

# **Human Perception and Economic Institutions: A Cognitive Political Economy Approach to North American Integration**

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## **Abstract**

Research into the economics of institutions has generated important findings on how the formal “rules of the game” set incentive structures and significantly affect economic performance, particularly in the developing world. Work has more recently begun on assessing the informal “rules of the game” that also structure economic activity. Missing from both of these efforts are investigations into the cognitive processes by which we interpret, understand, and make use of the formal and informal “rules of the game.” In this paper, we develop a rationale for combining the insights of research into institutions with the methodology and insights of psychology and cognitive science to investigate the human perception of the economic “rules of the game” in North America and describe an ongoing research project focused on underlying cognitive processes related to interpreting the NAFTA, and why it might matter for the future of institutional development related to North American integration.

## **I. Introduction**

In 1990, future Nobel Prize winning economist Douglass North reminded us that productivity depends upon specialization and with it increased complexity in economic exchange, fraught with increasing uncertainty and numerous transactions costs. Were it not for the development of institutions to help guide economic activity, economic actors would be completely lost in a world where the cost and uncertainty of obtaining information upon which to base economic decisions would virtually prohibit economic exchange. Institutions, therefore, necessarily evolve along with economic specialization and serve to transform the uncertainty associated with imperfect information into risk, thereby reducing transactions costs, and facilitating the capture of the potential gains from trade (North, 1990, 99-100).

Since Ronald Coase first articulated the theory of the firm and the primacy of transactions costs in setting firm structure back in 1937 (Coase, 1937), scholars have been taking a closer look at the role of transactions costs and how institutions shape both the character of those costs. According to North, “institutions are the humanly devised constraints that structure political, economic, and social interaction. They consist of both informal

constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, and property rights)” (North, 1991, 97-98). In North’s most recent work, he proposes five elements underlying the process of institutional change and associated impact on economic performance; competition, scarcity, incentives, historical context, and *human perception* (North, 2005, vii). As recognition of the importance of institutions has grown, more and more research has been emerging on the impact of institutions on economic performance.

However, the overwhelming majority of this work to date has been focused on the impact of formal institutions (Weingast and Marshall, 1988; Bolton and Scharfstein, 1998; de Soto, 2000), with informal institutions (Helmkey and Levitsky, 2004) only recently drawing the attention of scholars. The *human perception* component of institutional change has been the least explored of the five components identified by North but is perhaps the most important for understanding how economic performance is guided by institutions. Traditional models of decision-making, including rational choice theory and Simon’s “bounded rationality,” assume a utilitarian form of rationality whereby humans pursue their goals efficiently and decision-making, then, becomes a simple maximization process with self-interest at its core. However, these models have failed to elucidate how human beings perceive and understand the choices they confront. This paper has two primary objectives; first, to highlight the important insights cognitive psychology brings to analyses of decision-making in the context of institutional economics; second, to lay out a simple, but important, research program that will provide early data on the cognitive processes involved in using institutions in our decision-making.

This paper is divided to several major sections, beginning with a first cut at the practical linkage this line of research intends to make with respect to institutions in North America. Section III will lay out many of the central propositions about the role of institutions in shaping economic activity and argue for why institutions need as much attention within neoclassical economics as more basic elements such as supply and demand. Section IV will briefly return to the North American context to articulate why, even in the context of advanced economies, institutions and their development need a second look. Section V returns to the mixture of cognition and institutions and begins the development of a synthesis of the disciplines of political economy and psychology and the issues we are pursuing by doing so. Section VI lays out the specific method with which we are tackling this synthesis. And finally, while not offering specific conclusions, section VII returns once again to the importance of this line of enquiry for institutional development in North America.

## **II. The Practical Context**

North American economic integration has been the subject of study of extensive analysis by scholars, heavily dominated by both economists and political scientists. Economists, in particular, have been prolific contributors to the debate over economic integration through their analyses of the impact of the North American Free Trade Agreement (NAFTA), as well as projections about the impact of potential successor agreements (this is a vast literature, but see Hufbauer and Schott, 2005; Pastor, 2001; Dobson, 2002). In

spite of the considerable economic evidence linking the NAFTA to real gains in export growth, GDP, and standards of living in North America, there is emerging evidence of growing discrepancies between what the NAFTA actually says on paper, how it operates in practice, and what the agreement has come to “mean” on a variety of non-economic fronts.

There are few examples of this divergence starker than the U.S.-Canada softwood lumber dispute. In the fall of 2005, the Prime Minister of Canada, Paul Martin, accused the United States of violating international law when it failed to admit defeat following a NAFTA panel ruling in the long-running softwood lumber dispute that was partly in Canada’s favor. In the weeks that followed, Canadians expressed outrage at the U.S. position, while in the United States little public attention was paid to the dispute, and U.S. officials went about the routine preparation of a response to the panel decision.

