

Cognitive Conflict and Consensus Building in the National Estuary Program

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The consensus-building processes that characterize many environmental partnerships are often thwarted by cognitive conflict, which occurs when stakeholders have conflicting beliefs about the parameters of environmental problems and institutional performance. The author argues cognitive conflict results from stakeholders behaving like intuitive lawyers, who interpret uncertain situations in ways consistent with their self-interest. The implications of this argument are tested using survey data from stakeholders in the Environmental Protection Agency's National Estuary Program. The findings suggest cognitive conflict is a significant source of transaction costs for consensus-building processes, a barrier that should be directly addressed within partnership decision-making structures.

Consensual institutions that use collaborative decision making to formulate ecosystem or watershed management plans are a principal component of the *third wave* of environmental policy (Kenney, 1997; Yaffee et al., 1996). Unfortunately, consensus is often thwarted by what Kenney and Lord (1999) called *cognitive conflict*: Stakeholders with different core values have conflicting perceptions about the parameters of environmental problems and institutional performance. For example, a local environmental group might believe that the effluent from a chemical factory has serious health consequences, whereas the chemical company dismisses the possibility of hazardous effects. This article has three objectives with regard to this phenomenon: (a) provide a general theoretical explanation for its existence, (b) empirically demonstrate its effects in the context of a consensual environmental policy institution, and (c) discuss the public policy implications.

My theoretical account suggests cognitive conflict in consensual institutions occurs when stakeholders act like *intuitive lawyers* who are motivated to interpret uncertain situations in ways that are consistent with their self-interest (Baumeister & Newman, 1994). I empirically examine this hypothesis using

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data from a mail survey of 499 stakeholders in the Environmental Protection Agency's (EPA) National Estuary Program (NEP), one of the leading national examples of consensual institutions. The goal of the NEP is to bring together estuary stakeholders in the context of a management conference to negotiate and construct a comprehensive conservation management plan for governing estuary resources. My analyses demonstrate that stakeholders with different policy core beliefs also have conflicting secondary beliefs about the severity of estuary problems and the influence of different advocacy coalitions on the NEP decision-making process.

To understand the policy implications of these findings, I discuss how cognitive conflict is related to a broader perspective that views consensus building as a political contracting process (Libecap, 1989; Lubell, 1999; Weber, 1998). According to this perspective, stakeholders participating in consensual institutions are attempting to devise a new set of rules that can facilitate cooperation and solve environmental collective action problems. At the ecosystem level, consensual institutions enjoy an advantage relative to traditional command-and-control policies because they reduce the inherent transaction costs of political contracting: searching for mutually beneficial institutional arrangements, bargaining over alternatives, and monitoring and enforcing the final agreement (Lubell, 1999; Lubell, Mete, Schneider, & Scholz, 1998; Weber, 1998). I argue that cognitive conflict is both a source and consequence of transaction costs in the NEP and suggest ways of breaking out of this negative feedback loop.

THEORY AND CONCEPTS: POLICY CORE BELIEFS AND COGNITIVE CONFLICT

Explaining cognitive conflict in the NEP requires integrating theories of public opinion and cognitive psychology with theories of the policy process. The first step in this task is replacing the rational actor assumption that is often at the heart of policy analysis with the more realistic idea of bounded rationality (Simon, 1985). The bounded rationality model argues that the limits of human information processing create discrepancies between the objective characteristics of the decision environment and a person's subjective model of the world. Thus, to understand a stakeholder's decision to participate in the National Estuary Program, it is important to grasp that person's subjective beliefs about the benefits and transaction costs of the NEP process.

What do stakeholders' subjective models look like? Sabatier and Jenkins-Smith's (1993, 1999) Advocacy Coalition Framework (ACF) proposes stakeholder attitudes are organized into *policy-oriented belief systems*. Policy-oriented belief systems consist of three hierarchically ordered categories. At the top of the hierarchy are deep core beliefs about how society should work (e.g., narrow egoists vs. contractarians), at the second level are policy core beliefs about which strategies in a particular policy arena are consistent with the deep core beliefs

(e.g., power of market vs. government), and at the bottom of the hierarchy are secondary beliefs about particular policy tools and problems (e.g., estuary problem severity). The ACF argues belief change is more difficult at higher levels of the hierarchy, and shared policy core beliefs among stakeholders are the glue that holds together advocacy coalitions.

By focusing on the relationship between core beliefs and secondary beliefs, the literature on public opinion and cognitive psychology extends the concept of policy belief systems in two ways. First, when making political *evaluations*—expressing like or dislike for a political object—stakeholders use their core beliefs as measuring sticks.¹ That is, people measure the congruence between known attributes of the political object and their own predispositions. Stakeholders like political objects that are congruent with their core beliefs and dislike those that are not. For example, estuary landowners who favor private property rights may prefer habitat protection plans that feature transferable development rights over those that rely heavily on land use regulations.

