outcomes) into an analysis of state behavior.

There are some important advantages to Walker’s focus on moves. First, it provides a way for information on a leader’s operational code to become relevant to game-theory analysis. Although game theory assumes rationality, there are times when political actors appear to depart from rational actions. Operational code data can suggest when, how, or why such behavior will occur. It can contribute to our explanatory power by pointing out the idiosyncratic strategic orientations of particular leaders. Second, it facilitates analysis of dynamics of conflict situations. Knowing the operational codes of the leaders of two opposing states can enable the researcher to anticipate the moves that each country might make in response to the other’s behavior and to the shifting international context. This kind of research becomes even more feasible if one assesses the operational code by topic and target.

**Prognosis.** The operational code has a long, rich history in foreign policy analysis and has evolved over time. In its several iterations, the concept presents the scholar with the ability to develop a contextually nuanced assessment of a leader as well as a more quantitative, less subjective view and to use the insights of associates and biographers. By combining the various measures of the operational code, one can learn both what is unique about an individual leader and what he or she shares in common with other leaders. Moreover, there has been a growing concern with investigating the influence that a political actor’s operational code can have on political behavior.

But there is more work to do. In particular, there are several important things we do not yet know about the operational code. For instance, which of the ten beliefs is most important—the centerpiece around which the operational code is built? Holsti (1970) and George (1979) have posited that the first philosophical belief is the “master belief,” but that is a theoretical answer to an empirical question. Indeed, we are a long way from knowing the multivariate effect of the various dimensions of the operational code on different leaders. The quantitative content analysis scheme recently developed by Walker, Schafer, and Young sets the stage for doing such multivariate research, however, and for genuine cumulation of knowledge with variables that can be statistically linked to bargaining behavior, gathered on a number of leaders—even more contemporary figures—and compared across leaders.

**Cognitive Mapping**

A cognitive map is a specific way of representing a person’s assertions about some limited domain, such as a policy problem. It is designed to capture the structure of the person’s causal assertions and to generate the consequences that follow from this structure (Axelrod 1976a:55).

Operational code analysis grew largely out of a desire to understand and predict the behavior of an adversary, whereas cognitive mapping grew out of Robert
Axelrod’s desire to improve the quality of the decision-making processes of the home team. After all, “in a modern society many of the most important decisions affecting the quality of life and perhaps even our very survival are made by others” (Axelrod 1976b:vii). Axelrod wanted to provide tools to policymakers so that they could evaluate their own reasoning and avoid unnecessary simplification of complex decision environments. To facilitate such a process, he proposed to lay bare the structure of their thoughts and the connections between their beliefs. In particular, he focused on chains of causation. For example, a decision maker may believe that investing in additional arms will enhance her state’s security but may also believe that an arms buildup will provoke nonthreatening neighbors. The purpose of using a cognitive map in this case is to make these multiple consequences apparent to the policymaker, so that she can see the interrelationship among her beliefs and avoid what may be the unintended negative consequences of an arms buildup. The essential idea was to organize all of a decision maker’s causal beliefs in an accessible, visual manner—a network of concepts connected by their causes.

Other pioneers in the early days of cognitive mapping were driven by different motives and envisioned other uses for cognitive maps. G. Matthew Bonham and Michael Shapiro (1976) were interested in determining if cognitive maps could be used to predict the choices of policymakers and if they would reflect leaders’ operational codes. Fred Roberts (1976), in contrast, used cognitive mapping to develop a type of expert system to organize and make available to policymakers expert knowledge about a problem domain, in his case urban transportation. Jeffrey Hart (1976) took yet another tack, exploring how policymakers’ personal characteristics were reflected in cognitive maps and what such maps would reveal about their negotiating positions. Hart (1976:216) posited that using cognitive maps in negotiations “would make it possible to suggest ways in which positions or alignments may be changed by the judicious mustering of facts and evidence about the linkages between goals.” Regardless of the purpose, however, in each instance the cognitive maps that were developed linked the concepts of the policymakers being studied rather than imposing the conceptual framework of the analyst.

Theory. In developing cognitive mapping, Axelrod built on five earlier bodies of work: psychologies (Abelson and Rosenberg 1958), causal inference (Simon 1957; Blalock 1964), graph theory (Maruyama 1963; Cartwright and Harary 1965; Harary, Norman, and Cartwright 1965), evaluative assertion analysis (Osgood, Saporta, and Nunnally 1956), and decision theory (Luce and Raiffa 1957). Causal beliefs were emphasized in cognitive maps because causal inference had been shown to play a large role in problem solving and decision making. When people are faced with a problem, they look for the cause of the problem. When contemplating action, we imagine what consequences are likely to result through chains of causality. Cognitive mapping was designed to integrate and make explicit expressed causal relationships between concepts. If it is possible to ascertain the network of connections between causal statements in an individual’s belief system, we can analyze the chain of reasoning they are likely to use in any given situation. Thus, at its core, cognitive mapping is concerned with two types of causal relationships: (1) positive or generating causes, and (2) negative or inhibiting causes. One advantage that the cognitive map has over the operational code is its more discrete focus on the relationships between specific propositions. A major disadvantage is the need to represent these relationships in a network that can quickly become quite cumbersome. With this in mind, Axelrod designed cognitive mapping to take advantage of the correspondence between directed graph theory and matrix mathematics.
Because causation is a directional concept, it flows only one way; that is, the fact that A causes B does not imply that B causes A. A network composed of concepts that are linked causally belongs to a class of mathematical structures called "directed graphs." These structures provide a compact way of representing a network of concepts and causal relationships. For two concepts, A and B, a matrix can be constructed with a row and column for each concept. For each pair of concepts, the matrix entry \( (A, B) \) becomes 1 for positively related concepts, \(-1\) for negatively related concepts, and 0 for unrelated concepts. This formatting makes analyzing complex cognitive maps more feasible and efficient (Shapiro and Bonham 1973; Axelrod 1976a).

