Binary Role Theory and the Uncertainty Problem

In International Relations Theory*

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Introduction

Role theory has recently attracted renewed interest and attention in the field of International Relations (IR). While it has resided as a social theory since at least the 1930s within the sociological tradition of symbolic interactionism and other branches of social science, its contributions to understanding problems of international relations and foreign policy have been somewhat sporadic and only intermittently popular.[1] It sparked some attention in North America during the 1970s and 1980s regarding the study of national role conceptions as a source for the explanation of foreign policy decisions.[2] As relations between states became more tightly coupled in the late 20th century, James Rosenau employed role concepts and dynamics to describe patterns of global turbulence and stability among states in an emerging world of complex interdependence.[3]

However, subsequent debates among realist, neoliberal-institutionalist, and constructivist theorists of international relations in North America rarely employed the concept of role in passing, even metaphorically or descriptively, to refer to the contending power positions, institutional responsibilities, or social identities associated with their respective schools of thought.[4] The core propositions and assumptions of role theory were employed more systematically in Europe during the same period to model the evolution of the European Union as a set of supra-national institutions and its relations with both member and non-member states.[5] The same turn toward developing more formalized role models of international relations phenomena has now begun to emerge in the United States.[6]

These trends on both sides of the Atlantic have prompted some renewed interest and attention regarding role theory's actual and potential contributions to IR theory. This question is the focus here within the context of the problem of uncertainty in the study of International Relations. The core argument in this chapter is that binary role theory is a solution to the problem of uncertainty in international relations theory, because as a theory of social relations it is quintessentially an information theory in which information and uncertainty are binary opposites as analytical constructs that are logically coupled and inversely related: information reduces uncertainty, and vice versa, uncertainty reduces information.[7]

Brian Rathbun (p. 533) advances the following claims regarding the importance of the uncertainty problem: "The force of uncertainty is central to every major research tradition in the study of international relations. Realists, rationalists, cognitivists, and constructivists all utilize it in their theories. It is arguably the most important factor in explaining the often unique dynamics of international as opposed to domestic politics." Yet a close look at these different paradigms reveals very different understandings of the concept. He concludes that, "Understanding uncertainty is necessary for grasping the logic of each paradigm, for distinguishing them from each other, and promoting interparadigmatic communication."[8] Claudio Cioffi-Revilla (p. 3) agrees, saying that "Uncertainty is ubiquitous, consequential, and ineradicable in political life… [and]… since antiquity, the puzzle of political uncertainty has often frustrated progress in social science theory and public policy."[9] An obvious implication is "the need to develop a calculus of action under the condition of uncertainty" in order to manage risk and avoid mistakes in judgment or action in political life.[10]

The Uncertainty Problem

So what is the puzzle of uncertainty and how does role theory contribute exactly to our understanding of it and perhaps foster interparadigmatic communication among various schools of international relations theory? It turns out that (ironically) there is some uncertainty about what the problem of uncertainty is. The term in ordinary language is the antonym of certainty, which is defined in the *American Heritage Dictionary* (p. 145) as: "**1**. The fact, quality, or state of being certain. **2**. Something that is clearly established." As an adjective, uncertain refers to (p. 872): "**1**. Not known or established; questionable. **2**. Not determined; undecided. **3**. Not having sure knowledge. 4. Subject to change." [11]

Claudio Cioffi-Revilla identifies the nature of political uncertainty as "the puzzling lack of sureness or absence of strict determination in political life." In his seminal book he introduces the concept "as a fundamental property of politics, crossing the traditional sub-boundaries of international and domestic politics, identifying major forms of uncertainty that invite a unified explanation across different areas of politics." In his subsequent exposition of political uncertainty as a construct (pp. 3-25), he makes the important claim that its duality extends to dimensions across both macro and micro levels of analysis from properties of aggregate political behavior conceptualized as variables to properties of individual political occurrences conceptualized as events. In terms of levels of analysis, macro-events as variables are dimensions of aggregate behavioral properties in a system of interaction while micro-events are decisions or states of nature attributed to agents or elements of the system.[12]

Cioffi-Revilla and Rathbun both recognize that uncertainty may have multiple meanings and, therefore, different theorists may have different understandings of uncertainty. Cioffi-Revilla recognizes different meanings of uncertainty at macro and micro levels of analysis. Rathbun argues that the meaning of political uncertainty varies by theoretical schools, which

differ regarding what they are uncertain about. In turn, their respective uncertainties depend on their views of perception and reality. The importance of uncertainty as a problem for each theory is a function of the importance or centrality of the concepts of "learning, signaling and screening, and the role of international organizations in reducing uncertainty."[13]

Both of these theorists rest their different meanings of uncertainty on differences regarding what is the referent of uncertainty, i.e., what the theorist is uncertain about. Examples of objects of uncertainty at the macro level of international relations include political instability and violence, systemic polarization and polarity, alliance size and war intensities, which Cioffi-Revilla (pp. 47-68) represents mathematically as random variables with different shapes for their respective probability distributions in the political universe. He specifies micro-events (pp. 142-143) as "a state of the world containing a specific combination of more elemental occurrences (sample points) from the sample space Ω of decisional outcomes and states of nature…," which represent all possible states (decisions) of a sample space such as a domestic or international system. For example, when decisions for war occur, the macro-decisional outcome is war and the elemental micro-events are that (p. 143) "belligerents fight and fatalities occur, etc." within a sample space that is "all possible states of the international system."

Rathbun (pp. 533-552) argues that four paradigms of IR theory assign different meanings to uncertainty regarding the same phenomenon, such as the intentions of others. For example: (a) *realists* experience uncertainty as *fear* regarding the intentions of others, (b) *rationalists* experience uncertainty as *ignorance* about the intentions of others; (c) *cognitivists* experience uncertainty as *confusion* about the intentions of others; (d) *constructivists* experience uncertainty as *indeterminacy* about the intentions of others. [14] Fear, ignorance, confusion, and indeterminacy are examples of "label framing" in the form of alternative wording for the same objectively

equivalent phenomenon (uncertainty about the intentions of others) screened and coded by the different concepts (fear, ignorance, confusion, indeterminacy) of each theory. Cioffi-Revilla also screens uncertainty about phenomena experienced at different levels of analysis, e.g., war as the distributions of variables of macro-level events (intensities and frequencies of wars) relative to the distribution of occurrences of micro-level events (decisions to fight). However, he uses "valence framing," the assignment of mathematical signs (± valences) and values to put the same essential information in "a positive or negative light."[15]

The difference in the two types of framing is important. Label framing assigns a subjective meaning to experiencing the phenomenon, which may or may not be shared by other observers. This kind of framing is essentially an interpretivist move in which a hermeneutic circle of observers may emerge, sharing a common intersubjective understanding of the phenomenon referenced with their common cultural label for the phenomenon. Valence framing assigns a more objective meaning to the phenomenon by a mathematical operation in which the phenomenon is represented by an abstract symbol (positive or negative) rather than the local name assigned to the phenomenon. There is still a shared intersubjective understanding of the symbol, but it is no longer so culture-laden.[16]

Both framing operations use a language, but the language of mathematics is more universal, transcending cultural differences to a degree not so easily reached with the translation of words across language communities.[17] The consequences are that the degree of common understanding regarding an equivalent phenomenon "out there" in the world of events depends importantly on the instrumentation (language) employed by observers to retrieve and represent the same phenomenon "in here"—the world in their minds.[18] Different screens and codes yield different understandings of reality, a condition that seems to be an inescapable part of the human

experience of reality. So realists, rationalists, cognitivists, and constructivists inevitably have a "model-based" understanding of the reality of world politics and its uncertainties within the frame of reference provided by the concepts from their respective paradigms.[19]

This conclusion about the inevitability of a "model-based" understanding of reality is a common one reached by scholars from the natural sciences to the social sciences and humanities.[20] Within this consensus there is still ample room for disagreement over whether the "model" accurately reflects a reality outside the observer or whether the boundaries of knowledge stop at the frontiers of the language that states the model.[21] A universally definitive resolution of this dispute is obviously difficult, but the outline of a resolution within a particular domain of inquiry may be possible.

