ARE BUREAUCRATS AND SCIENTISTS MEMBERS OF ADVOCACY COALITIONS?
EVIDENCE FROM AN INTERGOVERNMENTAL WATER POLICY SUBSYSTEM

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ARE BUREAUCRATS AND SCIENTISTS MEMBERS OF ADVOCACY COALITIONS? EVIDENCE FROM AN INTERGOVERNMENTAL WATER POLICY SUBSYSTEM

For most of this century, many people in the U.S. and Western Europe have assumed that scientific/professional expertise concerning the magnitude of a policy problem, its causes, and the probable consequences of alternative solutions can and should be provided in an objective fashion—that is, uncontaminated by the values of the expert scientists or bureaucrats providing the advice. According to this model, value choices in a representative democracy should be made by elected officials responsible to the voters, and experts such as scientists and bureaucrats should be the sources of objective advice. This model makes a clear distinction between two types of bureaucratic officials: (1) political appointees, who are expected to exercise their values and policy preferences and/or the preferences of the elected officials who appointed them; and (2) civil servants, who are supposed to provide expert advice to political appointees and, once a decision is made, to implement it faithfully even if they disagree with it (Maranto 1995a). This view implicitly assumes that civil servants are “policy indifferent,” i.e. that they either have no substantive policy views or, if they have policy belief systems, they don’t act upon them.

The classic example is the British civil service. A civil servant should always obey the minister. If the minister is not available, the civil servant’s task is to make the decision that the minister would have made and who been able to make it personally (Brown and Steel 1979, 129; Dewey and Dobber 1988, 157). In the U.S., the argument for neutral expertise was part of the civil service reform movement which began in the latter 19th century and eventually became part of the broader Progressive movement. The Progressives believed that, if professionally trained people were hired and given security of tenure, much of government could be handled in an efficient, neutral fashion—meaning, at the very least, “free of partisan politics” (Krott and Miller, 1983). Despite this faith in the potential of neutral, nonpartisan expertise to solve social problems, most Progressives acknowledged that elected political leaders had the right to establish the policy goals of bureaucracy and that the bureaucracy’s task was to implement the law in an expert, efficient, and rule-bound manner (Goodnow 1909, Rosenthal 1971). Within the field of public administration,
Roberts (1994) has argued that the Rockefeller Charities—which played a major role in funding public administration programs in the 1920s and 30s—didn’t want to support anything “political” and thus strongly encouraged the image of a neutral, objective science of administration. There continue to be supporters of the “neutral competence” role model for civil servants (Kauffman 1956; Heelo 1975).

The Progressives’ faith in value-free science was, in many respects, a precursor of positivist’s belief in value-free science (Brown, 1977). Clearly, many scientists believe that their analyses of the magnitude of the problem, its causes, and the probable consequences of alternative actions can and should be provided in an objective, value-free fashion. And much of the claim for the role of independent scientists in policy disputes rests upon this view of their objectivity (Greenwood, 1997; NIE, 1997).

Many political scientists have long viewed this model of a clear separation between value-laden politics and value-neutral administration as naive (Appleby 1949; Nathan 1983k). Particularly in the U.S., weak political parties and the constitutional separation of powers require agencies to seek political alliances with key legislators and interest groups in order to assure a steady supply of critical budgetary and legal resources. This bureaucratic politics argument is best seen in the work of Wildavsky (1974), Fritschler (1983), and Meier (1985), as well as research on agencies’ efforts to organize supportive constituencies (McConnell 1966; Sabatier 1975).

Political scientists have given far less attention to the role of scientists and other professionals in public policy. But there are certainly arguments, first, that technical expertise is an important political resource and source of legitimacy (Rourke, 1976); second, that agency, corporate, and “think tank” scientists tend to reflect the dominant interests or policy views of their organizations (Wildavsky and Tosenbaum 1981; Jasontoff 1987); third, that agencies dominated by a specific profession tend to reflect the policy views of that profession (Kelman 1981; Bell 1985), and, fourth, that divergent paradigms within or between disciplines can contribute to major policy shifts (Evans and Meier 1990; Hall 1993). The latter
Two echo recent arguments in the philosophy of science that disciplinary paradigms usually contain all sorts of normative assumptions that belie the image of “value free” science (Brown 1977).