Using matrices to represent cognitive maps, however, reduces the researcher's ability to examine noncausal relationships between concepts (Alker 1975). Two recent efforts have sought to expand the representational abilities of cognitive maps, albeit in different ways. Young (1996) has proposed changes that extend the expressive capacity of cognitive mapping, while Bonham, Victor Sergeev, and Pavel Parshin (1997) have challenged some of the underlying assumptions about reasoning. Young (1994, 1996) observed that the computer capabilities available in the 1990s presented an opportunity to use less parsimonious, but more flexible, representations of networks by borrowing principles learned in the development of semantic networks and symbolic computing. This greater flexibility allowed him to expand the types of relationships between concepts that could be used in cognitive mapping and to add qualifiers to those relationships to permit the inclusion of beliefs about false propositions and propositions that are time dependent (for example, propositions that were true in the past). The result of this effort is an extended cognitive mapping scheme that can represent any relationship between concepts. (The content analysis scheme and representation system are collectively called WorldView.) Bonham, Sergeev, and Parshin (1997), in contrast, suggest that not all cultures may use causal reasoning in the same way as western cultures are assumed to do. In particular, they have identified “processual” reasoning in Russian belief systems. This type of reasoning focuses on the relationships between actions and conditions and shows how their interaction is affected by larger international processes, operating over time, that are gaining or losing momentum.

**Method.** Cognitive mapping methodology has benefitted from the initial creation of fairly well-defined and documented procedures. These procedures have been used consistently, and the common core remains even as independent projects elaborate the rules. Although there were some initial problems with coding reliability (see Axelrod 1976a), the formalization of existing coding rules by Margaret Wrightson (1976) and later by Bonham and Shapiro (1986a, 1986b), when combined with careful training, has produced acceptable reliability. Such is also the case for the more recent efforts (Young 1994, 1996; Bonham, Sergeev, and Parshin 1997). The basic procedure for constructing cognitive maps has not changed significantly since 1976.

The raw data for the construction of cognitive maps are usually original text taken either from transcripts of meetings or from public speeches. The content analysis procedures used in cognitive mapping focus on verbs, because they encode the relationships between concepts. Essentially, the analyst looks for the familiar subject-verb-object construction. When the intent of the cognitive map is to identify causal connections, the focus is only with verb constructions that indicate either a positive or negative causal relationship. For example, “oil pollution threatens sea birds” would be coded as: oil-pollution – sea-birds, where oil-pollution is the subject, a negative sign (\(-\)) indicates a negative causal relationship, and sea-birds is the object. The coding rules for doing more than just causal
relationships such as in WorldView (Young 1994) specify over thirty different relationships, several possible truth values and tenses, as well as rules for compound statements. In this system “oil pollution threatens sea-birds” becomes: oil-pollution threaten true present sea-birds, where the relationship is more refined and includes information that this belief holds true in the present.

Once all of the valid propositions in the text have been identified and coded as data statements, each must be cross-referenced so that all references to a unique concept are combined into one symbol. Originally, this procedure was performed manually, but the new software in WorldView performs this task automatically and produces a map that can be viewed, saved, or printed. The new processual coding procedures (Biryukov, Gleisner, and Sergeev 1995) have added the idea of processes over time, which Bonham, Sergeev, and Parshin (1997) represent as an extended arrow. Although this representation at first appears to be incompatible with the other two systems, it can easily be made compatible with WorldView by defining a process concept type.

Despite the reported reliability of all three content analysis systems and the advances made in automating part of the construction of cognitive maps, the actual textual analysis must still be performed by hand and is just as “slow and laborious” as other forms of content analysis. This cost has contributed to the relatively small number of studies that have been conducted.

Correspondence with Behavior. As a result of some early problems with the reliability of the content analysis system being used to construct cognitive maps, Axelrod (1976a) expressed reservations about the research. He was only willing to express confidence in the three largely qualitative empirical studies reported in The Structure of Decision; Axelrod (1976a:57) believed these produced “significant evidence that individuals do express choices, predictions, and explanations that are consistent with the functioning of the cognitive map corresponding to their assertions about their beliefs.” The idiosyncratic nature of cognitive map analysis was significantly reduced by the development of a model of decision making by Shapiro and Bonham (1973; see also Bonham and Shapiro 1976) that could be used to build forecasts from cognitive maps once one had situational input. This innovation moved the use of cognitive maps beyond purely qualitative analysis. The model, which these researchers labeled the Cognitive Process Model, has five steps.

1. **Amplify Applicable Concepts.** Match concepts in the situation to the belief system and generate lists of “highlighted” concepts.
2. **Search for Antecedents.** Find all prior causes of the highlighted concepts and add them to the list of stored paths.
3. **Search for Consequences.** Create a set of consistent paths by going through the map from highlighted concepts to terminal concepts; store these paths; and find the most central path(s), removing paths inconsistent with this path. The remaining set of paths is considered to be the “explanation” of the policy problem.
4. **Search for Policy Alternatives.** Find all policy concepts that are directly connected to this central path.
5. **Choose a Policy Alternative.** Select that policy concept that leads to the maximum gain in an ordered set of values (lexicographic search).

One of the first applications of this model was a study of a Middle East specialist’s interpretation of the 1970 civil war in Jordan. In this study Bonham and Shapiro (1976) report success in specifying the nature of the advice this expert
would have given to the U.S. president. This result provided some face validity for the technique. Later studies have used cognitive mapping to investigate changes in cognitive content. Bonham, Daniel Heradstveit, Ove Narvesen, and Shapiro (1978), for example, determined that cognitive mapping is able to replicate the adjustments in policymakers’ cognitive content that are made in response to new events such as a major oil spill. In a subsequent article, Bonham, Shapiro, and Thomas Trumble (1979) reported on the application of the cognitive process model to maps of U.S. policy issues that were constructed from interviews with a policymaker before and after the 1973 October War in the Middle East. In this study, they were able to forecast the nature of changes in the official’s belief structures following the war.

In recent years, Bonham and Shapiro with various collaborators have been the most energetic in pursing cognitive mapping research. Their focus, however, has begun to shift from individuals to groups and from cognitive maps built using text authored by one person to aggregate maps built using texts authored by a number of participants. In addition, they now focus on “dominant discourse,” where chains of concepts are weighted based on the “power and interest” of their proponents. In particular, in collaboration with Daniel Heradstveit (Shapiro, Bonham, and Heradstveit 1988), they have examined public policy debates in Norway on oil policy and attempted to predict the outcome of one particular debate using data from documents prior to a vote. This research generated the rather ambiguous conclusion that “our model could produce a set of understandings that is more or less similar to the actual debate that occurred” (Shapiro, Bonham, and Heradstveit 1988: 416).