The outline would take the form of general principles or rules that interact in such complex ways as to make the understanding of details impossible with the computing power available to humans. An example is the game of chess, which an observer can understand by reference to the rules of play for the pieces on the chess board. It is impossible to understand the game of chess in detail, however, because the interaction possibilities and outcomes among the pieces are impossible to compute and then understand.[22] If role theory can contribute significantly to our understanding of the rules of international relations and thereby significantly reduce the uncertainties of world politics, then a renewed interest in it is justified. This understanding may come either from a language that uses "valence" framing or "label" framing, which are both available and accessible as represented within the symbolic interactionist tradition of role theory.

Role Theory and the Symbolic Interactionist Tradition

The symbolic interactionist models of role theory occupy an elastic location spanning the two disciplines of psychology and sociology within the transdiscipline of social psychology.[23] The symbolic interactionist perspective in social psychology attempts to integrate the insights of role theory by linking self (the internal world in our minds) and society (the external world of events) with concepts from role theory.[24] Herbert Mead is credited with synthesizing and popularizing the three core ideas of mind, self, and society in symbolic interactionist thought with role theory's concepts of role making and role taking as subsidiary processes of the mechanism of role location.[25] "While Mead recognized that, historically speaking, the structure of society precedes the existence of all members except the founders, the emphasis of his thought was upon how individuals represent this environment through the medium of symbols, that is, via the process of 'mind.'"[26] As Turner (p. 315) also points out, "Mead stressed that just as humans can designate symbolically other actors in the environment, so they can symbolically represent themselves as an object."

This dual focus in Mead's thought led his descendants to divide into a "Chicago" school and an "Iowa" school, respectively, which were named after their locations at the two universities and their two methodological approaches to the study of self and society.

> The Chicago school emphasized a methodological strategy of interpretation and a relatively indeterministic view of causality in order to explore human spontaneity. The Iowa school favored a methodological strategy of hypothesis-testing with a relatively deterministic view of causality to identify stable patterns of behavior… With the passage of time, this schism has declined; however, the two schools do represent the extremes of the symbolic interactionist tradition

> and tend to overlap, respectively, with the traditions of phenomenology and structural role theory along a micro-macro continuum of thought in social psychology.[27]

These methodological divisions echo different assumptions about solutions to the level-of-analysis and agent-structure problems in IR theory.[28] The Chicago school tends to begin with an agent-centered, bottom-up, inside-outside approach while the Iowa school employs a structure-oriented, top-down, outside-inside approach in their applications of role theory to the study of agents and systems.

However, the two schools share a commitment to the common assumption that they are studying a *social* phenomenon, i.e., that both self and other count within a common ontological field in their analyses. They may also agree (though perhaps unknowingly) on a common lack of commitment in extreme cases to the very idea of causality, which is reflected by their different applications of role theory in making quasi-causal claims based on subjective interpretation v. objective discovery. The Chicago school emphasizes subjectivity as a barrier to making universal or probabilistic causal claims regarding the interactions of self and society while the Iowa school emphasizes unexplained variance in the form of exogenous influences creating spurious relationships as a barrier to making the same causal claims about the connections between the social system and the actions of agents. Although the former base their skepticism on the open-ended nature of human behavior and the latter emphasizes the complexity of a social system, both implicitly recognize the operation of an *uncertainty* principle in some form, which limits knowledge of the human condition defined as *self-in-situation*.

If both schools of role theory share a common and explicit recognition of the uncertainty principle, then this shared understanding is one basis for role theory's potential contribution as

an analytical bridge among general theories of International Relations and indeed among general theories in the social sciences. The potential bridge function of role theory is possible because as a theory of social relations it is quintessentially a theory of information and meaning, in which information and uncertainty are binary opposites as analytical constructs that are logically coupled and inversely related: information reduces uncertainty, and vice versa, uncertainty reduces information within the context of a social (role) theory.

Role Theory and the Uncertainty Problem

Does role theory address explicitly at its intrinsic core the problem of uncertainty in human affairs? I suggest here that role theory is more than just one such theory. Its key concepts focus on relationships rather than objects, i.e., it addresses the mechanics and dynamics of mental and social behavior by humans at various levels (units) of analysis. Individuals, dyads and triads, groups, institutions, states, societies, supranational and international organizations are constituted as systems by relationships, which also are agents in larger systems at different levels of aggregation and disaggregation. The human mind can also represent them as objects along with the self. The constituents of these units of analysis can be defined as roles. Role theory is a form of systems theory in which each element of a larger system can be a subsystem with its own elements.[29]

Most international relations theories and other social science theories address the minimalist sense of the uncertainty problem, as simply the problem of reducing the variance or increasing the probability function for the relations between variables, which is a common goal of empirical theories with induction and testing formats that involve correlating or cross-tabulating relationships between and among variables.[30] In this sense reducing the variance becomes a contribution to political theory by reducing the uncertainty among variables of

interest within a theory.[31] A deeper, more specific recognition of uncertainty is the difference in conceptualizing the reference in international relations theories to uncertainty regarding (a) the power or interest distributions between states in neorealist international relations theories of conflict;[32] (b) the institutional rules and interests in neoliberal theories of international cooperation;[33] (c) the configuration of norms in constructivist theories of international law and organization;[34] (d) cognitivist discussions of risk assessment in foreign policy analysis theories.[35]

These kinds of examples are the basis for Cioffi-Revilla's general discussion of political uncertainty as a construct and Rathbun's identification of the problem's variable meanings in International Relations theory. However, these discussions appear not to link the uncertainty problem consciously to information theory and its implications, a gap that general systems and decision-making theories of international relations and foreign policy over a generation ago did recognize and explore more explicitly.[36] This explicit link and its implications form the basis for the claim in this chapter that role theory recognizes the problem of uncertainty and then models explicit solutions to the problem.

The concept of maximum uncertainty applied to the world of social events (society) and the world of mental events (mind) as a statistical term narrowly means the phenomena in these worlds occur randomly. That is, it is equally probable that any one event in either of these domains will occur, and there is zero probability that one will occur more frequently than another The concept of entropy in information theory entails the concept of uncertainty by identifying explicitly the possible phenomena that can occur as well as the probability that they will occur.[37] It can refer both to the variety (possibility) of phenomena and the relative frequency (probability) of their occurrence. The state of maximum entropy for a system is one in which all possible states of the system are identified theoretically as an ensemble and all are equally probable. Its

entropy is reduced along with its uncertainty when its actual state takes a particular configuration and replaces uncertainty with complexity as a kind of order that is nonrandom. Put another way, in evolutionary terms selection replaces variety in a system as it operates, i.e., as its elements interact with one another and its environment.[38]

In social systems the process of communication (exchange of information) between agents in the system reduces the entropy (possible states of the system) into patterns (actual states of the system) over time. These interactions simultaneously reduce the uncertainty (randomness) in the system as well as the maximum entropy (equally possible states) by making some states more probable (less random) than others that are still possible but are not available (have not occurred) in the present. These patterns may be more or less complex, depending on the amount of information that is exchanged and the number of elements (agents) that constitute the system of interest. The stability of the system (the durability and persistence of the actual state of the system) depends on the degree of institutionalization that characterizes these patterns of interaction and binds the elements of the system together. [39]

These system-level features in role theory depend on the exchange of cues (information) between the agents that constitute the social system and the corresponding exercise of social power that accompanies the exchange of cues in the form of actions that transmit the information between agents. Role-making and role-taking refer to the exchange by Ego and Alter of cues, i.e., the sharing of information about each other's identities (who they are), interests (what each wants), and capabilities (what each is willing and able to do). In this account role theory becomes an information theory, i.e., a communication theory in the form of the exercise of social power that is a necessary condition for the existence of social cooperation or conflict.[40] "Social" here refers to the necessary condition of conscious awareness and concomitant information

processing in order for the constructs of self and society to exist.[41] Role theory as a social theory of communication and control in international relations logically precedes emergent patterns of conflict or cooperation in international relations, which are derivatives of the exchange of information and the concomitant exercise of power.[42]

Therefore, does role theory entail theories of conflict and cooperation offered by realist, neoliberal-institutional, and constructivist schools of IR theory? That question is one of the issues raised by the problem of uncertainty and role theory's solution to this problem. The answer depends partly on what is understood by entailment, how the problem of uncertainty manifests itself within particular paradigms of IR theory, and to what extent signaling and screening mechanisms are important mechanisms in a specific theory of international conflict or cooperation.[43] In particular, the tensions among different meanings of uncertainty are likely to surface, depending on what is problematized and when in the application of role theory to the problem of uncertainty in IR theories.[44] In this book the focus is primarily on the problem of uncertainty as manifested particularly within the context of realist and liberal international relations theory and the attempt to analyze Britain's appeasement strategy in the 1930s.