However, the attributes of political objects are often unknown. This suggests a second extension of the ACF focusing on how core beliefs regulate the formation of secondary beliefs. The motivated reasoning literature argues belief formation is regulated by a person's motivation concerning the outcome of a given reasoning task. Baumeister and Newman (1994) broadly defined *motivation* as a source of efforts to guide the inference or decision process in a particular way (also see Kunda, 1990). A person's motivation affects all stages of the reasoning process—gathering information (from both memory and new sources), assessing the implications of that information, and integrating the information bits into a belief, inference, or decision.²

Baumeister and Newman (1994) focused on two broad motivational patterns that characterize human cognitive processes, which they labeled the *intuitive scientist* and the *intuitive lawyer*. Intuitive scientists want to reach the optimal or correct conclusion. They gather as much information as possible using systematic search procedures, equally weight the implications of each information bit, and use decision rules that combine implications in an evenhanded manner. The goal of the intuitive scientist is to escape bias and form beliefs that are congruent with real-world circumstances as opposed to preexisting beliefs, thereby minimizing the discrepancy between their subjective models and objective circumstances.

The goal of the intuitive lawyer, on the other hand, is to “marshal the best available evidence for the preferred conclusion, or against the unwanted conclusion” (Baumeister & Newman, 1994, p. 5). Intuitive lawyers selectively attend to favorable evidence, discredit unfavorable implications, and integrate evidence in ways that lead to conclusions consistent with their preselected preferences. Intuitive lawyers are concerned with preserving the integrity of their subjective models and thus are willing to ignore or downplay disconfirming information.

The tendency of intuitive lawyers to choose integration rules that favor their predispositions provides reason to believe motivated reasoning has the strongest

effect in uncertain situations (Baumeister & Newman, 1994). Integration rules vary in terms of the weight given to each bit of information. When all implications point in the same direction, different integration rules may lead to very similar conclusions regardless of the weighting scheme. However, when faced with the conflicting implications of diverse evidence that characterize uncertain situations, integration rules with different weighting schemes can lead to radically different conclusions. Thus, integration rules that place greater (less) weight on information that confirms (disconfirms) an intuitive lawyer's predispositions have the largest influence in uncertain conditions. As will be discussed later, this observation is particularly important because uncertainty increases transaction costs, and thus transaction costs and cognitive conflict go hand in hand.

Following the motivated reasoning argument, the main hypothesis of this article is that to the extent NEP stakeholders are intuitive lawyers, they are likely to form secondary beliefs congruent with their core values. The political contracting perspective on consensus building provides good reason to believe stakeholders are intuitive lawyers. As they attempt to secure their preferred policy outcomes in the NEP, stakeholders will formulate secondary beliefs about estuary problems, policy tools, and institutional performance that are consistent with their preferences. Stakeholders not only use these secondary beliefs to stake out their bargaining positions and evaluate possible deals but also try to convince other stakeholders their vision of the world is correct.

In the following sections, I motivate the empirical analysis by identifying the policy core beliefs relevant to the National Estuary Program and discussing the fundamental uncertainties in the NEP likely to cause cognitive conflict among intuitive lawyers.

COGNITIVE CONFLICT OVER FUNDAMENTAL UNCERTAINTIES IN THE NEP

I focus on two sources of uncertainty in the NEP: the severity of estuary problems and the relationship between fairness evaluations and the influence of advocacy coalitions on NEP decision processes. Stakeholders' beliefs about these aspects of the NEP are critical from the political contracting perspective in which various advocacy coalitions try to agree on a scheme for distributing the benefits and costs of collective action. Of course, having some idea of the severity of the collective problem is a necessary prerequisite for evaluating the benefits and costs of various agreements. Furthermore, people are less willing to participate in a political contract if they believe a particular advocacy coalition exerts undue influence over policy decisions, leading to an unfair distribution of costs and benefits. Unfortunately, as will be explained shortly, both problem severity and fairness evaluations are subject to considerable uncertainty and thus breed cognitive conflict among intuitive lawyers.

Cognitive conflict is caused by the constraining influence of stakeholders' policy core beliefs on the formation of secondary beliefs. I concentrate on four policy core beliefs that scholars in the ACF tradition have identified as important in environmental policy (Sabatier & Brasher, 1993; Sabatier & Zafonte, 1997; Zafonte & Sabatier, 1998):³

- Environmentalism: preference for environmental protection over economic development and a general belief in the value of biodiversity
- Conservatism: preference for private property rights and a belief that the market is superior to government for determining allocation of natural resources
- Scientific optimism: belief that scientific technology can solve all environmental problems
- Inclusiveness: belief that public participation in policy decisions should be maximized.

The tension between environmental and conservative values is the most commonly analyzed in environmental policy, and I expect these values to be at the root of cognitive conflict. Scientific optimism and inclusiveness are both integral components of the "managerial discourse" rooted in Progressive Era reforms (Williams & Matheny, 1995). Scientific optimism is relevant to perceptions of environmental problems, whereas inclusiveness is related to institutional performance. In the next two sections, I explain in more detail how each of these policy core beliefs should affect secondary beliefs about the severity of estuary problems and the fairness of the NEP process.