In WorldView, Young (1996) has adapted the cognitive process model of Bonham and Shapiro to focus on the strength of the connections in the cognitive map. He has proposed that the stronger the connection the more important it is as a guide to reasoning. Young’s study was explicitly designed to determine if President Carter’s response to the 1980 Soviet invasion of Afghanistan could be predicted from cognitive maps of his public speeches. From his speeches prior to the invasion, it was possible to forecast that Carter would have a strong response to a Soviet invasion of another sovereign state, but the type of response was more indeterminate.

Although the stream of research on processual reasoning is new, Bonham, Sergeev, and Parshin’s (1997) study has implications for international negotiations. When one side to a conflict uses causal reasoning and the other side processual reasoning, bargaining may only become feasible as both sets of participants learn to translate one type of reasoning into the other. Because of the potential for such miscommunication among negotiators, Bonham (1993) has argued that cognitive maps have a role to play in making explicit the differences in parties’ beliefs and reasoning processes that may block negotiations of all types.

Prognosis. The outlook for cognitive mapping is better now than it has been for many years; there is both a new theoretical vitality to the research and new tools that are compatible with both the original formulation and current variants. Further, contemporary cognitive psychology is reinforcing the network model of memory that cognitive mapping embodies (e.g., see Estes 1991; Fiske and Taylor 1991). These new developments are providing the impetus for studies deliberately constructed to assess the forecasting capabilities of the approach. Two obstacles remain: (1) the time-intensive nature of the content analysis that has to be done in developing a cognitive map, and (2) the lack of refined tools for analyzing large cognitive maps. Modern ways of producing cognitive maps capture a lot of information, but that wealth of data itself poses problems for analysis. These obstacles must be overcome if we wish to expand the scope of cognitive map analysis beyond post hoc studies of narrow situations.
**Image Theory**

These ideal typical patterns provide a device for mapping images held by individuals, images held by modal members of particular groups, and prevailing views at various moments. . . . This perceptual mapping is a vital first step in inferring foreign policy motivation (Cottam 1977:78).

Some of this century’s seminal works in foreign policy decision making have hypothesized that policymakers’ perceptions of the enemy can significantly influence policy decisions. Kenneth Boulding (1956) talked about the effects that images of the self and others could have on the foreign policymaking process. Robert Jervis (1976) has written about the negative effects of false beliefs about one’s enemy. Holsti (1970) demonstrated how one decision maker’s (John Foster Dulles) views of the Soviet Union affected his foreign policy positions. Perceptions of reality, whether accurate or not, become “reality” in a decision maker’s mind, and he or she has no other basis upon which to act; thus these perceptions or images necessarily influence policy.

Let us consider some examples. The 1982 assassination attempt by a Palestinian on Schlomo Argov, Israeli ambassador to the United Kingdom, was linked in Menachem Begin’s mind with Yassir Arafat’s Palestinian Liberation Organization, which was operating in southern Lebanon. This interpretation became the basis for the perilous Israeli invasion of Lebanon and the siege of Beirut. The “image” was held so rigidly by Begin that even when substantial evidence surfaced that the would-be assassins were associated with Abu Nidal, one of Arafat’s archenemies, he refused to consider the information and the invasion went forward. As another example, consider General Douglas MacArthur, who held a condescending view of China and its military will and capabilities, as he marched north during the Korean War. In spite of numerous warnings by the Chinese (as well as supporting evidence from China’s allies and the U.S. intelligence community) that he should not approach the border, MacArthur’s image of the Chinese could not be altered. The result of course was one of the worst military setbacks in U.S. history.

The concept of “image” appears simple, straightforward, and rather elegant: images are interpretations of reality that drive policy. Nonetheless, at least two obstacles have proven challenging in trying to understand and study images. The first is the theoretical challenge: just what constitutes an image; what are its components; are there types or categories of images; and, if so, do they differ in their impact on policy? The second, and probably more difficult, challenge is the empirical one: how do we observe, differentiate, and measure an image and its impact on behavior?

**Theory.** Even though the effect of images on foreign policy decision making has been discussed in the literature for many years, it is not our intention here to investigate all such uses of the general concept. Instead, we will focus on one set of studies that most resembles a cohesive research program, namely, that originated by Richard Cottam and expanded extensively by Richard Herrmann and Martha Cottam. We concentrate on these researchers’ work for at least two important reasons. First, because theirs is a cumulative program, it is possible to trace the theoretical and empirical advancements over time. Second, their theory is well grounded in ideas and concepts emerging from cognitive psychology.

Richard Cottam (1977:62) began developing a theory of images with the critical assumption that “man behaves in perceptually patterned ways.” In other words, there are identifiable perceptual patterns that, in addition to interests and situational constraints, guide individuals’ behavior. At issue is what are these perceptual patterns or prototypes? Cottam argues that images have three dimensions; indeed,
people tend to perceive themselves vis-à-vis others in three different ways. In interpreting their environment, particularly in the political arena, policymakers assess the nature of the situation (Are those involved threatening me or affording me an opportunity?), how powerful these others are in comparison to one’s self, and how culturally similar (like me) they are. Combining these dimensions, Cottam identified several prototypes that are pervasive in the literature on international affairs: the enemy, ally, imperial, and colonial images. Thus, for example, the enemy image is attributed to those others who are viewed as threatening but culturally similar and as powerful as the perceiver. To illustrate the four prototypes, Cottam (1977:75) described Castro’s images of the United States, the Soviet Union, and the Dominican Republic. From Castro’s point of view, the United States tends toward the enemy image and the colonial image. The Soviet Union is seen as an ally, and the Dominican Republic is viewed as imperial. As this illustration suggests, there was some confusion in Cottam’s use of images between what were references to the positions of others—the enemy and ally images—and what were seen as references to one’s own position—the colonial and imperial images.

Herrmann’s (1984, 1985) initial work in this area clarified some of the confusion found in Cottam’s original prototypes. Herrmann (1984:31–34) tied images to gestalt theory, viewing images as comprising an integrated whole as opposed to a set of separate, independent parts, and to Heider’s balance theory, which expects that people will balance their sentiments (self-motivations) with their conscious perceptions (images of others). Based on these theoretical linkages, Herrmann argues that images of others are responses to perceptions about one’s own position (also see Herrmann 1988). The notion of balancing self-conceptions with images of the other is perhaps best exemplified in Herrmann’s (1984) treatment of the imperialist/child construct. If another state is seen as presenting an opportunity but has an inferior culture and is less powerful (inferior in capability) than the observer’s country, then the observer is likely to view his own state as the “imperialist” in the relationship and the other as a “child.” “The child stereotype balances with the perceived opportunity by providing a picture that allows the observer to impose its will and exploit the observed while simultaneously enjoying a feeling of moral correctness and even charitable self-sacrifice” (Herrmann 1984:37). The observer’s imperialism is justified by the construction of an image of the other as a child.