The Entailment of Role Theory and International Relations Theory

Theories may have either internal or external conceptual problems. Laudan summarizes the distinction between the two types of conceptual problems for a theory T as follows: "1. When T exhibits certain internal inconsistencies, or when its basic categories of analysis are vague and unclear; these are *internal conceptual problems*. 2. When T is in conflict with another theory or doctrine, T', which proponents of T believe to be rationally well founded; these are *external conceptual problems*."[45] Entailment is one of the various types of cognitive relationships that exist along a continuum of possibilities between two or more theories. The ends of this

continuum are bounded by degrees of consistency v. inconsistency between the theories in which a decrease in the degree of consistency poses an increasing cognitive threat to each theory as an external rather than an internal conceptual problem of consistency.[46]

Entailment exists when one theory logically implies the other as a necessary concomitant or consequence, i.e., there is no apparent conflict between T and T' and they are logically consistent with one another. Reinforcement exists when T and T' are partly consistent, i.e., they are analogous. Compatibility exists when T and T' have no relationship (consistent or inconsistent) with one another. Implausibility characterizes the relationship between T and T' when one theory entails (implies) that a part of the other theory is unlikely. Inconsistency exists when one theory entails the negation of at least a part of the other theory.[47]

Entailment characterizes the relationship between role theory and realist theory in the substantive domain of politics. This statement rests initially on the dual claims that their respective central concepts of information and power (as they are understood within the context of their respective theories) are isomorphic and commensurate—they have the same logical structure and refer to the same empirical phenomena in the same way. The exercise of *social* power entails (implies) as a logical consequence the transmission of information.[48] The empirical referent for each one is an agent (sender) and patient (receiver) of signals (messages). The messages in the exchange of social acts may be thoughts, words and/or deeds intended by the agent to influence the patient's responses in the form of thoughts, words, or deeds and thereby define the political relationship between the two elements of a social system. These social acts are thereby simultaneously concomitant acts of communication (information) and control (power) that generate relationships of cooperation or conflict between agent and patient in the

power politics language of realist theory or between ego and alter in the social acts language of role theory.[49]

The actual demonstration of the validity of this claim regarding entailment involves expressing the premises of role theory and international relations theory in the same language with the same logic. The process involves two steps: show the face validity of the isomorphic and commensurate qualities of the two theories expressed in ordinary language, and then translate both of these theoretical statements into a common language of mathematics or symbolic logic that maintains their isomorphic and commensurable relationships. The first step establishes an intuitive basis for entailment and removes the external conceptual problems associated with its absence. The second step identifies and resolves internal conceptual problems of logical inconsistency and also establishes the logical basis for the claim of entailment, i.e., that one theory implies the other as a logical concomitant or consequence.

[Figure 3.1 Here]

The face validity of the claim that concepts from role theory and international relations theory entail one another is the identification of strategies as roles that states enact in world politics. The grand strategies of bandwagoning, balancing, appeasement, and hegemony have their analogues in the roles of client (rebel), rival, partner, and hegemon (patron); role theory also specifies explicitly a slightly larger repertoire of nominal roles (those just identified in parentheses) implied by realist theory. These roles and the environmental constraints of material power from structural realist theory and national interests from classical realist and liberal theory are displayed in Figure 3.1, which distinguish role strategies in relation to the exercise of social power as positive (+) or negative (–) sanctions, the distribution of national interests as secondary (+) or vital (–), and the distribution of material power as symmetrical (=) or asymmetrical (≠).

Also in Figure 3.1 are the logical combinations of roles and strategies that intersect as the exchange of cues about the distributions of power and interests, which construct different definitions of the situation. These intersections of behavioral sequences by Agent and Patient in realist theory are simultaneously packets of information communicated by Ego and Alter in role theory. They are represented and connected by the symbolic language of mathematical operators {+,– and =, ≠}connecting Ego (e) and Alter (a) as agents and patients exercising symmetrical (=) or asymmetrical (≠) power and also communicating friendly (+) or hostile (–) roles toward one another.

A register of possible strategies specified by the possible combinations of interest and power distributions is in Figure 3.2. This figure shows the rank order of preferences for the different outcomes of submission (+,–) or domination (–,+), (settlement (+,+) or deadlock (–,–) associated with the environmental constraints defined by different distributions of power and interests between Ego and Alter. The register ranks the preferences for Ego, depending on whether Ego's national interests are vital (v) or secondary (s) interests and whether the distribution of power between Ego and Alter is symmetrical (=) or asymmetrical (≠), i.e., Ego is weaker (<) or stronger (>) than Alter. This list of strategies identifies families of grand strategies that can collectively interact to form an entropy matrix of all possible states between Ego and Alter formed by the logical intersections of strategies within and across each family.

[Figure 3.2 Here]

The intersections of role and counter-role possibilities are represented by the mathematical models of ordinal game theory in Chapter 1 with two players (Ego and Alter) who enact the roles defined by these strategies under the role demands (environmental constraints) of power and interest distributions specified in Figure 3.2 to rank the preferences of Ego and Alter for the different outcomes of settlement or deadlock and domination or submission within the

general game theory in Figure 3.3. Within this general model each agent (Ego or Alter) ranks its preferences for the four outcomes from 4 (highest) to 1 (lowest). The strategic orientations of the agents are identified by their respective highest-ranked outcomes as follows: a *bandwagoning* strategic orientation is one that ranks submission as the highest outcome; an *appeasement* strategic orientation ranks mutual settlement as the highest outcome; a *balancing* strategic orientation is indicated by ranking mutual deadlock as the highest outcome; a *hegemonic* strategic orientation prefers domination as the highest outcome. The content validity of these strategic orientations is extensive, as each one takes several forms, and Alter has the same choices of possible strategies as the ones shown for Ego in Figure 3.2. [50]

[**Figure 3.3 Here]**

However, the possible intersections of preference rankings for Ego and Alter in Figure 3.3 are limited by the constraints imposed by the logical rules of non-contradiction and transitivity plus the assumptions of either dominant or contingent strategies for Ego and Alter within each family of strategies. According to those logical rules and analytical assumptions, it is logically impossible under the condition of two-sided information to couple pairs of strategies into roles and counter- roles that do not agree on the distributions of power and interests between them, e.g. one bandwagoning strategy cannot be coupled with another bandwagoning strategy if both Ego and Alter assume that the power distribution favors Ego. If Ego assumes (E > A) and Alter also assumes (E >A), game theory's assumption of a game with two-sided information and structural role theory's assumption that roles and counter-roles are constitutive with respect to one another entail that Alter can only logically select a bandwagoning strategy while Ego can only logically select a hegemonic strategy.