As this episode illustrates, in the ten years since NAFTA took effect a profound gap has emerged between the Canadian and American understandings of the nature of commitments made by the governments of Canada and the United States to facilitate North American integration. Similarly, in 2006, Industry Canada reported that approximately 95 percent of Canada’s businesses are classified as small (less than 100 employees) and yet only 1.4 percent of these businesses engage in exporting their products. That such a small number of businesses are engaged in international trade when nearly 40 percent of Canada’s GDP and a high degree of the country’s standard of living are dependent on exports is worrisome.

One possible explanation for both the discrepancy in what the NAFTA means in terms of Canada-U.S. trade relations and what the NAFTA says and how the rules of the NAFTA are being used by businesses may be related to how the rules of international trade are perceived. While the focus of this paper is on micro-level decision-making by businesses in the face of incentives, these issues have ready application to macro-level policy as well.

### **III. Institutions and Choice Under Constraint**

The neoclassical economic model is comprised of many elements and makes numerous assumptions, but at its core is all about choice under constraint (McCloskey 1996). Whether we are talking at the level of individual consumers, the decisions of large firms, or even the heads of state, each faces a range of constraints, including scarcity, that shape the choice sets and structure their decision making. The constraints that shape our economic, social, and political decision making are nearly everywhere we look and are comprised of a series of rules (formal and informal), practices, customs, and heuristics (or rules of thumb), and their enforcement mechanisms through which we cognitively interpret the disparate and myriad information we are confronted with each day.

The definition of institutions borrowed from Douglass North is useful in terms of directing our understanding of economic activity toward the many humanly devised constraints that structure that activity, but is vague in terms of providing us with a clear

explanation of what institutions are, what they are not, or where exactly to look for them. In fact, North's definition of institutions as informal constraints (sanctions, taboos, customs, traditions, and codes of conduct) and formal rules (constitutions, laws, and property rights), seems to suggest that institutions might be found everywhere. In fact, they are. Institutions are everywhere shaping our economic decision-making. That they are such a ubiquitous, and influential, part of our economy argues strongly for including them more explicitly along side neoclassical theory as tools for explaining our economic system.

With the shift from autarkic production to ever more complex forms of specialization and the impersonal exchange that implies (Macneil 1974), economic decision makers are confronted with a range of problems such as agency in long-distance trade (Carlos and Nicholas 1990; Weingast 1984), the inter-temporal nature of exchange and associated enforcement mechanisms, and of course, the uncertainty associated with asymmetric information (Stiglitz 2001). Scholars of institutional economics and cognitive science have pointed us toward the many ways in which institutions help structure and simplify our decision-making and dramatically shape economic outcomes. They come in many forms including traditions (Axelrod 1986), formal constitutional rules (Weingast and Marshall 1988), informal agreements such as handshakes, and, of course, the powerful bonds of family ties (North 1990).

A rising standard of living depends on productivity increases. But productivity depends upon specialization and with it increased complexity in economic exchange, fraught with increasing uncertainty and numerous transactions costs. Were it not for the development of institutions to help guide economic activity, economic actors would be completely lost in a world where the cost and uncertainty of obtaining information upon which to base economic decisions would virtually prohibit economic exchange. Institutions, therefore, necessarily evolve along with economic specialization and serve to transform the uncertainty associated with imperfect information into risk, thereby reducing transactions costs, and facilitating the capture of the potential gains from trade (North 1991, 99-100). However, even with an advanced set of institutions, such as those in the most advanced market economies, helping to reduce the negative impact of market exchange fraught with uncertainty and high transactions costs, the problems of exchange inevitably persist. How we use such institutions to simplify the world around us is the domain of psychology and cognitive science.

### *Cognition and Institutions*

Among the most basic of findings of psychologists and cognitive scientists has been the tendency for humans to try and order their complex world through simplifying heuristics, or rules of thumb (Simon 1979; Simon 1959; Baron 2000). In economics, this function is partially served by the many institutional structures that help guide economic decision making in what would otherwise be a world characterized by pervasive uncertainty and opportunism. Institutions such as the price system, systems of property rights, and the rule of law provide us with guidelines through which we process the imperfect information around us. Under the neoclassical model, we frequently talk about the "profit

maximizing” firm under conditions of perfect competition. If competition and information were perfect, the precise structure of economic organizations like firms would be irrelevant for economic performance (Coase 1937). Were we in a world of perfectly competitive conditions, we could confidently talk about a zero transactions cost world where markets instantly established market clearing price and quantities for supply and demand and we could instantly contract with each other for virtually all forms of exchange. In other words, in such a world, economic decision-making would devolve into basic maximization problems instead of being fraught with uncertainty and risk. Hence, because we live in a world characterized by high transactions costs, imperfect information, and considerable uncertainty, in spite of institutions to help structure our decision-making, it makes little sense to talk about the “profit maximizing” firm.