SEVERITY OF ESTUARY PROBLEMS

By *problem severity*, I mean the effect of various environmental problems on the overall health of the estuary. Perceptions of problem severity are theoretically important for the political contracting model because stemming the decline of estuary conditions is one of the main benefits of collective action at the estuary level. Holding transaction costs constant, stakeholders who perceive severe environmental problems are more likely to engage in collective action.

However, the highly interconnected nature of ecosystem services creates uncertainty about actual problem severity because changes in one aspect of an ecosystem have complex, invisible, delayed, and serious influences on other aspects of the system (Costanza et al., 1997). Ecological complexity confounds scientific research into the causes and consequences of estuary problems. For example, it is difficult to distinguish the marginal contributions of various sources (e.g., diverse point sources, nonpoint runoff, and atmospheric deposition) to nutrient problems, and the consequences of nutrient overloading vary by weather, season, and year. Combined with the insufficient and fragmented monitoring capacities of natural resource agencies at all levels of government, this level of uncertainty leaves problem severity open to interpretation by intuitive lawyers.

I expect environmentalism and conservatism to influence secondary beliefs about problem severity in opposite directions. Environmentalists are more likely to see severe problems, whereas conservatives see less severe problems. These perceptions are consistent with their self-interests. Environmentalists want more environmental protection, so they think the problems must be severe. Due to their concerns about the adverse effects of environmental policy on economic productivity, conservatives and business interests will downplay problem severity.

Scientific optimists are also likely to downplay problem severity because they believe technology can fix anything. Therefore, environmental problems are merely transient phenomena awaiting the proper application of human ingenuity. Given its emphasis on institutional performance, I do not expect inclusiveness to affect problem perception.

An interesting extension to these baseline conjectures is the idea that the influence of motivated reasoning increases as uncertainty increases. One way to test this hypothesis is to look at how strongly policy core beliefs affect different types of issues that vary in terms of uncertainty. One source of variance in issue uncertainty is the ecological scope that must be considered to effectively manage the problem. I define *ecological scope* as the ratio of ecological processes to human behaviors as causes of a particular environmental problem.⁴ For example, endangered species problems have a broad ecological scope because population declines are due to both natural population cycles and human disturbance. Toxic pollution, on the other hand, has a smaller ecological scope because human behavior is a greater contributor to the problem. Ecological scope refers to the number of possible causes of a particular environmental problem; issues with greater ecological scope are more complex and thus increase the level of uncertainty.

My analysis looks at seven estuary issues in order of ecological scope: fish and wildlife declines, habitat loss, nutrient overloading, algae blooms, alteration of flow regimes, pathogens, and toxic substances. Two of these issues, wildlife declines and habitat loss, have very large ecological scope because it is difficult to disentangle the natural and anthropological causes of environmental change. Traditional water quality concerns such as toxics and pathogens have a narrower ecological scope because the relationship between human actions and environmental problems is clearer. Furthermore, wildlife and habitat issues are relatively new focal points for an EPA program in which the lead agency is traditionally concerned with human health issues. Thus, I expect policy core beliefs to have the strongest influence on wildlife and habitat issues and decrease as uncertainty declines.⁵

FAIRNESS EVALUATIONS

Lind and Tyler (1988) and Tyler (1990) argued persuasively that perceptions of distributive and procedural fairness are critical for citizen cooperation with laws and broader support for social and political institutions. This means stake-

holders who perceive the NEP as fair are more likely to fulfill the terms of the contract defined in the management plan.

Unfortunately, there is a good deal of uncertainty about the concepts of both distributive and procedural fairness. In the context of collective action problems, distributive fairness refers to the distribution of costs and benefits of cooperation (Hardin, 1982). How much should each stakeholder contribute to the environmental quality of the estuary, and what returns do stakeholders receive for their contributions? Hardin (1982) argued that in cases in which stakeholders receive different benefits from solving the collective action problem and also incur different costs of cooperation, there is no cost-sharing rule that represents a prominent solution to the fairness question.⁶ A prominent solution is a unique cost-sharing scheme that all stakeholders mutually recognize as providing an equitable distribution of costs and benefits (Schelling, 1978). In the absence of such a solution, disagreements will occur between stakeholders as each actor maneuvers to institute the cost-sharing rule that provides the highest benefit-cost ratio for that individual.

The meaning of procedural fairness is even less clear. Lind and Tyler (1988) noted a variety of factors that affect citizen perceptions of procedural fairness, including control over the decision process, interest representation, and outcome satisfaction. The structure of the NEP makes it difficult to ascertain the values of these variables. Does the management conference provide stakeholders with adequate control over the process, or do administrators or special interests control the agenda? Are all interests equally represented, or are some excluded or marginalized?

Regardless of which aspect of fairness stakeholders are considering, the critical question is who controls the process and outcome of the NEP (Thibaut & Walker, 1975; Tyler, 1990). Procedural control means influencing the agenda, group membership, and presentation of viewpoints and evidence. Distributive control means influencing the final choice of cost-sharing rules and the distribution of responsibilities. If stakeholders believe a particular advocacy coalition has undue control over either aspect of the NEP process, they are less likely to believe it is fair.