These rules for coupling roles and counter-roles model a role theory implied by the variables of power and interests. These variables are role demands (environmental constraints) and assume that both Ego and Alter locate their respective roles by reference to information about these variables in ranking their respective preferences for the four outcomes in Figure 3.3. The two-sided information assumption from game theory specifies further that each player has complete and perfect information about the preferences of both players. The domestic constraints and the skills or biases of each player are not represented directly in this structural model. Omitted is the possibility that each player may define the situation differently and enact roles from the register in Figure 3.2 that do not couple logically as specified by the distributions of power and interests. This possibility makes the process of role location more complex and uncertainty reduction less straightforward, as both players would need to pay more attention to the exchange of cues between them instead of assuming that they will simply reflect the demands of environmental focal points. It also means that it is possible for the two players to actively construct a definition of the situation rather than passively respond to an already existing situation.[51]

The net effect is to refocus analytical attention on the abilities of decision makers to send and receive cues and to view politics as a process of communication as well as control. There is a symbolic interaction process of exchanging information that entails a strategic interaction process of exercising social power. The exercise of power within the context of realist theory becomes a communication process of role-making and role-taking within the context of role theory. Material power may constrain the menu for the exercise of social power, but social power is what counts as the actual exercise of control. These distinctions suggest that role theory offers three possible models to solve the puzzle of Britain's appeasement strategy during the 1930s: a

structure-oriented, substantive rationality model of appeasement in which British decisions were constrained by the role demands of power and interests, an agent-centered, bounded rationality model of British decisions specified by the role conceptions of Ego and Alter, and a symbolic-interactionist, communicative rationality model in which British decisions were shaped dynamically by the exchange of cues with Germany, Italy, Japan during strategic and symbolic interaction episodes between 1931 and 1941.

The PIN Model of Binary Role Theory

According to the structural role model's logical rules and analytical assumptions, it is impossible to couple pairs of strategies into roles and counter-roles that do not agree on the distributions of power and interests between them under the condition of two-sided information.[52] However, the logically possible role and counter-role couples in Figure 3.4 represent a formal model that integrates key variables from three traditions of general International Relations theory as a type of grand strategic role orientation theory, which is called a PIN model here after its key variables of Power (P), Identity (I) and National (N) interests.[53]

[Figure 3.4 Here]

The triad of variables in Figure 3.4 interacts to construct different rankings for the preferences in Figure 3.3 in complex ways that do not give primacy to any one of the three variables, depending on the particular combinations of values that each takes in relation to the others. Power can take a symmetrical (=) equal value or an asymmetrical (≠) value of greater than (>) or less than (<) equal value. Identity can take either a cooperation (+) or conflict (–) value. National interests can take a secondary (s) or vital (v) value.[54] Foreign policy changes in Grand Strategic Orientation (GSO) are both spatial and temporal, i.e., strategies change spatially from dyad to dyad and temporally for the same dyad.

Sources of change include changes in identity (changes in CO^{+} or CF^{-}) for Ego or Alter, changes in interests (changes in v or s) by Ego or Alter, and changes in power positions (= or ≠) by Ego or Alter across dyads or over time. It is possible to start from any one of these theoretical perspectives and reach the configurations of ranked preferences in Figure 3.3 by introducing different scope conditions for specifying the PIN model's dynamics. A grand strategy research program within this theoretical context would involve mapping how many dyads are in a state's role set and how many strategies are pursued by a state, depending on the distributions of identities, interests, and power that define each dyad.

In this book the substantive problem is how different role dyads intersect with different grand strategies to generate or block the different outcomes of domination, deadlock, settlement, and submission between Ego and Alter in strategic interaction episodes during the 1930s. The focus is an account of the episodes between Britain and each of the Axis Powers, which links these three strategic dyads across time and space with the application of the concepts and propositions from binary role theory. The central propositions that guide the analysis are three rationality theorems. The expectation is that a systematic reconstruction of their thought patterns and actions will provide a cognitive explanation of their actions, making this effort a study of elite political psychology.[55]

The central claim in this explanation is that a decision maker's beliefs and preferences provide a nearly always necessary and sometimes sufficient explanation for how and why foreign policy decisions are made.[56] Taking this position subsumes rational choice explanations for foreign policy under the general category of cognitive explanations by assuming that sometimes a decision maker's cognitive processes are consistent with the premises of substantive rationality and at other times conform to the premises of bounded rationality. In order to make

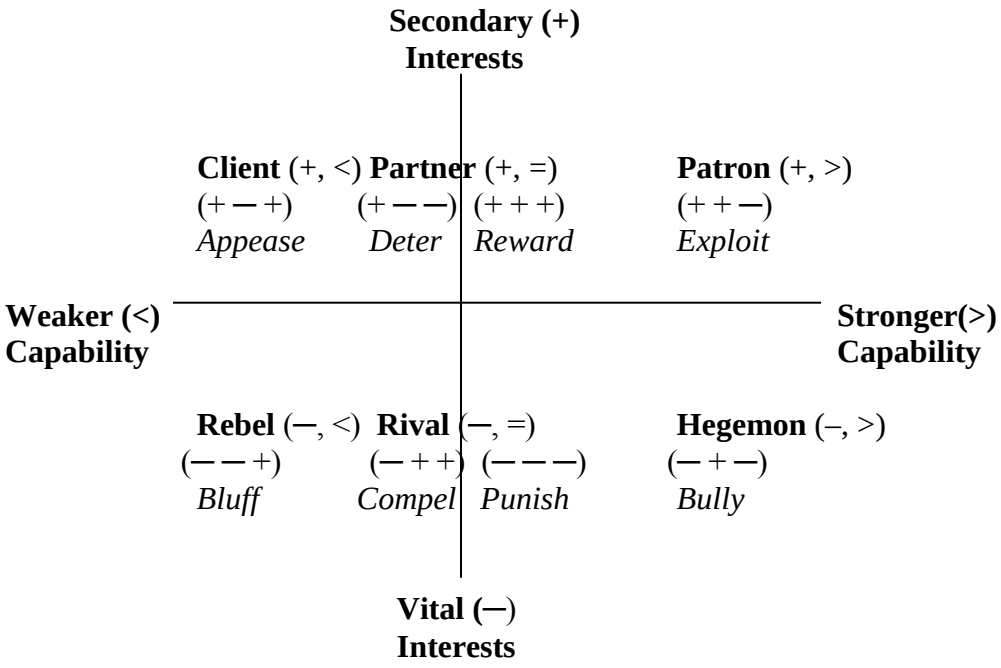
this determination it is necessary to be clear about the multiple meanings of rationality as a cognitive process employed in the argument.

Substantive rationality refers to the effects of actual background conditions and stimuli as external focal points influencing the beliefs, preferences and choices of Ego as a decision maker. *Bounded rationality* refers to the effects of prior beliefs held by Ego that act as internal focal points to re-enforce or undermine the influence of background conditions on Ego's preferences and choices.[57] *Communicative rationality* refers to the interaction between the internal focal points of prior beliefs and the external focal points of structural constraints and incentives over time as both beliefs and constraints change as a result of interactions between Ego and Alter. Communicative rationality[58] also refers more broadly to the dynamic and interactive process of *role transition* temporally or spatially (over time or across dyads) between Ego and Alter, which is likely to emerge from the interaction of the cognitive processes defining substantive and bounded rationality.

These three modes of rationality are subsumed under the umbrella of instrumental or procedural rationality, which refers to the influence of cognitive processes common to all three modes of substantive, bounded, and communicative rationality, such as seeking information, identifying and ranking preferences for different outcomes, and calculating ends/means relationships.[59] These cognitive processes may narrow or widen the gap between the internal and external focal points of prior beliefs and actual background conditions.[60] Over time, the balance of influence by external and internal focal points upon decisions may alter so that leaders experience learning effects in the form of altered beliefs that either converge with or diverge from background conditions.