### *Rational Choice Institutionalism*

In both the economics and public choice literatures, rational choice modeling, notably game theory, has been a popular method of identifying the key factors motivating economic and political decision-making (Munk, 2001). The debate over rational choice theory has been raging in political science for some time, and has been joined by those investigating the impact of institutions in areas such as economic and political development. Of particular interest is new research into the “informal” side of North’s definition of institutions; namely, the sanctions, taboos, customs, traditions, and codes of conduct, that also shape our decision-making. Critics of rational choice approaches to institutional analysis point out that it is often informal sets of institutions that under gird and support the formal structures that are so frequently the focus of empirical studies (Helmke and Levitsky, 2001). In fact, in order to fully understand the “institutional scaffolds” that so deeply structure our decision-making, we need to approach investigations of institutional development from both a formal and informal point of view. As Weyland has also argued, rational choice institutionalism’s focus on self-interest as the prime motivating force for decision-making has led investigators toward incorrect inferences about actor preferences. Specifically, researchers have either inductively inferred actor preferences by looking at their actions or deductively inferred them by looking at the incentive structures set up by institutions (Weyland, 2001). In either case, argues Weyland, researchers miss key factors that shape both political outcomes and institutional development, particularly in regions such as Latin America and Africa where formal institutional development is weak.

Even with respect to the study of formal institutions, the identification of preferences among decision-makers is a tremendous challenge. Within neoclassical economics, such preferences are said to be everywhere. The assumption of rationality by decision-makers posits that they will make choices that will allow them to reach a higher level of ordinal utility. The problem is that the use of ordinal utility curves tells us very little about the actual preference sets of decision-makers. Utility curves within the neoclassical model are said to be everywhere and are effectively assumed away as a factor in the neoclassical model.

## *Irrationality and Mental Models*

The reality of the human condition is that individuals have limited computational capacity, and are able only to selectively search through all possible alternatives or evaluate their consequences. In addition, the search for information is incomplete, often containing inaccuracies, based upon partial information (i.e. the role of prior knowledge or levels of expertise), and often terminated with the discovery of satisfactory, although not necessarily optimal, courses of action (Simon 1985). Herbert Simon has argued that the self-interest assumption in human rationality breaks down amidst the range of other motives for human decision-making, including significant, even necessary, levels of altruism (1993,1991).

In order to reach strong conclusions about economic activity, the neoclassical model makes a number of simplifying assumptions, including rationality on the part of decision-makers. Yet, psychology and cognitive science have suggested important weaknesses in this assumption beyond imperfect information, including an inability to apply self-interested rationality with the information we have before us. In fact, the rationality assumption has been under attack by psychologists for more than fifty years. Herbert Simon, in his influential 1956 article *A Behavioral Model of Rational Choice*, argued from empirical evidence that individuals are just sufficiently rational to achieve some minimum level of a desired outcome, but no sufficiently rational to achieve some maximum level of a desired outcome (Simon, 1957). Studies of human reasoning have even identified instances in which information relevant for making self-interested assessments is ignored (although not intentionally), as well as instances in which differences in the mere presentation of information influence our decision processes. Further, under conditions of uncertainty, human decision-making is strongly influenced by preconceived stereotypes, beliefs, and personal experiences into which we regularly try and place new and imperfect information.<sup>1</sup>

In short, the use of heuristics (rules of thumb) allow us to simplify a complex world, but the use of such heuristics can also lead to important errors of bias in the decision making process (Tversky and Kahneman 1974; Tversky and Kahneman 1981). By themselves, the limitations on cognitive processes suggested by psychology and cognitive science give us pause to reconsider the rationality postulate of the neoclassical model. These limits render human decision making “intendedly rational but only limitedly so” (Simon, 1957).

Institutions go a long way toward expanding those limits by providing additional rules of

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<sup>1</sup> We often talk about the management of risk in economics, but seldom speak of the mechanisms we use to mitigate and shift risk. Insurance (life, home, auto) is one of the most common mechanisms used to shift risk to other parties, but government regulation is a less obvious form of risk management that shifts the burden of risk from one group to another. See also *The Economist*, “Survey of Risk,” January 24, 2004.

thumb by which we attempt to order the complex, and imperfect process of exchange. Such institutions help us make exchange decisions by transforming significant, although by no means all, levels of uncertainty into much more manageable risk.