How do policy core beliefs influence fairness perceptions? There is no a priori reason to believe that conservatism or environmentalism are likely to have a direct effect on fairness beliefs. After all, being "fair" by including a broad range of stakeholders into the decision arena is a hallmark of consensual institutions. However, conservatism and environmentalism should affect beliefs about who controls the NEP process and therefore have important indirect effects on fairness evaluations. In general, a given advocacy coalition is more likely to believe that their opponents control the process. Environmentalists are likely to believe that economic interest groups control the process, whereas economic interest groups are likely to believe the opposite. Sabatier, Hunter, and McLaughlin (1987) called this tendency to see opponents as more influential the *devil shift*, in which members of advocacy coalitions evaluate the behavior of their opponents

more critically than their own.⁷ The devil shift not only fits the intuitive lawyer model but also serves a strategic purpose by providing stakeholders bargaining ammunition to demand more control for their own coalition while deflecting criticisms that they have an unfair level of control.

Inclusiveness is likely to reduce perceptions of unfair control across the board. People who believe that policy making should incorporate a broad range of interests are likely to downplay disconfirming information. For example, an inclusive stakeholder might discount the accusation of an environmental group that business interests are dominating the process. Because scientific optimism is more relevant to problem beliefs, I do not expect it to influence beliefs about control and fairness.

In sum, I expect secondary beliefs about advocacy coalition control to directly influence fairness evaluations and policy core beliefs to have a direct influence on beliefs about advocacy coalition control over NEP decisions and thus an indirect effect on fairness evaluations. The next section empirically demonstrates the existence of cognitive conflict in the NEP regarding both beliefs about problem severity and fairness evaluations.

DATA ANALYSIS: SURVEY EVIDENCE FOR COGNITIVE CONFLICT

My analysis of cognitive conflict relies on a spring 1998 mail survey of NEP stakeholders in 20 NEPs across the country. I received 499 usable responses from a sample of 1,671 for an overall response rate of 30%. The sample was generated from lists of stakeholders provided by EPA's Office of Wetlands, Oceans, and Watersheds and from individual NEP project directors.

To get a better idea of the universe of stakeholders involved in the NEP, Table 1 presents a cross-tabulation of respondents according to stakeholder types and location in the federal system. Government representatives, mostly from administrative agencies, comprise 60% of the sample.⁸ Members of environmental groups (11%) and researchers (9.5%) are the next largest groups. Taken together, representatives of extractive industries and business/real estate interests have a level of representation equal to environmental groups (12%). Clearly, intergovernmental coordination is a main focus of the NEP, but the entire range of stakeholders familiar to students of local environmental policy is represented.⁹ Despite the overall low response rate, there are no significant differences in response rates across types of NEP stakeholders (see Lubell, 1999, for more details).¹⁰

ESTUARY PROBLEMS AND COGNITIVE CONFLICT

To show that conservatives and environmentalists have conflicting beliefs about the severity of estuary problems, I estimate regression equations for the seven estuary issues mentioned earlier. A question measuring secondary beliefs

TABLE 1: Cross-Tabulation of Stakeholder Type and Federal Level

<i>Self-Classification</i>	<i>Federal Level</i>					<i>Total n</i>	<i>Total Percentage</i>
	<i>National</i>	<i>Subnational</i>	<i>State</i>	<i>Substate</i>	<i>Local</i>		
A	56	14	81	31	93	275	60
B	5	8	11	16	11	51	11
C	4	7	5	8	8	32	7
D	2	5	5	6	5	23	5
E	10	8	20	5	1	44	9.5
F	2	3	9	12	9	35	7.5
Missing <i>n</i> (39)	79	45	131	78	127	460	100
Missing percentage	17	10	28	17	28		

NOTE: A = Congress or state legislature, municipality elected official, government agency, special district; B = environmental groups; C = marine fisheries and recreation/forestry/agriculture; D = real estate/business/waste management; E = university/education; and F = citizens at large/consultants/misc.

about problem severity is the main dependent variable, and the explanatory variables are the policy core beliefs of environmentalism, conservatism, scientific optimism, and inclusiveness (see Appendix for question wording and scale construction). All variables are linearly transformed to a (0, 1) range, so the coefficient estimates are interpreted as the percentage point change in the mean of the dependent variable moving across the entire range of the explanatory variable. For example, if the mean of problem severity is 20% at the lowest level of environmentalism in the sample and the coefficient on environmentalism is .10, then *ceteris paribus*, the mean of problem severity is 30% at the highest value of environmentalism. Table 2 shows the results of these regressions.

As predicted by the cognitive conflict perspective, environmentalism and conservatism influence beliefs about problem severity in opposite directions for all seven issues. Moving across the range of the environmentalism scale increases perceptions of problem severity at a maximum of 23% for wildlife issues and a minimum effect of 4% for hydrological alterations, with an average 12.8% increase across models. Conservatism has a stronger influence across the board, decreasing perceptions of problem severity at a maximum of 34% for wildlife issues, a minimum of 9% for algae blooms, and an average decrease of 19% across all models. These results clearly demonstrate the cognitive conflict between environmental and conservative values.