Although still focusing on images, Martha Cottam’s (1986) early research moved in a somewhat different direction than Richard Cottam’s or Herrmann’s. She focused on the cognitive process of categorization and specifically the assignment of characteristics to external entities (as opposed to internal motivations). She used Rosch’s (1978) levels of abstraction as a foundation for understanding political categories. Rosch argued that there are three levels of abstraction—high, basic, and subordinate—with the first being the most general (e.g., furniture) and the last being the most specific (e.g., kitchen chair). According to Rosch, in describing objects people tend to use the middle—or basic—category (e.g., chair) first and most often in interpreting information. This category is cognitively efficient while being moderately descriptive. Thus Cottam argues that considering individual states is inefficient political categorization because each requires too much descriptive information to be easily identified (an example of Rosch’s subordinate level of abstraction). Instead, “if one searches the political world for the most efficient and basic division, it would appear to be a division among types of states” (Cottam 1986:41). Images provide one way for observers to divide states. Because experimental research on category construction has found that individuals “prefer to use seven plus or minus two categories,” Cottam (1986:49) focuses on those seven images (enemy, hegemonist, dependent ally of the enemy, neutral,
ally, dependent of the United States, puppet of the United States) that she believes are most prevalent.

Cottam’s (1992b, 1994) more recent research has made two other notable theoretical contributions to image theory. First, she argues that images are more than “cold” cognitions. They include affective tags as well. Policymakers often feel strongly, either positively or negatively, about certain images and respond emotionally when such images are aroused. Second, she has begun talking about the need for analysis that includes self-images—what are leaders’ views of their own role? In particular, she is interested in policymakers’ images about their own power, control, and efficacy (see Cottam 1992b:7–13).

The theoretical work on image theory can be summarized as follows. Decision makers need to simplify reality in order to make its complexity manageable. The specific simplifications that are chosen often serve individuals’ motivational needs to justify actions or to balance other beliefs. Once formed, these cognitive constructions become filters through which information passes and upon which policy choices are advocated. As a result, images can have a causal effect on behavior.

Method. Richard Cottam (1977:78–79) saw the methodology behind inferring images as complex and “suggestive only.” The inferring “is based on verbal descriptions and on expressed policy preferences” (Cottam 1977:73). And, indeed, most of the empirical contributions to image theory have been qualitative in nature. Cottam first demonstrated the methodology with a case study on the role of the British in Egypt, relying primarily on secondary materials such as historical works and media sources to infer images.

The possibility of a tautology emerges in this initial research. Image theory anticipates that images will affect behavior. However, in this early case study images were at least in part inferred from behavior. This problem is even more explicit in Herrmann’s work. He begins his discussion of methodology by stating that “the perceptions of a nation’s leaders regarding other countries can be inferred from the imagery they use in speeches and written documents” (Herrmann 1985:39). But in discussing the sources of such documents for the Soviet leaders he planned to study, he raises concerns about their artificiality (that the comments have essentially been cleaned up for public consumption) and turns, instead, to behavior to act as an indicator of images: “It is the international behavior of the USSR, not its publicly presented images of the United States, that should be the primary evidence for testing my propositions regarding Soviet perceptions and motives” (Herrmann 1985:42).

This strategy is problematic for at least two reasons that deal with problems in logic and theory. As noted above, the idea behind image theory is that if we can assess a policymaker’s image, we can anticipate his or her political behavior. If we use behavior to infer the image, we have not made a causal link between two variables. Such a process may provide a more valid description of a leaders’ perceptions, but the intent of the theory was to go beyond such description.

The theoretical problem is related. We do not know which comes first, the image or the policy. Whereas image theory clearly posits that the image comes first, a competing school of thought, self-perception theory (Bem 1972; Larson 1985), argues that attitudes about objects tend to follow from behavior. Individuals engage in behavior and, then, justify that behavior afterward by developing the corresponding attitudes. Deborah Larson (1985) has provided an excellent political example of this problem. In 1947, President Harry Truman was faced with the British pullout from Greece at a time when that government was engaged in a communist-based civil war. Larson documents that Truman had not yet developed
an enemy image of the Soviet Union; nonetheless, the situation demanded that
the United States come to the assistance of its European ally. Moreover, Truman
faced a hostile Congress and an isolationist American public. To deal with these
domestic difficulties, he framed the crisis as one between freedom and tyranny,
goodness and evil, communism and democracy. The “Truman Doctrine” worked
well; the enabling legislation sailed through the U.S. Congress. Larson then shows
how, over a period of several weeks, Truman began to justify his own actions by
correspondingly changing his image of the Soviet Union.

In separate attempts to sort out which comes first, the image or the behavior,
Schafer (1997) and Herrmann et al. (1997) have used experimental research
designs that included measures of each and arranged a clear temporal ordering so
that causation could be more directly inferred. Schafer had subjects engage in a
simulated international conflict where the adversary was either threatening or
friendly and its culture was either similar or different from the actor’s—two of the
dimensions emphasized by image theory. Checking that the subjects perceived
these differences in the adversaries they faced, Schafer found that their images
affected the policies they selected to deal with the conflict. In their experiments,
Herrmann et al. conducted checks to assess whether six images acted as schema
for subjects by providing them with partial information and asking them to match
other image appropriate information. With the success of these initial experi-
ments, Herrmann et al. put their subjects into simulated international interactions
with an “ally” or “enemy” and found that the subjects’ images helped to shape the
policies they chose. Although these experiments, like all experiments intended to
generalize to a policymaking setting, have some liabilities (e.g., artificial setting,
student subjects, too simplistic), the findings do suggest that images influence pol-
icy and not the other way around.

Even though Martha Cottam also has used qualitative methods to infer images
that policymakers hold of other countries, she has approached the puzzle in a
comparative manner, providing us with a somewhat different perspective on the
effect of images. Specifically, she explored the images that different camps of poli-
cymakers during the Carter administration had about countries in Latin America
(Mexico: Cottam 1985; Nicaragua: Cottam 1992a). She observed that each camp
held different images of the targets, which translated into the choice of different
policy strategies within each camp. Although her studies do not help us sort out
the causal story, because her results suggest correlation but not necessarily causa-
tion, the data do indicate that there is a linkage between how another country is
viewed and the strategy policymakers are likely to choose in responding to their
actions.