#### **IV. Modern North America**

In many ways, the kinds of institutions described to this point seem too elementary to be found within, much less shape, modern economies. Yet, through a simple extension of these elements we can readily see how institutions, and particularly institutional change, matter for contemporary economic decision makers. Transactions costs, uncertainty, contractual relations, and property rights— the domain of institutional economics— all, whether or not we always appreciate it, underlie contemporary discussions of North American integration. There is an important and burgeoning literature on economic development growing out of the analysis of institutions, which simply posits that institutions matter for economic performance (de Soto 1999; Ferguson 2004; Rodrick et al. 2002; Hall and Jones 1999; Glaeser et al. 2004). The analysis of institutions and their impact on economic performance reaches into literatures including industrial organization and the theory of the firm (Coase 1937; Bolton and Sharfstein 1998; Demsetz 1997; Hart and Moore 1990; Kronman 1985), the development of property and contract law (Macneil 1978; Macneil 1974), governance in domestic political bodies (Moe 1991; Weingast and Marshall 1988), and a simple neoclassical rationale for the integration of the state itself (North 1981; Alesina and Spolaore 1997).

One especially fertile area for the analysis of institutions has been in development economics, and in particular the work of Peruvian economist Hernando de Soto who has argued that one of the principal failures of capitalism in most regions of the world outside the developed west is the inability to raise the capital so key to development. For many in the west who have become accustomed to understanding *how* our economic system functions while forgetting *why* it functions, solutions to the challenges of development amount to simplistically trying to replicate western modes of law and organization in developing countries. When such methods fail, explanations often include spurious references to cultural or religious differences rather than challenging the policy prescriptions themselves (de Soto, 2000, 3-4). One of the great mysteries of development is the divergence in economic performance among countries with ostensibly similar legal and political structures. As de Soto vividly demonstrates, one of the central problems facing developing countries is the failure of their institutional structures to provide the basis for shifting the substantial capital that exists in the extra-legal economies of developing countries into the legal economy (Ibid.)

As de Soto has been working with developing countries such as Peru and Egypt on reforming their land title regimes, other economists (Field and Tororro, 2006; Galian and Schargrodsky, 2006) have recently been adding to the body of empirical evidence supporting the link between property rights and development; in other words, exploring both the *how* and *why* an economic system functions. A notable omission in the body of work on economic development is the scant scholarly attention paid to the development of macroeconomic institutions in developed countries. One exception here has been the

work of Beth and Robert Yarbrough who in the late 1980s tried to apply some of the insights of micro-level work on institutions to international trade (1985, 1986, 1987a, 1987b). Most intriguingly, the Yarbroughs argued that institutional structures such as the General Agreement on Tariffs and Trade (GATT) operate much like a private contract by delineating the terms of the relationships that develop among the membership, as well as how the GATT transforms uncertainty in trade relations into risk by managing the opportunistic behavior associated with the kinds of inter-temporal exchange involved in international trade (1987b), not unlike the ordering of relations between private parties through contracts.

Institutions matter, and in North America none has mattered more for international trade than those contained in the North American Free Trade Agreement (NAFTA). In fact, the entire text of the NAFTA is, at bottom, a set of institutions (rules) as they have been defined here (page 1-2 of this manuscript). As a whole, the NAFTA is a set of institutions, and functions as a trilateral contractual arrangement, much as the Yarbrough's argued the GATT had done for the multilateral system. Yet, each and every chapter of the NAFTA, everything from the oft-ignored Preamble which extends the shadow of the future for all three countries by "strengthening the special bonds of friendship and cooperation," to the many substantive provisions governing disputes, complex rules of origin, and tariff elimination is a set of institutions that has structured economic decision making in North America. The rules of North American commercial activity as structured by the NAFTA affect everything from transactions costs, the distribution of property rights, to the conclusion of exchange contracts. A new institutional structure (set of rules) as rooted in the NAFTA promised to make the process of reducing transactions costs, maximizing the benefits of ownership of property, and concluding contracts more predictable. But institutional change in North American economic relations did not cease with the conclusion of the NAFTA; it is, in fact, a continuous process.

## **V. Cognition and Institutions II**

Institutional change is a continuous process. Institutions are pervasive and continuously setting the incentive structures for our economic and political decision-making. If we accept these things, and that we have methodological hurdles to overcome with respect to rational choice, where do we turn to advance our understanding of the role of institutions in economic and political realms? For policy makers, the implications of getting formal institutional design right are enormous. In addition, understanding the evolution of both formal and informal institutions, and how they interact with one another, is equally consequential for public policy.

Over the past decade, researchers have begun to incorporate the insights of psychologists and cognitive scientists into analyses of the ways in which institutions shape our social, political, and economic lives. One early effort by Denzau and North from 1994 argued that humans developed, and made extensive use of "mental models" as a means to simplify, and order the uncertain world around them. From these models flowed a series of beliefs and ideologies concerning the world around us that served as heuristics for

decision-making.

In order to understand decision making under conditions of uncertainty, we must understand the relationships of the mental models that individuals construct to make sense out of the world around them, the ideologies that evolve from such constructions, and the institutions that develop in a society to order interpersonal relationships (Denzau and North, 1994, 4).