Scientific optimism also acts in the expected direction for the wildlife and habitat loss issues. At least for those issues with broad ecological scope, stakeholders who subscribe to the myth of science are less likely to see environmental problems. People are more likely to rely on their preconceived notions of science when the link between human actions and environmental consequences is unclear, perhaps because the lack of scientific consensus on these issues increases the utility of policy core beliefs as information sources.

TABLE 2: Cognitive Conflict and Estuary Problem Severity

	<i>Core Estuary Issues</i>						
	<i>Wildlife</i>	<i>Habitat</i>	<i>Nutrients</i>	<i>Algae</i>	<i>Flow</i>	<i>Pathogens</i>	<i>Toxics</i>
Policy core beliefs							
Environmentalism	.23 (.05)**	.13 (.07)*	.11 (.06)*	.11 (.11)	.04 (.11)	.12 (.07)*	.16 (.13)
Conservatism	-.34 (.06)**	-.30 (.07)**	-.30 (.09)**	-.09 (.09)	-.27 (.08)**	-.20 (.08)**	-.22 (.06)**
Scientific optimism	-.12 (.05)**	-.11 (.05)**	-.06 (.05)	.06 (.06)	-.06 (.06)	-.06 (.05)	-.02 (.06)
Inclusiveness	.06 (.06)	.07 (.04)	.10 (.07)	.10 (.05)*	.09 (.05)	.01 (.05)	.08 (.07)
Constant	.65 (.08)**	.77 (.07)**	.57 (.08)**	.36 (.11)**	.66 (.09)	.50 (.09)**	.40 (.11)**
Model fit	$F = 22.86^{**}$	$F = 9.47^{**}$	$F = 9.24^{**}$	$F = 1.83$	$F = 4.61^{**}$	$F = 4.11^{**}$	$F = 11.08^{**}$
	$R^2 = .17$	$R^2 = .13$	$R^2 = .08$	$R^2 = .02$	$R^2 = .06$	$R^2 = .05$	$R^2 = .06$

NOTE: All coefficients are unstandardized regression coefficients. Robust standard errors corrected for within-estuary correlation reported in parentheses.
 * $p < .10$. ** $p < .05$.

The results support the more general conclusion, which can be seen by looking at the size of the regression coefficients and the percentage of variance explained (R^2), that the influence of policy core beliefs is greater for issues with broader ecological scope. Policy core beliefs exert their strongest influence on the wildlife and habitat loss issues (i.e., relatively large coefficient estimates and R^2), which I argue have the broadest ecological scope. The influence is less for more traditional water quality issues, although there is not a uniform decrease across all the issues. In particular, conservatism has a lower influence on the algae bloom issue and environmentalism on the flow issue than expected. One possible reason for the nonuniform decrease is that issue uncertainty is a function of a broader range of issue characteristics than I have identified in this article. Further research should explore how different issue characteristics (e.g., age, complexity, and salience) interact with individual stakeholder attributes to better determine what types of issues cause cognitive conflict.

COGNITIVE CONFLICT, ADVOCACY COALITION INFLUENCE, AND FAIRNESS EVALUATIONS

The cognitive conflict argument predicts that policy core beliefs will directly influence secondary beliefs about advocacy coalition influence in ways consistent with self-interest, which in turn influence NEP fairness evaluations. Using the same set of policy core beliefs described earlier, Table 3 presents analyses predicting whether respondents believe environmental interests, economic interests, or administrators have an undue influence on NEP decisions.

Again, cognitive conflict between environmentalists and conservatives is clear. Moving across the range of the environmentalism scale increases the belief that economic interests dominate by 25% but decreases the belief that environmental interests dominate by 28%. Conservatism works in exactly the opposite direction, increasing beliefs about environmental influence by 23% and decreasing beliefs about economic influence by 18%. Conservatives are also more likely to believe that administrators have an undue influence. This is most likely due to the distrust of government that pervades conservative values.

Inclusiveness reduces beliefs about interest domination by 14% for both economic and environmental groups. People who take a more egalitarian view of environmental policy making are also less likely to see a biased decision process. As predicted, scientific optimism has no influence on fairness evaluations.

The story becomes more complex and interesting when looking at how cognitive conflict over the level of advocacy coalition influence affects overall fairness evaluations. Table 4 presents models using a fairness evaluation scale as a dependent variable. Note in the Appendix that the fairness scale contains a question that measures a self-interested notion of fairness, so altruistic ideas are less likely to be prominent. The first model in Table 4 simultaneously estimates the effects of both beliefs about coalition influence and policy core beliefs. This captures the direct effect of policy core beliefs net of their influence through beliefs

TABLE 3: Cognitive Conflict and Advocacy Coalition Influence

	<i>Environmental Coalition Influence</i>	<i>Economic Coalition Influence</i>	<i>Administrative Influence</i>
Policy core beliefs			
Environmentalism	-.28 (.06)**	.25 (.10)**	.02 (.09)
Conservatism	.23 (.08)**	-.18 (.08)**	.14 (.06)**
Scientific optimism	.05 (.05)	-.09 (.06)	-.10 (.05)*
Inclusiveness	-.14 (.06)**	-.14 (.07)*	.01 (.08)
Constant	.56 (.06)**	.51 (.09)**	.55 (.10)**
Model fit	$F = 25.62^{**}$ $R^2 = .13$	$F = 9.74^{**}$ $R^2 = .07$	$F = 2.73^{*}$ $R^2 = .02$

NOTE: All coefficients are unstandardized regression coefficients. Robust standard errors corrected for within-estuary correlation reported in parentheses.