In the case of convergence, beliefs and cognitive processes that mirror external reality are nearly always necessary conditions for a decision maker to make a substantive rational choice. In the case of divergence, beliefs and cognitive processes at odds with external reality may sometimes be sufficient conditions to steer the decision maker to make a bounded rational choice. Extended symbolic and strategic interactions in a process of communicative rationality over time may result in first divergence and then convergence in the beliefs of both Ego and Alter leading to the choice of new roles and counter-roles for them. It is relatively unusual among students of world politics to take a contingent position on the question of what kind of rationality governs political decisions and even more rare to place rational choice theories under the umbrella of political psychology as a cognitive explanation.[61]

While the distinction between substantive and bounded rationality is widely recognized, most international relations scholars have tended to assume one form of rationality dominates the calculus of decision or reject the concept of rationality as a sound theoretical basis for understanding decisions.[62] Structural analyses by neorealist and neoliberal theorists identify background conditions that constrain the range of possible decisions by individuals and thereby shape the larger events created by combinations of individual decisions. Agent-based analyses by cognitivist theorists often make the assumption of bounded rationality and identify beliefs that constrain the choices of individuals and govern the events that follow as consequences. The assumption of communicative rationality is implied in the dialogical or dialectical analyses by constructivist theorists of the interaction of norms and identities and their consequences. We shall employ all three modes of rationality beginning with substantive rationality in Part II, shifting to bounded rationality in Part III, and turning to communicative rationality in Part IV, to model Britain's appeasement decisions between 1931 and 1941.



Sequences	Interest Cues	Power Constraints	Definitions of the Situation
{e,a,e,a}	$\{+_e +_a\}$	Symmetrical (e = a)	Mutual Cooperation {+ + + +}
{e,a,e,a}	$\{-_e -_a\}$	Symmetrical (e = a)	Mutual Conflict {– – – –}
{e,a,e,a}	$\{+_e -_a\}$	Asymmetrical (e < a)	Submission/Domination {+ – + –}
{e,a,e,a}	$\{-_e +_a\}$	Asymmetrical (e > a)	Domination/Submission {– + – +}

Figure 3.1. Role Types and Definitions of the Situation for Ego and Alter.
Symbols: Ego (e), Alter (a); Secondary (+), Vital (–); Equal (=), Greater than (>), Less than (<). Sequences of cues leading to definitions of the situation are bracketed. Definitions of the situation as outcomes of coupled roles are underlined: mutual cooperation {+ +}; submission/domination {+ –}; domination/submission {– +}; mutual conflict{– –}.

ROLES	STRATEGIES	
	Bandwagoning Strategies	**Appeasement Strategies**
Cooperation (+)	Submit>Settle>Deadlock>Dominate (s,<) Submit>Settle>Dominate>Deadlock (v,<)	Settle>Submit>Deadlock>Dominate (s,<) Settle>Submit>Dominate>Deadlock (v,<)
	Submit>Deadlock>Settle>Dominate (s,=) Submit> Deadlock >Dominate>Settle (v,=)	Settle>Deadlock>Submit>Dominate (s,=) Settle> Deadlock> Dominate >Submit (v,=)
	Submit> Dominate>Settle> Deadlock (s,>) Submit>Dominate>Deadlock>Settle (v.>)	Settle>Dominate>Submit> Deadlock (s,>) Settle>Dominate>Deadlock>Submit (v,>)
	Balancing Strategies	**Hegemonic Strategies**
Conflict (–)	Deadlock>Submit>Settle>Dominate (s,<) Deadlock>Submit>Dominate>Settle (v,<)	Dominate>Submit>Settle>Deadlock (s,<) Dominate>Submit>Deadlock>Settle (v,<)
	Deadlock>Settle>Submit>Dominate (s,=) Deadlock>Settle>Dominate>Submit (v,=)	Dominate>Settle>Submit>Deadlock (s,=) Dominate>Settle>Deadlock>Submit (v,=)
	Deadlock>Dominate>Submit>Settle (s,>) Deadlock>Dominate>Settle>Submit (v,>)	Dominate>Deadlock>Submit>Settle (s,>) Dominate>Deadlock>Settle>Submit (v,>)

Figure 3.2. Families of Strategic Role Orientations.*

*Interests: Secondary(s); Vital (v). Mathematical Symbols: Greater than (>), Equal (=), Less than (<), Cooperation Role (+), Conflict Role (–).

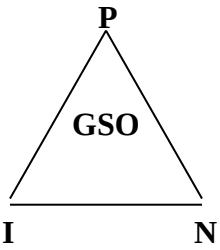
		Alter	
		CO	CF
Ego	CO	Mutual Settlement	Ego Submits/ Alter Dominates
	CF	Ego Dominates/ Alter Submits	Mutual Deadlock

Figure 3.3. General Game Theory Model for Binary Role Theory
CO = Positive (+) Sanctions (Cooperation); CF = Negative (-) Sanctions (Conflict)

PIN MODEL

ALTER

EGO	COOP	CONF
COOP	Appease	Submit
CONF	Dominate	Balance



Grand Strategic Orientations (GSOs)

Appease = liberal cooperative security orientation
Submit = small state orientation
Dominate = offensive realist orientation
Balance = defensive realist orientation

Grand Theoretical Orientations

P = Power politics orientation (realism)
I = Identity politics orientation (constructivism)
N = National interest politics orientation (liberalism)

Theoretical Propositions Regarding Grand Strategic Orientations (GSOs)

1. **Constructivists** say that GSO is a function of identities (I), which can define which national interests (N) are ignored or highlighted and make power (P) less relevant, i.e., "Anarchy is what states make of it." GSO = I→N→P. See Wendt, *Social Theory of International Politics*.

2. **Liberals** say that GSO is a function of national interests (N), which determine the range of relevant identities (I), and power (P). GSO = N→I→P. See Moravcik, "Liberal International Relations Theory."

3. **Realists** say that power (P) permits a range of interests (N) which then specifies identities (I). GSO = P→N→I. See Kenneth Waltz, *Theory of International Politics* (Reading, MA: Addison-Wesley, 1979).

4. **Binary Role Theory** says that knowledge of Alter's GSO over time can influence Ego's GSO selection between a Cooperation (+) Role or a Conflict (–) Role with different strategic orientations. It is likely that security communities and enduring rivalries are examples of this phenomenon.

4. **Grand Strategic Role Orientation Theory** says that there are *families* of strategies for Ego that can vary, depending on Alter's strategy. The PIN model specifies what strategic role orientations for Ego and Alter emerge from the interaction among Power, Identity, and National interests while Binary Role Theory specifies the interactions and outcomes between Ego and Alter as a role and counter-role dyad with different configurations of Power, Identity and National interests.

Figure 3.4. A PIN Model of Grand Strategic Role Orientations.

[1]Sebastian Harnisch, Cornelia Franks, and Hans Maull, eds., *Role Theory in International Relations* (New York: Routledge, 2011); Cameron Thies, "Role Theory and Foreign Policy." In Robert Denemark, ed., *The International Studies Encyclopedia* (West Sussex: Wiley-Blackwell, 2010); Marijke Breuning, "Role Theory Research in International Relations: State of the Art and Blind Spots." In Sebastian Harnisch, Cornelia Franks, and Hans Maull, eds., *Role Theory in International Relations*, pp. 16-35. New York: Routledge, 2011.

[2] K.J. Holsti, "National Role Conceptions in the Study of Foreign Policy." *International Studies Quarterly*, 14: 233-309; Stephen G. Walker, ed., *Role Theory and Foreign Policy Analysis* (Durham, NC: Duke University Press, 1987).

[3] James Rosenau, *Turbulence in World Politics: A Theory of Change and Continuity*. New York: Cambridge University Press, 1990. See also James Rosenau, "Roles and Role Scenarios in Foreign Policy." In Stephen Walker, ed., *Role Theory and Foreign Policy Analysis*.

[4] See Colin Elman and Miriam Fendius Elman, eds., *Progress in International Relations Theory* (Cambridge, MA: MIT Press, 2003).

[5] Harnisch et al, *Role Theory in International Relations*.