More recently, North has suggested that explorations of human neurological processes by cognitive scientists may hold the keys to unlocking the ways in which humans learn about, structure, and adapt to the complexities of the world around us (North, 2005). North argues further that the institutional “scaffolds” that human societies have created are a complex product of cultural development, our individual and collective consciousness, and the richness of a society’s artifactual heritage—beliefs, institutions, tools, instruments, and technology. This heritage plays immediate roles in shaping the choices within societies (North, 2005, 23-65). The more complex the scaffolds are, North suggests, the more successful a society is likely to have been in transforming pervasive uncertainty into risk (Ibid., 36). However, as North himself concedes, neuroscience is still a long way from uncovering the mechanisms by which our cognitive processes begin erecting these scaffolds (Ibid., 38).

If how institutions shape our individual and collective decision making is tied to elements of consciousness deeply embedded in widely held belief systems and culture, then looking at institutions in terms of the incentive structures they set out is as important as what we think those institutions mean. In other words, the subjective meaning of the institutions we construct may be as important as the concrete incentive structures institutions actually generate.

Within the NAFTA area, the long-running softwood lumber dispute, among others, has revealed an apparent gap between what the NAFTA means versus what the NAFTA actually says. It is possible that the NAFTA has come to symbolize a range of things in Canada-US relations that the agreement itself was never designed to resolve, yet has come to embody. It is possible that the agreement has taken on a symbolic life of its own that in institutional terms transcends the narrow wording of the agreement and has become part of the “scaffolding” that has been erected in North America.

### *The Methodological Synthesis*

In contrast to the optimistic view of rationality within the neoclassical model, Herbert Simon’s critique suggested that individuals are not likely to apply economic rules at an optimum level of rationality. Further research into decision-making has suggested that humans routinely violate the most basic tenets of rational choice models, even in making the simplest of decisions (Tversky and Kahneman, 1974). However, none of these findings elucidates the cognitive processes underlying these tendencies toward sub-optimal rationality. It could be the case that people accurately understand economic rules but, in the process of applying a rule to some situation, fail to apply it correctly (leading

to less-than-optimal rational behavior). Alternatively, it could be the case that people do not understand economic rules correctly because of a lack of training and knowledge about the rules being used (also leading to less-than-optimal rational behaviour). In other words, exploring the underlying cognitive processes of less-than-optimal rational behaviour among economic decision-makers would help elucidate the influence of human perception in the understanding and use of economic institutions, such as the NAFTA.

Exploring the cognitive processes of less-than-optimal rationality is a worthwhile endeavor for at least two reasons. First, human perception of rules is imbedded in language, physical artifacts, and beliefs, which both define patterns of human interaction, and effectively structure the choice sets confronted by economic decision-makers. In spite of the nontrivial value of formal economic rules, economic agents do not apply rules directly without first interpreting what they mean and when they should be applied. Rules must pass through the filter of human knowledge and experience before being used to reduce complexity in economic exchange. Second, less-than-optimal rationality in cognitive performance has been found to not only be predictable, but also to be avoidable. In particular, psychologists have found that biases and errors in formal reasoning tasks are often predicted by either the absence of required knowledge or by the presence of misconceptions with existing knowledge (see Charness & Schultetus, 1999; Chi, 1997; Ericsson & Smith, 1991; Johnson-Laird, 1999; Leighton & Sternberg, 2003; Newell & Simon, 1972; Stanovich, 1999). Errors made by college students on logical reasoning tasks can be eradicated substantially by presenting the tasks within a context that is familiar to students (Leighton & Sternberg, 2003). Moreover, studies of expert versus novice problem solving in a variety of domains such as physics, chess, and medicine have demonstrated that experts solve problems more successfully and reliably than novices (Ericsson & Simon, 1991). Individuals who have spent at least 10,000 hours of deliberate practice learning about a subject domain have developed a deeper knowledge base of the subject domain (Ericsson & Smith, 1991) and therefore select and apply better strategies to solve problems, have faster recall of information, and possess richer, more sophisticated networks of understanding than individuals who have spent fewer than 10,000 hours learning about the domain (Ericsson & Smith, 1991).