* $p < .10$. ** $p < .05$.

about coalition influence. The second table looks only at the effect of policy core beliefs; thus, the estimates reflect the total direct effect of policy core beliefs, including their indirect effects through beliefs about coalition influence.

The first thing to note is that beliefs about advocacy coalition influence are the strongest predictors of fairness evaluations. Moving across the ranges of the environmental (22%), economic (13%), and administrative (16%) influence scales decreases the perceived fairness of the NEP process. Even when the advocacy coalition influence variables are excluded from the model, environmentalism and conservatism have no direct effect on fairness evaluations at all. The reason for this is that the indirect effects of policy core beliefs work in opposite directions. For example, environmentalists are more likely to think that business groups have undue influence but less likely to think that environmental groups have undue influence. These indirect effects of policy core beliefs on fairness evaluations cancel each other out when mediated by beliefs about advocacy coalition influence.

Another way to think about this surprising balancing effect is to realize that all types of stakeholders are using the same set of beliefs about advocacy coalition influence to make fairness evaluations. For example, environmentalists not only think that business group domination of the NEP is unfair, but they also think that environmental group domination of the NEP is unfair. This finding is not congruent with the self-interest aspects of the cognitive conflict, which would predict advocacy coalitions never use their own influence over decision making as a measuring stick for fairness. If the self-interest hypothesis applied, fairness evaluations should only be responsive to beliefs about whether opposing coalitions dominate the process. Even if an environmental interest group does dominate the process, then environmentalists should still believe the process is fair because that belief preserves their power. The environmental group would think the process is unfair if they believe business interests dominate.

TABLE 4: Fairness Evaluations in the National Estuary Program

	<i>Full Model</i>	<i>Direct Effects Only</i>
Policy core beliefs		
Environmentalism	.03 (.07)	.01 (.09)
Conservatism	-.01 (.06)	-.05 (.08)
Scientific optimism	.07 (.04)	.09 (.04)*
Inclusiveness	.09 (.06)	.14 (.05)**
Interest domination		
Environmental domination	-.22 (.02)**	—
Business domination	-.13 (.04)**	—
Administrative domination	-.16 (.05)**	—
Constant	.74 (.08)**	.48 (.07)**
Model fit	$F = 46.82^{**}$	$F = 4.43^{**}$
	$R^2 = .22$	$R^2 = .03$

NOTE: All coefficients are unstandardized regression coefficients. Robust standard errors corrected for within-estuary correlation reported in parentheses.

* $p < .10$. ** $p < .05$.

This suggests a series of possible interactions. Conservatives' fairness evaluations should be less affected by beliefs about economic coalition influence and more affected by beliefs about environmental coalition power (i.e., negative interaction between conservatism and environmental influence). Similarly, environmentalists' fairness evaluations should be less affected by beliefs about environmental coalition power and more sensitive to beliefs about economic coalition power (i.e., negative interaction between environmentalism and business influence). If these interactions were strong enough, then cognitive conflict in beliefs about advocacy coalition influence would be translated into fairness evaluations. Although not reported here, estimated interaction coefficients are in directions congruent with this possibility but are not statistically significant.

This means that fairness evaluations are less subject to direct cognitive conflict. Cognitive conflict still exists in terms of perceptions of coalition influence but is canceled out by stakeholders who are using broad measuring sticks for fairness evaluations. One intriguing explanation for this finding is that the NEP has broadened the considerations stakeholders use for making fairness evaluations, a question that can only be answered by comparing stakeholders from estuaries with and without an NEP.

The last thing to note is that policy core beliefs explain a relatively small amount of variance (low R^2) in secondary beliefs for most of the models in Tables 2, 3, and 4. They do a respectable job in the models for wildlife and habitat problem severity and also for environmental coalition influence. This suggests that although policy core beliefs are one important factor determining secondary beliefs, there are others that need to be considered. From the political contracting perspective, it would be very important to see how objective charac-

teristics of the estuary action arena affect attitudes. Are perceptions of environmental problems affected by real-world estuary conditions? Do the mix of stakeholders and the structure of the NEP affect fairness evaluations? These are critical questions for both theory and substantive policy concerns that must be explored with further research.

POLICY IMPLICATIONS: FROM INTUITIVE LAWYERS TO INTUITIVE SCIENTISTS

The survey results clearly demonstrate cognitive conflict between environmental and conservative advocacy coalitions interacting in the context of the NEP. Environmentalists believe that estuary problems are severe, whereas conservatives view them as less severe. Similarly, environmentalists are more likely to think that economic interests dominate NEP decision making, whereas conservatives believe environmental interest groups have more power. These competing beliefs are consistent with the self-interest of each coalition and reflect their particular bargaining positions in the political contracting process.