Two other methodological innovations in image theory are worth noting. Herr-
mann (1988), interested in Soviet views of the third world, used the writings of
second-tier elites in the Soviet Union to infer images, believing that these materi-
als would be less sanitized and more representative of the images these elites held.
Herrmann looked at “a substantial portion of the academic writings” made by
prominent scholars and deputy secretaries of the Central Committee’s Interna-
tional Department over the preceding ten years. All members of the group that
Herrmann studied had made careers out of analyzing the third world, and were
engaged in preparing the background materials that Soviet leaders would use in
shaping policy.

In an attempt to validate the use of public materials for inferring images, Mar-
tha Cottam (1986) used survey research techniques to demonstrate that policy-
makers do use categories, including ones that very much resemble her theoretical
work in this area. She administered a questionnaire to officials in four different
locales in the United States government. Including answers to both open-ended
and closed-ended questions, the survey results provided a wealth of information on categories and image constructs. Several results are worth reiterating. First, policymakers did tend to categorize countries in the ways that image theory anticipated. Second, they stated that the most helpful way to categorize states was on the basis of "their general policies toward the US" in contrast to by region, ideology, or size (Cottam 1986:72). Third, they identified many of the anticipated attributes associated with the image categories.

Correspondence with Behavior. Given the difficulties we have already noted in distinguishing cause from effect in the study of image theory, much of the research that might have been discussed in this section has already been presented. One recent pioneering study by Herrmann and Fischerkeller (1995), however, that clearly separates independent and dependent variables deserves highlighting here. As their independent variable, these two researchers, following the lead of earlier work, specify five different types of images (enemy, ally, imperial, colonial, and degenerate). They then identify a set of behaviors, from general to specific, that should follow from each different image construction, and speculate how images held in opposing countries should affect strategic interactions between the two. After setting forth a rather elaborate theoretical structure, Herrmann and Fischerkeller assess the prevailing images in the American and Soviet governments as well as in the Iranian and Iraqi governments, using statements by key members of each administration, lead editorials in party publications, memoirs, and secondary sources. They measure these states' behavior by using event data from the New York Times, the U.S. Foreign Broadcast Information Service Daily Report, and the Congressional Record on aid and arms transfers. Hence, the independent variables and dependent variables come from separate and distinct sources.

Their results are encouraging. Herrmann and Fischerkeller found different patterns of behavior associated with different dyadic images. And the patterns were ones that were anticipated in the theoretical framework. For example, the Soviet and American governments viewed each other primarily as enemies during the time under investigation. Recall that the enemy image combines perceptions of threat with views of the other as having similar capabilities and culture. This image resulted in containment and tit-for-tat behavior on both governments' part, but virtually no direct military confrontations. Iran and Iraq also frequently viewed each other as enemies. As a consequence, their interactions during this time period were similar to those of the superpowers. Occasionally, however, the dyadic imagery between Iran and Iraq shifted from enemy-enemy to enemy-degenerate. As specified in the theory, it was during those times that conflict tended to erupt.

Prognosis. The image theory proposed by Richard Cottam some twenty years ago has undergone important theoretical and empirical changes since its inception. Cognitive psychology generally tells us that individuals will simplify reality, look for patterns, and categorize like objects. We should expect nothing different from policymakers. However, questions remain regarding the impact of images on policy preferences and state behavior.

There are at least two steps this research program needs to take. First, it seems important to develop systematic procedures for inferring images. Although we are not categorically opposed to qualitative research, the variability in qualitative techniques used thus far significantly reduces the possibility for comparison and generalization. The advantages of a quantitative way of assessing images appear numerous. They include permitting more rigorous analysis of the effects of images, building a directly comparable set of studies, and putting other variables
(such as ideology, expertise, and role) into the mix to assess the relative impact of images. The second direction for research is to sort out the temporal problem by determining which comes first image or policy to directly address the rival hypothesis from self-perception theory.

*Conceptual Complexity*

Individuals progress and may become generally fixated at various levels along the dimension of simplicity-complexity of information processing. Individuals at the simple end are characterized by rigid evaluations of stimuli, the rejection of dissonant information, submissiveness to authority and prestige suggestion, etc. At the complex end of the dimension, individuals are shown to exhibit flexible and open cognitive systems; the use of many dimensions in an integrated combinatorial fashion; a search for novelty and further information; and the ability to consider multiple points of view simultaneously (Suedfeld and Rank 1976:170).

Research on conceptual complexity in the study of international affairs differs in a number of significant ways from the other three research programs we have described. The concept itself originated in psychology. Moreover, it is not concerned with the substance of cognition, but with how information is processed. Conceptual complexity was initially developed to explain success in complex decision environments (e.g., see Harvey, Hunt, and Schroder 1961; Schroder, Driver, and Streufert 1967; Suedfeld and Rank 1976; Suedfeld, Corteen, and McCormick 1986). Since the concept entered the literature of political science, research has focused on answering two questions: (1) whether degree of conceptual complexity influences a leader’s approach to the policymaking process and, in turn, the political entity’s behavior (e.g., Hermann 1977, 1984; Tetlock 1981a, 1983b), and (2) whether changes in expressed conceptual complexity are precursors to particular types of behavior such as surprise attacks (e.g., Levi and Tetlock 1980; see also Hermann 1974). Underlying these questions was (and is) a concern with what guides policy interactions between states, within governments, between leaders and constituents, and within a leader’s advisory system.

*Theory.* Research on conceptual complexity has focused on the structure of cognition, that is, how complex, varied, and interconnected an individual’s belief system is. Does it contain a high number of closely related concepts and an associated ability to compare competing explanations for behavior? Or are there a few highly salient beliefs and a limited number of categories to describe objects in the environment? The initial motivation for the study of conceptual complexity was the theory that success in a complex environment requires a correspondingly complex belief system. This perspective is reflected in early laboratory studies of the concept in psychology (e.g., Schroder, Driver, and Streufert 1967). Conceptual complexity has been viewed as a trait that differentiates among people as well as a variable that reflects changes in a person’s situation, say from nonstressful to stressful.