The absence of relevant task knowledge is a powerful predictor not only of whether biases and errors in reasoning will be observed but also of the difficulties individuals will encounter as they attempt to understand new task information meaningfully. Studies of experts and novices have demonstrated that individuals who are more knowledgeable (versus less knowledgeable) about a subject domain are better able to integrate incoming information by adding to or revising their existing knowledge. Moreover, in the process of assimilating or accommodating new information, this information is often modified in significant ways. For example, if an individual already possesses a rich, organized, and relevant knowledge base in preparation to receive new information, any alteration of the incoming information is expected to enrich its meaning and use. This occurs because the incoming information is connected to other relevant knowledge, where it is infused with additional meaning. However, if an individual has a sparse, unorganized, and unrelated knowledge base, any alteration of the new information will likely result in a misconception of the information and undermine its proper application (Gigerenzer,

Todd, & the ABC Research Group, 1999; Johnson-Laird, 2004; Newell & Simon, 1972; North, 2005; Sloman, 1996). What these research findings indicate is that for individuals to reason effectively about formal economic rules, they must have an organized and relevant knowledge base in the domain in which they are reasoning. Based on these findings, two avenues of investigation emerge; first, what are the semantic networks that individuals create to interpret and generate meaning about formal economic rules; and second, how do individuals apply these semantic networks to thinking and decision-making about the rules of international trade and associated concepts such as economic integration, productivity, and efficiency?

### *Understanding Reasoning About Institutions*

In the disciplines of economics and political science, hypotheses about decision-making are investigated through a range of methods, including case studies, game-theory (Axelrod, 1980; Oye, 1985; Hopmann, 1998; Thompson, 2001; Munk, 2001) and survey designs (Pennings, Keman, & Kleinnijenhuis, 1999). Although these designs could in principle provide data about the underlying cognitive processes of individuals (see Hoppman, 1998, for the strategies used by individuals in negotiations), they were not developed for that purpose (see Munck, 2001). Game-theory, in particular, was developed primarily to generate data about decision-making from observable behavior arising from narrow choice sets (Axelrod, 1980; Baron, 2000; Thompson, 2001). A more complete game-theoretic analysis of observable behavior would entail examining how individuals actually reason through the choices they confront to elucidate underlying cognitive processes and how different knowledge levels influence those processes.

Research methods found in cognitive psychology can be used to address specific questions about the interpretations and applications of knowledge used by individuals. In particular, *verbal report* methods and *verbal analysis* (Chi, 1997; Ericsson & Simon, 1993; Leighton, 2004; Taylor & Dionne, 2000) can be used to explore the interpretations individuals have developed in response to specific information. Verbal report methods involve presenting an individual with a story scenario, text, or problem-solving task and asking the person to *think aloud* as they try to understand the story, text or solve the task. Thinking aloud requires the individual to report every idea, concept, or process that passes through their mind and that they are aware of consciously in their working memory as they attend to the given task. Standard probes are used such as asking the person to “keep talking” while they are performing the task. Research studies have found that asking individuals to articulate their thoughts during or after they have solved a task is a valid and reliable method for identifying the cognitive processes available to individuals as they reason about information and solve problems (e.g., Chi, 1997; Ericsson & Simon, 1993; Norris, 1990). The purpose of identifying the ideas, concepts, and processes reported by the individual as they reason about the task is to create a *semantic network* or semantic map for the individual. Semantic networks are visual displays of the background knowledge an individual evokes in relation to thinking about a task.

Once semantic networks are collected for groups of individuals, verbal analysis can be

used to identify common themes or concepts in the networks for subsequent quantitative analyses. For example, consider two groups of individuals responding to a task in which the rules of the NAFTA must be applied. Group A exhibits a greater incidence of the self-reported concept “bilateral agreement” than group B. The concept “bilateral agreement” can now be represented as a dichotomous variable in which the value of 1 signifies presence of the concept for a particular person and the value of 0 signifies absence of the concept. The dichotomous variable is then used as a predictor of an outcome variable such as success in solving the task or can be used as an outcome variable for a predictor such as occupational level. In order to ensure that the concepts identified for the semantic networks are being identified and interpreted reliably, verbal analysis involves having at least two raters independently review the networks. The two raters could agree perfectly in the concepts identified within and across semantic networks (inter-rater coefficient of 1.0). However, commonly one would aim to achieve an inter-rater coefficient of at least .90, indicating that 90% of commonly occurring concepts can be reliably identified within and across networks. Once the commonly occurring concepts are identified, they are transformed into variables and entered into a quantitative analysis.

Psychological investigations of expert versus novice problem solving processes also commonly make use of quasi-experimental designs (Cook & Campbell, 1979; Keppel, 1991; Myers & Wells, 1995). Quasi-experimental research methods differ from experimental research methods in the strength of the causal interpretations they support. For example, in an experimental design, human subjects are randomly assigned to one of two groups or conditions so that demographic variables such as intellectual ability or socioeconomic status (SES) are evenly distributed across the two groups. In a quasi-experimental design, random assignment is impossible because the interest is to investigate existing groups such as individuals identified as experts and novices in a particular subject domain. Although random assignment cannot be used to distribute the effects of demographic variables such as intellectual ability or SES across the groups in a quasi-experimental design, statistical techniques such as Analysis of Covariance (ANCOVA) can be used to match the subjects in both groups on demographic variables. Both verbal analysis and quasi-experimental design can effectively be used to address both the weaknesses of standard rational choice approaches that have been identified by scholars and the call for a more nuanced, holistic approach to the study of institutions that incorporates analyses of informal institutions, including elements of culture, that would facilitate a broader understanding of institutions and institutional change (North, 2005; Helmke and Levitsky, 2004; Weyland 2002).