Because it is both a source and consequence of transaction costs in the NEP, cognitive conflict has broader implications for the political contracting view of consensus-building processes. The political contracting model argues that the transaction costs of bargaining, monitoring, and enforcing political agreements serve as barriers to effective policy making (Lubell, 1999; Lubell et al., 1998; Weber, 1998). Transaction costs exist when costly information creates uncertainty about the attributes of goods being exchanged and the performance of agents (Eggertsson, 1990; North, 1990). Hence, because the effects of motivation on belief formation are stronger in uncertain situations, transaction costs increase the level of cognitive conflict. The higher levels of cognitive conflict about the severity of wildlife and habitat problems provide empirical evidence for this point.

In turn, cognitive conflict increases the transaction costs of negotiating rules for governing estuary resources. By dismissing information that is inconsistent with their predispositions, stakeholders acting as intuitive lawyers are less likely to discover mutually beneficial political agreements. Transaction costs and cognitive conflict create a negative feedback loop—higher transaction costs escalate cognitive conflict, and cognitive conflict creates higher transaction costs. Combined with the uncertainty inherent in environmental policy, this feedback loop is probably one of the primary causes of environmental policy gridlock at the federal, state, and local levels (Kraft, 1994).

The fact that cognitive conflict continues to be a problem in the NEP highlights the limits of consensual institutions to break out of this feedback loop. Advocates of consensual institutions often promote the ability of collaborative planning to build a common vision among stakeholders. Clearly, the NEP has

not eliminated differences in perceptions that characterize adversarial policy arenas. This does not mean the NEP has failed. The critical question is whether the NEP has reduced the level of conflict in comparison to adversarial forms of environmental policy making. Perhaps policy core beliefs have even a stronger influence in legal arenas or legislative hearings. The fact that environmental and conservative stakeholders reduce their fairness evaluations if they believe their own group has an undue influence on the NEP provides some evidence of progress toward alleviating the consequences of cognitive conflict.

Fortunately, the pessimistic findings about cognitive conflict provide solid ground for formulating some policy recommendations. Put simply, to break out of the feedback loop, one goal of consensual institutions should be to **qqDJF5** transform intuitive lawyers into intuitive scientists. This means changing the motivation of stakeholders from looking for information that confirms their predispositions to searching for optimal schemes for cooperation. If this can be accomplished, a broader range of mutually beneficial policy choices will emerge, giving estuary stakeholders a better chance of finding a set of rules that fits their specialized needs.

How can the NEP accomplish this motivational change? The survey results provide some clues. First, because cognitive conflict over problem characteristics is severe, a good deal of energy should be spent on clearly identifying the nature of estuary problems. Lubell's (1999) finding that stakeholders who feel there is adequate scientific knowledge about estuary issues are more likely to support the NEP substantiates this idea. Scientists from all sides of an issue should be encouraged to collaborate and peer review each other's work. Non-technical stakeholders should be brought into the research process as much as possible not only to ensure accountability and increase legitimacy but also to help educate people about complex ecological relationships. All of this activity should happen early on in the process, as it does already in the problem characterization stage of the NEP. However, care must be taken to avoid paralysis by analysis—estuary problems will never be completely understood, so some action should be taken once an adequate level of knowledge is achieved.

Second, the relationship between perceptions of advocacy coalition influence and fairness evaluations points to the importance of the inclusive character of consensual institutions. To avoid criticisms of interest group domination, the early stages of a consensus-building process should be devoted to identifying all the relevant stakeholders in an estuary. At the ecosystem level, every user of natural resources and every government organization with some influence over the rules governing estuary resources are legitimate stakeholders. If they are not included in the process, they are likely to take unilateral actions that ignore the collective problems considered by the NEP and can destroy consensual agreements. Once all relevant stakeholders are identified, care should be taken to encourage their continued participation in the process.

The NEP process already takes steps in these directions. NEP case studies such as those presented in this volume should reveal exactly what types of policy

tools and decision-making procedures do the best job at solving cognitive conflict. Tools for building stakeholder relationships, trust, and other forms of social capital will probably also prove valuable additions to the more traditional problem-solving approaches (Coleman, 1990; Langbein & Kerwin, 1999; Putnam, 1993; Schneider, Teske, Marschall, Mintrom, & Roch, 1997). Once a catalog of effective tools is identified, quantitative research can measure a broader range of consensual institutions and other third-wave innovations and examine exactly how different institutional characteristics affect stakeholder motivation, attitudes, behavior, interactions, and ultimately, actual changes in environmental outcomes.

APPENDIX

The following questions were used individually or as scales to measure the variables presented in this article. Unless otherwise noted, all questions used a 10-point *disagree/agree* scale in which higher numbers indicate greater agreement. Questions preceded by an asterisk (*) were reverse coded to minimize systematic response bias. Scales are constructed using the mean of responses to individual items and excluding items with missing values. As noted in text, all variables are linearly transformed to the (0, 1) range for purposes of analysis.