[6] Stephen G. Walker, "Role Identities and the Operational Codes of Political Leaders." In Margaret Hermann, ed., *Advances in Political Psychology* (Amsterdam: Elsevier, 2004); Stephen G. Walker, "Generalizing about Security Strategies in the Baltic Sea Region." In Olav Knudsen,

ed., *Security Strategies, Power Disparity, and Identity (*Burlington, VT: Ashgate, 2007); Stephen G. Walker, Akan Malici, and Mark Schafer, eds., *Rethinking Foreign Policy Analysis: States, Leaders, and the Microfoundations of Behavioral International Relations* (New York: Routledge, 2011); Stephen G. Walker, and Akan Malici, *U.S. Presidents and Foreign Policy Mistakes* (Stanford, CA: Stanford University Press, 2011); Cameron Thies and Marijke Breuning (2011) "Integrating Foreign Policy Analysis and International Relations Through Role Theory." *Foreign Policy Analysis*, 8: 1-4. See also the accompanying articles in this special issue of the journal.

[7] This core argument does not go uncontested or unqualified in the social sciences. Cognitivist and constructivist theorists contend that uncertainty is not simply or only the binary opposite of information and has no intrinsic meaning in the absence of identities and norms. My response is that all information is received within a "model-based" understanding of reality and that role theory as a theory of social relations is uniquely situated within the sociological tradition of symbolic interactionism to manage the tension between information and meaning regarding the problem of uncertainty. For a discussion of this issue see the references to model-based reality and symbolic interactionism later in this chapter.

[8]Brian Rathbun (2007) "Uncertain about Uncertainty: Understanding the Multiple Meanings of a Crucial Concept in International Relations Theory." *International Studies Quarterly,* 51: 533-558. Rathbun discusses the changing meaning of uncertainty in different theoretical contexts while Seth Lloyd, *Programming the Universe* (New York: Alfred Knopf), pp. 24-27 discusses the distinction between information and meaning within the context of information theory.

[9] Claudio Cioffi-Revilla, *Politics and Uncertainty* (Cambridge, UK: Cambridge University Press, 1998), p. 3.

[10] Walker and Malici, U.S. *Presidents and Foreign Policy Mistakes*, p. 3.

[11] *American Heritage Dictionary*. Third Edition (New York: Dell, 1994).

[12] Cioffi-Revilla, *The Politics of Uncertainty*, pp. 3-25. See also Appendix 1 in his book. The quotations are on p. 3.

[13] Cioffi-Revilla, *ibid*.; Rathbun, "Uncertain about Uncertainty," pp. 535-537.

[14] It is possible to view these distinctions as less useful because they are not necessarily mutually exclusive, e.g., cognitivists may experience uncertainty about intentions as both confusion and ignorance or there may be a "cognizance gap" on the part of individuals in the components of their experience of others' intentions. See Yaacov Vertzberger, *The World in Their Minds* (Stanford, CA: Stanford University Press, 1990), p. 45 regarding "the discrepancy between reality and the perception arising from the decision maker's noncognizance of relevant components in the environment." However, Rathbun (p. 534, fn. 1) stresses that he is "only characterizing the main tendencies of each paradigm, and many scholars working in one tradition and embracing its general conception of uncertainty will blend elements of others." A related concern is whether the differences among these various schools of IR theory are really distinct, or does one subsume one or more of the others? Rathbun argues that each school's distinction is

unique, conceptualizing the problem of recognizing and responding to uncertainty in the environment differently as follows: "In realism and rationalism… uncertainty is a problem of lacking information…In cognitivism and constructivism, states are uncertain …of how to understand the information in front of them." Both a lack of information and understanding can make decision makers less certain about how to respond. In each paradigm the decision maker copes with uncertainty differently: realists respond to fear with a focus on accumulating power; rationalists respond to ignorance by seeking more information; cognitivists respond to confusion by using cognitive shortcuts to reduce ambiguity or complexity; constructivists respond to indeterminacy by framing information within a set of norms or identities that provide information with meaning.

[15] The distinctions between label framing and valence framing are taken from Martin Dufwenberg, Simon Gächter, Heike Hennig-Schmidt (2011) "The Framing of Games and the Psychology of Play." *Games and Economic Behavior*, 72: 459-478.The quotes are from their discussion of framing on p. 472. Their use of "framing" comes from prospect theory. See their discussion on pp. 461-62 and fn. 4 of their paper plus Daniel Kahneman and Amos Tversky (1979) "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47: 263-292.

[16] Seth Lloyd, *Programming the Universe*, pp. 26-27, puts the point this way: "It would be useful to have an example of a situation in which a piece of information can be interpreted in only one way and in which the mechanism eliciting a response is completely known…Computers supply one such mechanism….The computer program unambiguously instructs the computer to perform a particular sequence of operations. The "meaning" of a computer program is thus universal, in

the sense that two computers following the same instructions will perform the same set of information-processing operations and obtain the same results….If a statement in a computer language has more than one possible interpretation, an error message is the result: for computers, ambiguity is a bug." He goes on (p. 27) to recognize that ambiguity is a bonus in human languages, which can have a variety of meanings assigned to a word in ordinary conversation and in literature.

[17] Daniel Little, *Varieties of Social Explanation* (Boulder, CO: Westview, 1991), pp. 68-87.

[18]Vertzberger, *The World in Their Minds*; Walker, Malici, and Schafer, *Rethinking Foreign Policy Analysis.* The larger implications of making a distinction between the world "in here" and "out there" are explored in Patrick Thaddeus Jackson, *The Conduct of Inquiry in International Relations* (New York: Routledge, 2010).

[19] Rathbun, "Uncertain about Uncertainty," pp. 552-554.

[20] Stephen Hawking with Leonard Mlodinow, *A Briefer History of Time* (New York: Bantam Dell, 2005). David Sylvan, and Barry Glassner, *A Rationalist Methodology for the Social Sciences* (New York: Basil Blackwell, 1985). Richard Ashley, "The Poverty of Neorealism." In Robert Keohane, ed., *Neorealism and Its Critics*, (New York: Columbia University Press, 1984).

[21] Cynthia Weber, *Simulating Sovereignty* (New York: Cambridge University Press, 1995).

[22]See Richard Feynman, *Six Easy Pieces*. (Reading, MA: Addison-Wesley, 1995), pp. 24-25) for a discussion of this point with the use of the chess game as a metaphor. Even a simple game like checkers took multiple computers and several years to "solve" the possible outcomes with just ten pieces left on the board. According to the authors (p. 1522) of this research, "Checkers has roughly the square root of the number of positions in chess," and they point out that chess computer programs still rely on rules of thumb because they lack the computing power to perform more precise calculations, See Jeffrey Schaeffer et al. (2007) "Checkers is Solved." *Science*, 317: 1518-1522.

[23] Sarbin and Allen, "Role Theory"; Sheldon Stryker and Anne. Statham, "Symbolic Interaction and Role Theory." In Gardner Lindzey and Eliot Aaronson, eds., *The Handbook of Social Psychology* (New York: Random House, 1985).

[24] Stephen G. Walker, S. 1992. "Symbolic Interactionism and International Politics: Role Theory's Contribution to International Organization." In Cottam and Shih, eds., *Contending Dramas, (*New York: Praeger, 1992) pp. 19-38. Alexander Wendt, *Social Theory of International Politics* (New York: Cambridge University Press, 1999). Sebastian Harnisch, "'Dialogue and Emergence': George Herbert Mead's Contribution to Role Theory and his Reconstruction of International Politics." In Sebastian Harnisch, Cornelia Frank, and Hanns Maull, eds., *Role Theory in International Relations* (New York: Routledge, 2011), pp. 36-55. David McCourt, "The Roles States Play: A Meadian Interactionist Approach." Presented at the Annual Meeting of the International Studies Association, San Diego, CA, April 1-4, 2011.

[25] Mead, H. 1934. *Mind, Self, and Society* (Chicago, IL: University of Chicago Press); Wesley Burr et al, "Symbolic Interaction and the Family." In Wesley Burr et al, eds., *Contemporary Theories about the Family* (New York: Free Press, 1979); Jonathan Turner, *The Structure of Sociological Theory*. Fourth Edition. (Chicago: Dorsey Press, 1986), 313-318.