## **VI. Method**

Through the use of verbal protocols to elicit responses from individuals of varying expertise on elements of North American economic integration, we aim to uncover some of the cognitive processes that go into the formation of belief systems about the NAFTA and North American integration that have been unexplored by traditional economic or political analysis, and which have only recently been suggested as factors in institutional development. The table below outlines our two-year work program for this line of research. We are currently in the “Fall/Winter” period of Year 1 in which we have begun

the generation of NAFTA-oriented scenarios of varying degrees of complexity (see Appendix A) to be put before each of our human subjects.

	Spring/Summer	Fall	Winter
Year 1	Synthesis of literature in economic rule sets, and cognitive processes	Identification of framework for conceptualizing and measuring human perception of rule sets	Generation of scenarios for quasi-experimental study
Year 2	Recruit participants; administer quasi-experimental study	Analysis of study results using qualitative and quantitative analysis	Write-up and disseminate results

The objective for the spring and summer of Year 2 will be to recruit 90 participants to take part in a quasi-experimental study designed to assess how individuals of varying knowledge levels in international trade and business understand and reason about economic rules. The study will involve three groups of participants. Thirty graduate students with minimal background knowledge in international trade and business issues will be recruited from the political science department to comprise the *novice group*. Thirty faculty members with specialization in international relations, economics, or business issues, who have spent at least two years of consistent study (approximately 10,000 hours) focused on international trade issues, will be recruited and comprise the *academic expert group*. Thirty businessmen and women who actively manage small or medium-sized enterprises (SME) that produce a tradable good or service and apply trade rules in their everyday practice will be recruited to comprise the *applied expert group*. Two expert groups—*academic* and *applied*—are being included in the proposed research so as to compare the relative benefits of acquiring knowledge either through theoretical training or practical experience. To minimize the confounding influence of background variables, participants will be matched on socioeconomic status, intellectual ability, years of undergraduate and high-school education, and gender. Each group consists of 30 participants for two reasons: First, the collection of verbal reports is a labor-intensive and time consuming process where participating individuals are normally interviewed individually and for at least one hour. Increasing the sample size to more than 30 would hamper our ability to collect verbal reports and analyze them within the two-year time frame of our project funding. Second, studies employing verbal reports traditionally involve sample sizes of no more than 20-25 participants (Ericsson & Simon, 1993; Taylor & Dionne, 2000). The objective of verbal report studies is to achieve sufficient depth and complexity in participant responses so as to permit the generation of hypotheses for future experimental investigations of the cognitive processes underlying human responses.

We will administer NAFTA-oriented scenarios to the 90 participants individually. Participants will be asked to verbally report all their thoughts as they read the scenarios, and reason through a series of questions about each scenario. Verbal report methods will be used to probe the interpretations individuals develop of the content in the scenarios and the applications of economic rules as they solve the questions posed in the scenarios.

The co-investigator has had experience using verbal reports in psychological (e.g., Leighton, in press; Leighton & Bisanz, 2003) and educational assessment studies (Leighton, Rogers, & Maguire, 1999; Leighton, 2004).

## **VII. The Point (If Not Quite The Conclusions)**

While economists have been looking at the many caveats to the basic neoclassical economic model, it remains at its core all about *choice under constraint* (of time, information, resources, etc.) (McCloskey, 1996, 125). Yet, as North and many others have pointed out, the neoclassical model does not explicitly consider the constraints themselves. We can identify the many sources of supply and demand (income, tastes, prices, expectations, population growth, technology, the number of suppliers, even the weather) and include them within the model. Yet, we spend little time examining the context in which those variables operate.

North and others have increasingly realized the importance of how we interpret the formal and informal institutional context in which economic activity takes place. This study aims to advance our understanding of this perspective by looking narrowly at how the semantic networks that individuals of varying knowledge levels have developed to generate meaning about economic rules and the application of these semantic networks to thinking and decision-making about international trade rules and associated concepts such as productivity and efficiency.

It is our belief that the implications of this work for public policy making (institutional development) are profound as they target a set of possible reasons for the seemingly divergent expectations over what trade agreements like the NAFTA are thought to be able to do versus what they are actually designed to do. This is an important set of issues going forward simply because the discussion of what is next in North American integration has been nearly continuous since the NAFTA was signed in 1994. That discussion has accelerated since the terrorist attacks of September 11, 2001 and the closure of America's borders (See Anderson, 2006). What, if anything, can be done to secure the free flow of goods and services across North America's borders through deeper forms of integration is, in part, a function of how we think about and interpret the meaning and function of deeper levels of integration. This study involves a narrowly focused group of "experts" of varying degrees. However, this initial foray in to the cognitive processes behind our interpretations of existing economic arrangements like the NAFTA may facilitate the management of public expectations about what deeper forms of integration can realistically achieve.