The study of conceptual complexity as a trait within the domain of foreign policy can be traced to work by Michael Driver (1977) and Margaret Hermann (1974, 1977). They were both interested in investigating ideas from psychology that suggested individuals who were lower in conceptual complexity (i.e., more conceptually simple) had a small response repertoire and, thus, when faced with an international crisis would be likely to see few nonaggressive options. They would view the world in black-and-white terms and “when threatened have no alternative to war” (Driver 1977:339). The more conceptually complex person, it was hypothesized, would see the world in more nuanced terms and would not react to any situation without first gathering and processing contextual information. Data from
a set of internation simulation runs in Driver's (1977) case and on forty-five world leaders in Hermann's (1980) case indicated that policymakers who were less conceptually complex forced their states to engage in more conflictual behavior than their counterparts who were more conceptually complex.

Data from both studies suggested that whereas conceptually complex leaders were more responsive to their political environments, conceptually simple leaders were more belief-driven. In other words, conceptually complex leaders wanted to check with politically powerful others, to seek further information about the issue at hand, and to consider a range of alternatives before taking action. Conceptually simple leaders were more single-minded, decisive, and quick to define the situation in terms that fit their predispositions. Hermann (1984, 1993; Hermann and Hermann 1989) has confirmed and elaborated on the theoretical implications of these differences in a set of studies of heads of state. This distinction provides information about which leaders are likely to be open to negotiation and compromise and which will probably ignore all entreaties unless their demands are met.

In contrast to an emphasis on conceptual complexity as a trait, we find a number of studies that have explored how manipulable this variable is. Peter Suedfeld and Dennis Rank (1976:171) have proposed that conceptual complexity is a "somewhat flexible, situation-specific response style rather than a pervasive, stable, consistent trait." They found support for this proposition for revolutionary leaders who expressed relative simplicity in the struggle for power and significantly more complexity when faced with the problems of governing. This study became the precursor for a large body of research focused on the factors that can influence changes in conceptual complexity.

One of the earliest of these studies (Levi and Tetlock 1980) examined the hypothesis that stressful events would reduce cognitive capacity by examining statements made by Japanese officials prior to the outbreak of World War II in two contexts: policy formulation meetings and policy presentations before the emperor. They found that statements made during the policy presentation were significantly more complex than those made in policy formulation meetings, suggesting that social context can influence conceptual complexity. A subsequent study of United States presidents, in which the scores on conceptual complexity of successful candidates rose sharply immediately after the election (Tetlock 1981a, 1981b), echoes the study of revolutionary leaders and also supports the proposition that social context can enhance or reduce conceptual complexity. These studies have identified a number of contextual factors that have an effect on conceptual complexity including stress, accountability, and advocacy (e.g., Tetlock 1983a, Maoz and Anat 1987; Suedfeld, Wallace, and Thachuk 1993). Apparently when leaders are responding to threat or trying to persuade others, they become more conceptually simple and focused; as they become more uncertain or are faced with a multifaceted task like governing, leaders exhibit more complexity and search for more cues in their environment.

Comparing and contrasting the trait and situational approaches to conceptual complexity, one can ask if there are limits to how far conceptually simple leaders are likely to move when put into an uncertain environment and, correspondingly, whether conceptually complex leaders can ever display the extremes of behavior characteristic of the most simple leader. In a study of a number of U.S. Congressmen, Hermann (1977) found that when they were expert in a particular area (e.g., chair of a committee), the more conceptually simple representatives could become more complex and the more conceptually complex representative could exhibit less complexity. But in both cases there was a threshold neither could break.
Method. Early laboratory research on conceptual complexity relied on a variety of measures including personal inventories, questionnaires, and paragraph completion exercises (see Vanoy 1965; Tuckman 1966). Because of the inaccessibility of political leaders, students of both the trait and situational approaches to conceptual complexity have developed content analysis schemes to assess this variable. Hermann and her colleagues determine a leaders’ complexity levels by looking for words in their statements that indicate a complex belief structure, (e.g., “conditional,” “somewhat,” “various,” “perhaps”) or a simple belief structure (e.g., “always,” “regardless” “without a doubt,” “certainly”). Conceptual complexity is determined by calculating the ratio of high-complexity phrases to the sum of high- and low-complexity phrases. The preferred sources for this technique are spontaneous expressions by leaders, such as responses to interview questions. (For complete coding instructions, see Hermann 1987a, 1987b.)

The content analysis scheme that is used to assess conceptual complexity in the situation-based approach is built from that used with the Paragraph Completion Test (Harvey, Hunt, and Schroder 1961). Suedfeld and Rank (1976) adapted this coding method to archival material. They reasoned that if the technique could be used to score paragraphs created by subjects in a laboratory, it could also be used with preexisting written documents. The resulting coding system focuses on the structure of evaluative material rather than statements of facts or descriptions of procedure. Although most of the researchers in this area emphasize that the system is agnostic to content (i.e., there is no presumption that a given position on a political issue corresponds to a given level of complexity), coders are required to determine whether responses indicate “awareness and tolerance of two different interpretations or perspectives” (Tetlock and Suedfeld 1987:48). This task cannot be accomplished without reference to the meaning of the text, even though the particular substantive content is not of concern. Rather than providing a ratio, this measure of conceptual complexity ranks a set of “scoreable” paragraphs from a text(s) on a 1 to 7 scale and calculates a mean score. Scores from 1 to 3 indicate increasing differentiation, that is, a recognition that problems have more than one facet or dimension; a score of 4 indicates high differentiation but only the beginning of integration; and scores from 5 to 7 indicate increasing integration, that is, the development of cross-connections among the disparate facets of the problem. Interestingly, political leaders’ scores tend to fall in the 1 to 4 range. (For a general discussion of the coding system, see Tetlock and Suedfeld 1987; for a complete coding manual, see Baker-Brown et al. 1992.)

What is very clear about both of these content analysis techniques is that they are significantly less expensive to use than those for the operational code, cognitive mapping, or image theory. It would seem important in the future to compare these two ways of analyzing conceptual complexity. Hermann (1987a, 1987b) has suggested that the trait-based approach is more a measure of cognitive differentiation than integration, while Tetlock and Suedfeld (1987) have designed the situation-based measure to focus on integration. Given, however, the restriction in scores on the integration measure with political leaders, both techniques may be assessing policymakers’ ability to differentiate objects in their environments and should relate to one another.