[26] Walker, "Symbolic Interactionism and International Politics," p. 21.

[27] Walker, *ibid*., p. 22; see also Turner, *The Structure of Sociological Theory*, pp. 341-352; Burr et al, "Symbolic Interaction and the Family," p. 51.

[28] J. David Singer "The Level-of-Analysis Problem in International Relations." In James Rosenau, ed., *International Politics and Foreign Policy*. Second Edition (New York: Free Press, 1969). Alexander Wendt (1987) "The Agent-Structure Problem in International Relations Theory." *International Organization*, 41: 335-370. Walter Carlsnaes (1992) "The Agency-Structure Problem in Foreign Policy Analysis." *International Studies Quarterly*, 36: 245-270. Alexander Wendt, *Social Theory of International Politics*. (New York: Cambridge University Press, 1999).

[29] Ross Ashby, *Design for a Brain*. Second Edition. (New York: John Wiley, 1960). Ludwig. von Bertalanffy and Anatol Rapoport, Y*earbook of the Society for the Advancement of General Systems Theory*. Vol. 1. (Ann Arbor: University of Michigan Mental Health Research Institute,

1956). Robert Jervis, *System Effects: Complexity in Political and Social Life* (Princeton, NJ: Princeton University Press, 1997).

[30] For example, see Geoffrey Keppel, *Design and Analysis*. Second Edition. Englewood Cliffs, NJ: Prentice-Hall, 1982); Rudolph Rummel, *Understanding Conflict and War*. Volumes 1-5. (Beverly Hills, CA: Sage, 1975-81). See also Cioffi-Revilla, *Politics and Uncertainty*.

[31] John Vasquez, *The Power of Power Politics* (New Brunswick, NJ: Rutgers University Press, 1983); Karl Deutsch, *The Analysis of International Relations* (Englewood Cliffs, NJ: Prentice-Hall, 1968).

[32] For example, see Andrew Kydd, *Trust and Mistrust in International Relations* (Princeton, NJ: Princeton University Press, 2005), Jeffrey Taliaferro, Steven Lobel, and Norris Ripsman, "Introduction: Neoclassical Realism, the State, and Foreign Policy." In Steven Lobell, Norris Ripsman, and Jeffrey Taliaferro, eds., *Neoclassical Realism, the State, and Foreign Policy* (Cambridge, UK: Cambridge University Press, 2009).

[33] For example, see George Downs and David Rocke, *Optimal Imperfection: Domestic Uncertainty and Institutions in International Relations*. Princeton, NJ: Princeton University Press, 1995); Robert Keohane and Lisa Martin, "Institutional Theory as a Research Program." In Colin Elman and Miriam Fendius Elman, eds., *Progress in International Relations Theory*, (Cambridge, MA: MIT Press, 2003); Andrew Moravcsik, "Liberal International Relations Theory: A Scientific Assessment." In Colin Elman and Miriam Fendius Elman, eds., *Progress in International Relations Theory*.

[34]For example, see Nicholas Onuf, *World of our Making: Rules and Rule in Social Theory and International Relations (*Columbia, SC: University of South Carolina Press, 1989); Friedrich Kratochwil, *Rules, Norms, and Decisions* (New York: Cambridge, 1991).

[35] For example, see Yaacov Vertzberger, *Risk Taking and Decision Making: Foreign Military Intervention Decisions* (Stanford, CA: Stanford University Press, 1998); David Welch, *Painful Choices: A Theory of Foreign Policy Change* (Princeton, NJ: Princeton University Press, 2005).

[36]Richard Snyder, Howard Bruck, and Burt Sapin, eds., *Foreign Policy Decision-making as an Approach to the Study of International Politics* (Princeton, NJ: Princeton University Press, 1954). Morton Kaplan, *System and Process in International Politics* (New York: John Wiley, 1957). Richard Rosecrance, *Action and Reaction in World Politics* (Boston: Little, Brown, 1963). Karl Deutsch, Second Edition. *The Nerves of Government.* (London: Free Press,1966). Charles McClelland, *Theory and the International System* (New York: Macmillan); Charles McClelland, "Access to Berlin: The Quantity and Variety of Events, 1948-1963." In J. David Singer, ed., *Quantitative International Politics: Insights and Evidence*,(New York: Free Press, 1968). Charles McClelland, "The Beginning, Duration, and Abatement of International Crises." In Charles Hermann, ed., *International Crises*, (New York: Free press, 1972). Robert Jervis, *The Logic of Images in International Relations* (Princeton, NJ: Princeton University Press, 1970); Robert Jervis, *Perception and Misperception in International Politics (*Princeton, NJ: Princeton University Press, 1976). John Steinbrunner, *A Cybernetic Theory of Decision* (Princeton, NJ: Princeton University Press, 1974).

[37]Cioffi-Revilla, *Politics and Uncertainty*, does not recognize explicitly the distinction between uncertainty and entropy, defining the meaning of uncertainty as follows (p. 5): "Uncertainty means that in politics outcomes are neither predetermined (with probability 1) nor impossible (with probability 0), but lie somewhere in between." However, he does assume (p. 148) that these outcomes in the sample space include "all possible states of the system."

[38]Robert Wright, *Nonzero*. (New York: Vintage Books, 2000); see also Sean Carroll, *From Eternity to Here: The Quest for the Ultimate Theory of Time* (New York: Dutton, 2010). See Seth Lloyd, *Programming the Universe* (New York: Knopf, 2006), pp. 40-44, 65-99 for an extensive discussion of the concepts of physical and information entropy who points out that although entropy is discussed somewhat differently in information theory and theories of physics, they are actually the same in both theoretical domains. He argues as well that theories of physics are actually entailed by information theory.

[39] See Walker, *Role Theory and Foreign Policy Analysis* and Walker, Malici, and Schafer, *Rethinking Foreign Policy Analysis* for a discussion of the processes of authorization, allocation, cooperation, and conflict that can institutionalize roles in systems of foreign policy and world politics.

[40]Deutsch, *The Nerves of Government*. See also Walker, Malici, and Schafer, *Rethinking Foreign Policy Analysis*, pp. 279-282.

[41] John Searle, *The Social Construction of Reality (New York: Free Press, 1995)*; John Searle, *Mind, Language, and Society* (New York: Basic Books, 1998); Wendt *Social Theory of International Politics*. See also n. 1.

[42]Deutsch, *The Nerves of Government*; John Burton, *Conflict and Communication* (New York: Macmillan, 1969).

[43] Rathbun (2007) "Uncertain about Uncertainty."

[44]The communication and exchange of cues by role making and role taking processes, respectively, is inherently a process of reducing uncertainty by constructing an intersubjective understanding of the social situation between Ego and Alter. The reduction of uncertainty via these processes is constitutive as well as regulative, which makes the process of role location between Ego and Alter even more open-ended and problematical. See Walker, Malici, and Schafer, *Rethinking Foreign Policy Analysis*, pp. 248-257.

[45]Larry Laudan, *Progress and Its Problems* (Berkeley, CA: University of California, 1977), p. 49. Italics are Laudan's.

[46]Larry Laudan, *Progress and Its Problems* (Berkeley, CA: University of California, 1977), 48-54.

[47]*Ibid.*, p. 54. Note that Laudan's conceptualization of entailment is bi-directional, i.e., entailment implies either an affirmation or a negation of concomitants or consequences.