## **Appendix A**

### **NAFTA Scenarios**

#### **Scenario #1**

Canada and the United States have been parties to a bilateral free trade agreement since 1988 (or 18 years), and have been parties to the North American Free Trade Agreement, along with Mexico, since 1994 (or 14 years).

Please describe, in as much detail as possible, what each of these Agreements is? What were they designed to do? What do each of these Agreements “mean?” What is their significance?

#### **Scenario #2**

Both the bilateral Canada-US Free Trade Agreement and the North American Free Trade Agreement contain chapters on dispute settlement. Suppose the industry that you are involved with is confronted with a new tariff on your exports to the US market.

In this context, what is your understanding of what the dispute settlement mechanisms are? What are they supposed to do? What do you see as being important about this part of each Agreement?

#### **Scenario #3**

Both the bilateral Canada-US and trilateral NAFTA trade agreements contain chapters on the provision of services and temporary entry for professionals.

What are these chapters designed to do? Are they related? If so, how? If not, why do you think that? Can you think of any sensitivities in each of the three NAFTA countries that these chapters might raise?

#### **Scenario #4**

Look at the attached Presidential Proclamation No. 8067 from October 7, 2006. What is your assessment of this document? What is it talking about? Why? What does it mean? Who would it affect? How?

**Presidential Documents**

**Federal Register / Vol. 71, No. 198 / Friday, October 13, 2006 / Presidential Documents  
60649**

**Proclamation 8067 of October 11, 2006**

**To Modify Rules of Origin Under the North American Free  
Trade Agreement**

**By the President of the United States of America**

**A Proclamation**

1. Presidential Proclamation 6641 of December 15, 1993, implemented the North American Free Trade Agreement (the “NAFTA”) with respect to the United States and, pursuant to the North American Free Trade Agreement Implementation Act (Public Law 103–182) (the “NAFTA Implementation Act”), incorporated in the Harmonized Tariff Schedule of the United States (the “HTS”) the tariff modifications and rules of origin necessary or appropriate to carry out the NAFTA.
2. Section 202 of the NAFTA Implementation Act (19 U.S.C. 3332) provides rules for determining whether goods imported into the United States originate in the territory of a NAFTA party and thus are eligible for the tariff and other treatment contemplated under the NAFTA. Section 202(q) of the NAFTA Implementation Act (19 U.S.C. 3332(q)) authorizes the President to proclaim, as a part of the HTS, the rules of origin set out in the NAFTA and to proclaim modifications to such previously proclaimed rules of origin, subject to the consultation and layover requirements of section 103(a) of the NAFTA Implementation Act (19 U.S.C. 3313(a)).
3. The United States, Canada, and Mexico have agreed to modifications to certain NAFTA rules of origin. Modifications to the NAFTA rules of origin reflected in general note 12 to the HTS are therefore necessary.
4. Section 604 of the Trade Act of 1974, as amended (the “1974 Act”) (19 U.S.C. 2483), authorizes the President to embody in the HTS the substance of the relevant provisions of that Act, and of other acts affecting import treatment, and actions thereunder, including the removal, modification, continuance, or imposition of any rate of duty or other import restriction.

NOW, THEREFORE, I, GEORGE W. BUSH, President of the United States of America, acting under the authority vested in me by the Constitution and the laws of the United States, including section 604 of the 1974 Act and section 202 of the NAFTA Implementation Act, do hereby proclaim:

- (1) In order to reflect in the HTS modifications to the rules of origin under the NAFTA, general note 12 to the HTS is modified as provided in the Annex to this proclamation.
- (2) The modifications made by this proclamation shall be effective with respect to goods of Canada or of Mexico, under the terms of general note 12 to the HTS, that are entered, or withdrawn from warehouse for consumption, on or after July 1, 2006.
- (3) Any provisions of previous proclamations and Executive Orders that are inconsistent with the actions taken in this proclamation are superseded

to the extent of such inconsistency.

IN WITNESS WHEREOF, I have hereunto set my hand this eleventh day of October, in the year of our Lord two thousand six, and of the Independence of the United States of America the two hundred and thirty-first.

George W. Bush

### Subject Response Schematic for Scenarios

	What is it? Definition	What does it do? Practical	What does it mean? Significance
1) The NAFTA			
2) Chapter 19-Dispute Settlement			
3) Services/Temporary Entry			
4) Rules of Origin			

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