Correspondence with Behavior. As we noted above, those working with the trait-based approach to conceptual complexity have found an inverse relationship between level of complexity and conflict. In one case (Driver 1977), participants leading states in an internment simulation were more likely to go to war in response to an international crisis the lower their scores on conceptual complexity. In several other cases (Hermann 1980, 1984; Hermann and Hermann
1989), countries exhibited more conflictual behavior the lower the conceptual complexity scores of their heads of state. In these studies, state behavior was measured by events data. Moreover, in this research these same leaders were more prone to take risks and irreversibly commit the resources of their states and less likely to engage in diplomacy if some more definitive action was possible than their more complex counterparts. Based on these findings, Hermann and her colleagues (e.g., Hermann and Kegley 1995; Hermann and Preston 1998) have proposed that leaders who are low in complexity are more likely to challenge constraints in the international arena, whereas those high in complexity will be more prone to respect constraints.

Thomas Preston (1996, 1997) has examined a different kind of political behavior using the trait-based approach to conceptual complexity. He has argued that because leaders low in complexity are more likely to challenge constraints, they will set up their advisory systems so that they are in charge. In contrast, leaders high in complexity who are responsive to their environment will choose a more collegial and informal advisory setting with easy access to a wide variety of information. Examining the advisory systems of several U.S. presidents across a number of occasions for decision, Preston found that presidents high in complexity generally tended to create an advisory structure that incorporated an open information-processing system, exhibited a high sensitivity to the policy and problem context, and engaged in a deliberative decision process that was tolerant of disagreement and conflict. The advisory systems of those low in complexity were more formal and hierarchical in structure and more focused on the choice process than option generation or information search. Juliet Kaarbo and Hermann (forthcoming) have reported similar results in a study of four European prime ministers.

An important issue in any research on traits is demarcating who is high and who is low. Generally this process is accomplished by comparison to a norm. In the case of the studies just discussed, the leaders that formed the norming group were other heads of state (e.g., presidents, prime ministers, party chiefs, dictators). Given that the number of such leaders on which Hermann and her colleagues have collected data has increased across time to currently over one hundred, the group that comprised the norm is different in these various studies so that they are not directly comparable.

The value that a stable personal characteristic has for forecasting future political behavior is fairly straightforward. However, is a situation-specific expression of conceptual complexity just as useful? Given the focus on validating the situational nature of conceptual complexity, it is understandable that a significant amount of energy in this program of research has been devoted to determining what affects changes in complexity. A large number of the studies essentially track reports that look on either side of significant events or changes in status to determine if level of complexity also changes (e.g., see Suedfeld and Bluck 1993; Guttieri, Wallace, and Suedfeld 1995). An interesting predictive result, however, that does emerge from this research is that the conceptual complexity of leaders' public rhetoric declines perhaps as much as six months before a crisis moves toward war (Suedfeld and Tetlock 1977; Suedfeld, Tetlock, and Ramirez 1977; Raphael 1982). In addition, the leaders of aggressor states have a marked decline in complexity prior to the initiation of conflict (Suedfeld and Bluck 1988; Wallace, Suedfeld, and Thachuk 1993). These findings appear to be very consistent and demonstrate that decreasing conceptual complexity scores reflect increasing commitment to one solution to the crisis. One more note of interest comes from a study of General Robert E. Lee and his opponents in the American Civil War (Suedfeld, Corteen,
and McCormick 1986). This research suggests that if the data on complexity indicate a crisis will turn to war, by comparing the complexity scores of the leaders on each side, it may also be possible to predict which side will win—Lee won the battle when his conceptual complexity was higher than that of his opponents.

**Prognosis.** Because conceptual complexity focuses on cognitive structure not cognitive content, it is less useful for forecasting political behavior if the researcher is interested in the specific content of the policy. But the trait-based approach suggests that level of conceptual complexity can furnish information about the more general kind of behavior that a leader is likely to urge on his government in international affairs (e.g., conflict vs. cooperation) and how flexible and decisive the leader is likely to be. And the situation-based approach appears to provide an indicator of when a government has become committed to a particular course of action. In light of the changes in the coding system for the situation-based measure recently proposed by Tetlock and Anthony Tyler (1996) (namely, to assess both differentiation and integration), it seems an opportune time to examine how these two approaches to conceptual complexity relate to each other. Among the possible questions to be explored are the following: Are these two approaches measuring a single phenomenon? Do leaders who are high on the trait-based measure exhibit more change in their scores on the situation-based measure than those who are low? Are policymakers really consistent in their scores on the trait-based measure over time?

**An Agenda for Future Research**

In this article we have argued that (1) cognition is a critical variable in understanding international affairs, perhaps even as important as interests and capabilities in terms of providing insights into the dynamics of international processes, and (2) several research programs have made important theoretical, methodological, and empirical contributions to our knowledge about how cognition influences what goes on in world politics. But this field of inquiry is still very young, and there is much left to do. For scholars interested in working in this area, we believe that this statement should be good news; from those not working in this area but interested in the results, we request patience and tolerance as methodologies are refined and old assumptions are challenged. Toward this end, we would like to propose a two-part research agenda for the future. The first part focuses on the potential for synthesis among the four research programs reviewed here; the second part raises some of the more general questions that must be addressed if we are to achieve our goal of using cognitive variables to forecast what political entities are likely to do.

**Is Synthesis Possible?**

If we are correct in suggesting that the research programs on the operational code, cognitive mapping, image theory, and conceptual complexity have each been designed to achieve essentially the same goal—to forecast political behavior by the analysis of cognition revealed in texts—then we would expect a close relationship between the four programs and the possibility of integrating them in the future. In fact, this close relationship has been recognized for a long time, but a number of methodological and theoretical problems have hindered such interaction and integration. Among these difficulties are the costs associated with developing the various assessments of cognition and considerations of how to go about linking cognitive content and cognitive process. But several recent technological breakthroughs may help overcome these dilemmas and make synthesis more feasible.
Methodological Synthesis. One of the early objectives of cognitive mapping was to measure conceptual complexity. In fact, Shapiro and Bonham (1973) developed a structural measure of conceptual complexity based on the connectedness among objects in causal cognitive maps (see also Levi and Tetlock 1980; Maoz and Anat 1987; Maoz 1990; Young 1996). In a similar vein, Walker, Schafer, and Young (1998) have begun to consider whether targeted operational codes (i.e., operational codes generated by looking only at a leader's perceptions of a specific actor) can be considered to measure images. If so, images can then be derived from operational codes. The reverse might also be the case: the aggregate of an actor's images about all other actors in the international environment could provide part of an operational code (i.e., the answers to the first two philosophical questions). Moreover, there have been attempts to integrate the operational code with cognitive mapping. For example, Walker, Schafer, and Young (1998) have extracted operational code data from Young's (1994) existing WorldView–based cognitive maps of President Carter. They accomplished this process by selecting only those relationships in the cognitive map that corresponded to operational code questions. The resulting data were used to refine their Verbs In Context System (VICS) and to contribute to the development of their quantitative indices. As a result, VICS does not require the construction of cognitive maps, but remains compatible with them. Thus, operational codes can be derived from cognitive maps (see also Cutler 1982). Furthermore, images can be obtained from cognitive maps by selecting only those propositions in the cognitive map that are associated with the target actor.