[48]A key distinction in making the entailment argument here is the conceptualization of power in the domain of politics as an actual social relationship in which Agent (A) controls Patient (B) i.e., A gets B to do or stop doing something that B would otherwise not do or stop doing, rather than the material capacity for establishing such a potential social relationship. Social power is thereby not equivalent to material power--the economic, diplomatic, military resources of material power are not equivalent to the social acts of rewards, punishments, threats or promises as actual exercises of social power. See David Baldwin, *Paradoxes of Power* (New York: Blackwell, 1989). The realist conceptual analyses of appeasement in Chapter 1 use the term power to refer to both social and material power plus the actual physical force that accompanies the exercise of deeds rather than words. Depending on the exact reference to social power or material power, the relationship between information and power is either definitely entailment in the case of social power or perhaps only re-enforcement in the case of material power. The latter (material power) is the form that also fuels physical rather than social phenomena, e.g., the forces of nature or the electricity in a vacuum cleaner. See Charles McClelland, *Theory and the International System* (New York: Macmillan, 1966).

[49]Karl Deutsch explicitly recognizes this entailment when he suggests…"that it might be profitable to look upon government somewhat less as a problem of power and somewhat more as a problem of steering; and to show…that steering is decisively a matter of communication….Let us recall that our word 'government' comes from a Greek root that refers to the art of the

steersman." See Karl Deutsch, *The Nerves of Government*. Second Edition. (Free Press, 1966), pp. xxvii, 182.

[50] The nominal definitions for these families of Cooperation and Conflict roles as strategic orientations may vary by theoretical or cultural language across observers or agents, e.g., the symbolic role valence of (+) for Cooperation associated with the role enactment of a bandwagoning strategy may be "client" or "lamb," depending upon the realist analyst (see Randall Schweller, *Deadly Imbalances* (New York: Columbia, 1998) and Walker, *Role Theory and Foreign Policy Analysis*, pp. 256-259). The operational definition of each Cooperation (+) or Conflict (–) role is specified by the rank order of preferences for outcomes and distinguished as families of roles by a shared top-ranked preference, e.g., all bandwagoning roles share a top-ranked preference for the outcome of submission.

[51]Searle, *The Social Construction of Reality*. See also, Walker, Malici, and Schafer, *Rethinking Foreign Policy Analysis*, pp. 251-252.

[52] Steven Brams, *Theory of Moves* (Cambridge: Cambridge University Press, 1994); Alexander Wendt, *Social Theory of International Politics*; see also David Sylvan and Barry Glassner, *A Rationalist Methodology for the Social Sciences*.

[53] This model is actually an alliance of three models to form a "theory complex" of game theory, binary role theory, and the key variables from liberal, realist, and constructivist schools of international relations theory. The latter are from substantive theories of world politics while

game theory is a mathematical theory and role theory is a social-psychological systems theory. See Walker, Malici, and Schafer, *Rethinking Foreign Policy Analysis*. The creation of theory complexes is recognized implicitly by Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes." In Imre Lakatos and Alan Musgrave, eds., *Criticism and the Growth of Knowledge* (Cambridge: Cambridge University Press, 1970) and explicitly by Larry Laudan, *Progress and Its Problems* as a normal practice in the natural sciences although the former emphasizes theoretical rivalries while the latter emphasizes theoretical alliances. The phrase "theory complex" is Laudan's.

[54] The source of the PIN model is Stephen G. Walker and B. Gregory Marfleet, "Binary Role Theory and Grand Strategies." Presented at the Annual Meeting of the International Studies Association in San Diego, CA, April 1-5, 2012.

[55] Jon Elster, *Political Psychology* (Cambridge: Cambridge University Press, 1993). According to Elster (p. 11), political psychology is an area of inquiry that "cannot limit itself to tracing the effects of beliefs and desires on individual actions and thereby on social processes. It also has to concentrate on the mechanisms by which desires and beliefs are formed." Role theory expands the focus beyond individual beliefs and desires into the realm of mechanisms and sources of those beliefs and desires.

[56] Stephen Walker, "Beliefs and Foreign Policy Analysis in the New Millennium," in Michael Brecher and Frank P. Harvey, eds., *Conflict, Security, Foreign Policy, and International Political Economy: Past Paths and Future Directions in International Studies*, (Ann Arbor: University of Michigan Press, 2002).

[57] Herbert Simon, "Human Nature and Politics." *American Political Science Review*, 79 (June, 1985), 279-305. Simon also recognizes that if a leader makes a decision based on emotional impulses unmediated by the cognitive processes associated with procedural rationality, it is a rare case of radical irrationality in which beliefs are neither necessary nor sufficient conditions for choice.

[58] Its application here is generally consistent with what Habermas calls communicative rationality: "The concept of *communicative rationality* carries with it connotations based ultimately on the central experience of the unconstrained, unifying, consensus-bringing force of argumentative speech, in which different participants overcome their merely subjective views and, owing to the mutuality of rationally motivated conviction, assure themselves of both the unity of the objective world and the intersubjectivity of their lifeworld (Habermas 1984a, p. xl, 10, 22, 37-38)" cited by Stephen K. White, "Toward a Critical Political Science." In Terence Ball, ed., *Idioms of Inquiry: Critique and Renewal in Political Science* (Albany, NY: SUNY Press, 1987), p. 120. The full citation for the Habermas quotation is Juergen Habermas, *The Theory of Communicative Action*. Vol. 1. Translated by Thomas McCarthy (Boston: Beacon Press, 1984). The goal for Habermas is to exchange subjective arguments with language in order to reach an ethical conclusion about what ought to be done. However, our goal is simply to exchange information with language as the medium of exchange and draw strategic inferences about what is to be done. This focus and goal is akin to what is meant by ecological or adaptive rationality, in which an agent's information and the environment's information become congruent, i.e., match up, so as to enable the agent to reach or maintain a goal. See Gerd

Gigerenzer and Reinhard Selten, "Rethinking Rationality." Pp. 1-13 in Gerd Gigerenzer and Reinhard Selten, eds., *Bounded Rationality: The Adaptive Toolbox*. Cambridge, MA: MIT Press, 2001.

[59] See Daniel Little, *Varieties of Social Explanation* (Boulder, CO: Westview Press, 1991), pp. 39-67 who distinguishes between "thin" (substantive) rationality and "thick" (bounded) rationality as levels of procedural or instrumental rationality and argues (pp. 40-41) that, "The rational choice paradigm of explanation rests on one central premise and a large set of analytical techniques. The premise is that individual behavior is goal-directed and calculating." The range of analytical techniques extends from subjective probability models of individual choices to game theory and public goods models of the strategic interaction among the choices of individuals.

[60] Simon, "Human Nature and Politics," uses the term procedural rationality to encompass what we have defined here as bounded rationality, i.e., the influence of beliefs as a cognitive process is an instance of one kind of procedural rationality. He does not explicitly employ communicative rationality as a construct although Gigerenzer and Selten, "Rethinking Rationality," argue that bounded rationality entails it. The distinction between external and internal focal points is made by Michael Chwe, *Rational Ritua*l (Princeton: Princeton University Press, 2001). See also Barry O'Neill, *Honor, Symbols, and War* (Ann Arbor: University of Michigan Press, 1999).

[61]Exceptions regarding contingent explanations are John Steinbrunner, *The Cybernetic Theory of Decision* (Princeton: Princeton University Press, 1974); Janice Stein and Raymond Tanter, *Rational Decision-Making: Israel's Security Choices, 1967* (Columbus: Ohio State University Press, 1980). Jon Elster, *Sour Grapes: Studies in the Subversion of Rationality* (New York: Cambridge University of Press, 1983), John Searle, *Rationality in Action* (Cambridge: MIT, 2001), Gerd Gigerenzer and Rein hard Selten, eds., *Bounded Rationality: The Adaptive Toolbox* (Cambridge: MIT 2001) explore the porous borders between rational and psychological explanations.

[62]Examples of both sides of the rationality debate are Nehemia Geva and Alex Mintz, eds., *Decision-Making on War and Peace* (Boulder: Lynne Rienner, 1997); George Downs, ed., "The Rational Deterrence Debate: A Symposium." Special Issue of *World Politics*, 41 (1989); David Lake and Robert Powell, eds., *Strategic Choice and International Relations* (Princeton: Princeton University Press, 1999). See also Elster, *ibid*., and Searle, *ibid*., for a philosophical assessment of rationality as a useful concept or assumption.