FAIRNESS EVALUATIONS (alpha = .72)

1. Overall, the decision-making process is fair to all stakeholders.
2. My organizations' interests and concerns are adequately represented in the partnership.

PROBLEM SEVERITY

Concerning the overall health of your estuary, do you think the problems associated with each issue listed below are very severe (10), not severe (0), or somewhere in between. Seven issues: nutrient overloading, declines in fish and wildlife populations, alteration of natural flow regimes, habitat loss/modification, pathogens (disease-causing substances), algae blooms (e.g., Brown tide, Red tide), toxic substances.

POLICY CORE BELIEFS

Environmentalism (alpha = .58)

1. Protecting the environment is a more important goal for environmental policy than maintaining opportunities for economic growth and development.
2. Protecting future generations from environmental problems is just as important as protecting people whose health and welfare are currently threatened.

3. In general, how would you describe your policy orientation on estuary issues when trade-offs between environmental protection and economic development are important? 1 to 7 scale; 1 = prodevelopment, 7 = proenvironment.

Conservatism (alpha = .70)

1. *In general, government should play a larger role than the market in determining how society uses natural resources.
2. Preserving the rights of individual citizens is more important than protecting the environment.
3. In general, government agencies and regulations intrude too much on the daily lives of private citizens.

Inclusiveness

Maximizing the scope of public participation in environmental policy improves policy effectiveness.

Scientific Optimism

Scientific technology provides the key to solving environmental problems.

ADVOCACY COALITION INFLUENCE

Economic Coalition Influence

Economic interest groups have an undue influence on partnership decisions.

Environmental Coalition Influence

Environmental interest groups have an undue influence on partnership decisions.

Administrative Influence

The partnership is dominated by experts and administrators.

NOTES

1. The definition of *political objects* encompasses any object of political importance to the actor under consideration including policy preferences, candidate assessments, and performance judgments (Feldman, 1988).

2. Initial accounts of motivated reasoning picture motivation as an intentional choice, perhaps one that is induced by social contexts such as the presence of outside observer to whom one's decisions must be justified (Kunda, 1990). More recent investigations suggest that motivation is unconscious and that the default motivation for most people is to confirm their predispositions by quickly

accepting preference-consistent information and carefully scrutinizing preference-inconsistent information (Ditto & Lopez, 1992; Ditto, Scepansky, Munro, Apanovitch, & Lockhart, 1998).

3. For the purposes of this article, I will refer to all core beliefs as *policy core beliefs*, which are the second level of policy belief systems. However, recent articles in the Advocacy Coalition Framework (ACF) tradition analyze neoclassical conservatism and environmentalism as deep core beliefs. I acknowledge that conservatism and environmentalism represent deeper core values than inclusiveness and scientific optimism and may in fact constrain the formation of the latter beliefs. Nevertheless, the National Estuary Program (NEP) mail survey uses language that is narrowly focused on the environmental policy subsystem and thus measures concepts at the policy core level.

4. Even if the concept of ecological scope could be measured in an objective manner, I suspect the ratio would almost never be greater than one. In other words, most environmental problems involve more human than natural causes. However, the concept of ecological scope is still relevant because there is variance in how often natural processes are identified as at least a partial cause of environmental problems. From the political contracting perspective, ecological scope is important because it is a measure of issue complexity. There may be other sources of complexity in environmental problems that I am not considering in this article.

5. Further corroboration for this argument can be derived from the history of environmental thought. Early environmentalists often highlighted the relationship between human welfare and environmental health to support their political positions, whereas some modern brands of environmentalism emphasize the intrinsic values of natural habitat and biodiversity independent of their influence on human welfare. At the very least, there is less debate about the connection between human welfare and problems such as toxics and pathogens than for wildlife and habitat issues, which are still surrounded by a large amount of scientific uncertainty. Hence, policy core values should have stronger effect on the more debatable issues.

6. Hardin (1982) considers four cost-sharing rules: equal cost sharing, proportional benefits taxation, marginal rate of substitution taxation, and proportional incremental benefits taxation. The problems of distributive fairness become even more severe when utility is nontransferable (i.e., individual welfare cannot be measured using a common currency), as is the case with many environmental problems (e.g., business evaluates policy implications using monetary consequences, whereas environmentalists use difficult-to-measure nonmonetary criteria).

7. Sabatier, Hunter, and McLaughlin (1987) offered several other psychological explanations for the *devil shift* phenomenon, but I argue that these explanations are not as compelling or generalizable as the motivated reasoning account and fail to create a strong link between the role of individual beliefs and broader political processes that is an important feature of the political contracting perspective.

8. I consider both government officials and interest groups as stakeholders in the NEP process. Not only do many government agencies control the property rights of various estuary resources, their political welfare is also affected by NEP outcomes.

9. The small percentage of interest group stakeholders who actively participate in the NEP process does not necessarily reflect a low level of interest group activity in an estuary because each interest group member generally represents a much larger class of stakeholders.

10. Follow-up telephone surveys of nonrespondents indicated that inaccurate contact information was responsible for the majority of missing cases. Hence, I do not think there is a reason to worry about systematic nonresponse bias correlated with the dependent variables in my analyses.

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