Because, as the above discussion suggests, the content analysis procedures for doing cognitive mapping are designed to extract as much information from texts as possible, they appear to contain all the necessary information to derive each of the other constructs. If this statement is true, why has no unified coding system been developed? The property of cognitive maps, especially the newer systems of Young (1996) and of Bonham, Sergeev, and Parshin (1997), that makes them so "flexible" has also made the cost of using them prohibitive. As more information is retained in the content analysis process, their labor intensiveness and expensive ness have increased dramatically. But thanks to a recently developed robust automated event coding system, the Kansas Event Data System (KEDS) (Gerner et al. 1994), there is a greater potential than before of integrating the measures of the four cognitive concepts. Adapted by Young (forthcoming) for cognitive mapping, KEDS has proven capable of automating a substantial portion of the content analysis process involved in cognitive mapping, both reducing the cost and improving the quality of the resulting data.

Although event coding—recording who did what to whom—may appear at first glance to be very distant from "cognition coding"—recording who believes what—they have been shown to be related in both the operational code efforts of Walker, Schafer, and Young (1998) and the cognitive mapping efforts of Young (1996). The content analysis approach in all three systems is verb centered and inherits much of its rationale from the World Events Interaction Survey (McClelland 1976), one of the better-known event data sets. It was this shared heritage that prompted Young to consider adapting KEDS to do cognitive mapping. Although cognitive mapping using KEDS is not yet efficient enough to support an integrated methodology, follow-on systems that are currently in the pipeline will make such a synthesis possible.

Virtual Leaders. Even though a methodological synthesis may be imminent, we still have the problem of integrating approaches that focus on content and process. From the very beginning of work on cognitive mapping, there has been
an interest in the cognitive processes that lead to decisions as indicated by its concern with causal reasoning and by the early definition of a reasoning model—Bonham and Shapiro’s cognitive process model. Again, given the amount of information extracted from text and a focus on the linkages between propositions, cognitive mapping seems well suited as a platform for cognitive process models. What is not clear is whether policymakers use the same cognitive process in reaching their decisions. Operational code research and studies of conceptual complexity have also been interested in cognitive processes and in the question of differences among leaders in the ways that they process information. The operational code, for example, assesses individuals’ beliefs about the best approach for selecting goals and how the risks of political action are calculated, controlled, and accepted; trait-based conceptual complexity looks for variation across individuals in their capacity for complex reasoning. Thus, to the extent that leaders differ from one another, we can use measures of their operational code and conceptual complexity to guide the choice of the cognitive process model that should be applied to them.

The situation-based approach to conceptual complexity, however, has clearly demonstrated that leaders’ cognitive processes can be influenced by contextual factors. This finding suggests that the cognitive process used to make decisions can vary in response to current domestic and international pressures. In the most clear-cut cases, we may be able to use a decline in situation-based complexity—similar to that which occurs as crises move toward overt conflict—to detect a switch from cognitive processes that incorporate a wide range of goals to a process that incorporates only limited goals.

In the short term we should assess the cognitive content of a leader using the method that is most appropriate to our research question and the type of material that is available. If there is a rich source of data on a particular issue and an interest in understanding how a leader is going to solve a specific problem, cognitive mapping provides us with the most appropriate information on that person’s beliefs. Image theory and targeted operational code studies are more useful when the focus of attention is a particular adversary. And determining the more general operational code becomes important when the researcher is interested in ascertaining a leader’s preferred orientation to international relations. Putting our information on an individual’s cognitive process together with data on his or her cognitive content, we can create a virtual leader and involve all four research programs we have discussed.

Building such a virtual individual is becoming more feasible with the development of computational models like that Charles Taber (forthcoming) has created on event interpretation. Models like Taber’s are more difficult to develop without the raw cognitive content that is needed for their evaluation. In point of fact, building process computational models is easy; evaluating them in the absence of realistic content is largely futile. This type of computational model demands knowledge about both process and content. Our ability to define the nature of the cognitive process and to ascertain particular cognitive content using the four research programs described here makes this simultaneous evaluation possible.

Further Research on Cognition

In addition to considering whether and how the operational code, cognitive mapping, image theory, and conceptual complexity might be integrated, there are certain rather fundamental tasks that still need to be addressed. More research must be done on refining how we conceptualize cognition and measure it. In giving our prognosis about each of the research programs reviewed in this article, we have
made suggestions about particular research steps that should be taken. But there are also some fairly general questions about the kinds of materials that are used and the stability of the content analysis that require answers. For example, is there a difference in the resulting cognition between using leaders' prepared comments (speeches) as opposed to their more spontaneous comments (interviews and press conferences); how stable are the cognitions that are assessed by these various methods across time, issues, targets, and cultures; does cognitive content seem to influence the decision process more for some leaders than for others?

Moreover, to go much further in understanding the influence that cognition has on international affairs will require a larger pool of data from which to make meaningful comparisons. Because our information for several of the methods of measuring cognition is restricted to a small number of cases, it is currently difficult to know just what a particular score or assessment means. Do most leaders view the world in that way, or is it, rather, most leaders in a particular culture or only those leaders who find themselves in a specific kind of situation? We need to cumulate cognitive information on a larger group of leaders. The development of automated content analysis systems will facilitate such an endeavor, but pooling information among those engaged in studies using the methods described in this review will also hasten our ability to be more comparative.

In the final analysis, though, the greatest need is to continue to explore how cognition influences and shapes what governments do internationally. Although knowing Bill Clinton's operational code and his image of Iraq may by themselves be of some interest, we are more concerned with how they influence American foreign policy. By building the repertoire of ways that cognition appears to affect political behavior, we are increasing our ability to show where preferences come from and to forecast the impact they are likely to have on how international actors conduct negotiations, deal with crises, and initiate changes.

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