While many political scientists have expressed considerable skepticism concerning the “objectivity” of advice provided by civil servants and scientists, they have not produced any compelling theoretical frameworks of the role of agency officials, outside scientists, legislators, and interest group leaders in public policy-making, particularly in complex intergovernmental systems. The interrelated literatures on bureaucratic politics and policy subsystems generally incorporate relatively simple conceptual frameworks based on resource dependency principles (Pfeffer and Salancik 1979). Individuals are viewed primarily as members of organizations and heavily constrained by organizational rules. Organizations are preoccupied with the acquisition of resources necessary for maintenance and survival: (a) for agencies, budgets and legal authority, (b) for interest groups, budgets (generally perceived to depend primarily upon providing policy outputs that benefit members), and (c) for legislators, reelection. Organizations develop strategies and exchange resources in pursuit of these objectives. In most cases, the optimal strategy is to confine policy-making authority to a small set of legislative committee members, agency officials, and interest group leaders who share a general set of policy goals and seek to negotiate long-term, mutually-beneficial arrangements —while restricting access of outsiders. Examples include the classic iron triangles in public works, agriculture, and nuclear power (McConnell, 1966; Romm et al. and Jones, 1993).

While these loose resource dependency principles have provided a useful organizing framework for a lot of empirical research, they also suffer from several limitations. First, proponents differ on whether actors have very simple goal structures dominated by survival self-interest and survival (e.g. Niehaus 1971) or more complex goals including professional and other conceptions of what constitutes good public policy (Dethick and Quirk, 1985). Second, there is a general tendency to assume that the relationship between goals/interests and behavioral strategies is relatively clean and that actors’ belief systems are quite simple. Relatively little attention is accorded problem definition or technical information concerning problem severity, causes, or impacts. Third, as a consequence, the range of actors has generally been
limited to high agency officials, legislative committee members, and interest group leaders, to the exclusion of those interested in policy ideas (journalists, policy analysts) and relatively technical information (scientists and policy analysts in agencies, think tanks, and universities). Fourth, there has been a tendency to focus on relatively simple policy subsystems involving a restricted number of actors. This was fine in the 1950 and early 1960s. But, since the early 1970s, most policy subsystems have become much more complex as actors with entirely different values have become organized (consumers, environmentalists, minorities, religious fundamentalists), decision-making in Congress and some other legislatures has become increasingly decentralized, and as subsystems have become increasingly intergovernmental in scope. From the vantage point of 1997, the Washington-based iron triangles of the 1950s look quaint indeed.1

In an effort to address some of these perceived deficiencies in relatively simple resource-dependent frameworks, Sabatier (1988; Sabatier and Jenkins-Smith 1993; 1998) developed the advocacy-coalition framework of policy change. It assumes that actors have relatively complex belief systems incorporating multiple values and perceptions of problems, causes, and impacts. It specifically deals with the role of scientists and policy analysts in the process. And it is designed to deal with complex intergovernmental subsystems involving large numbers of actors. One of its fundamental arguments is that most agency officials and scientists involved in a specific policy domain (or subsystem) are not “policy indifferent,” but instead can be grouped with like-minded interest group leaders and legislators into one or more “advocacy coalitions.” Each coalition consists of actors from a wide variety of institutions who (a) share a set of basic and instrumental policy beliefs forming a relatively coherent belief system and (b) engage in some degree of coordinated activity in an effort to alter the behavior of governmental institutions consistent with these beliefs.

In this paper, we first sketch out the basic arguments of the advocacy coalition framework (ACF), including several specific hypotheses. The ACF is then applied to a complex intergovernmental policy dispute involving water policy in the San Francisco Bay/Delta. In particular, we present evidence from a survey of 465 policy elites that (a) university scientists and officials (primarily civil servants) from many
federal and state agency have belief systems very similar to interest group leaders from environmental and water development groups; (b) civil servants have belief systems that are just as integrated (coherent) as more “political” elites; and (c) that both agency officials and university scientists perceive sets of allies and opponents—including interest groups, other agencies, and university scientists—that arguably reflect some degree of coordinated behavior within coalitions. The concluding section discusses the generalizability and some of the implications of these results.

1. The Advocacy Coalition Framework (ACF)

The advocacy coalition framework is designed to understand policy change over periods of a decade or more within a particular substantive domain/subsystem, such as air pollution control or K-12 education. Since one of its goals is to integrate political scientists’ traditional preoccupation with socioeconomic conditions, political ideologies, and political institutions with policy scholars’ concern with the role of policy analysis/scientific information in the policy process, the ACF has to deal explicitly with the factors affecting the behavior of professional and scientists working in agencies, consulting firms, universities, etc. It does so by developing the concept of an “advocacy coalition.”

As indicated previously, an advocacy coalition consists of interest group leaders, legislators, agency officials, researchers, and journalists who share a set of basic beliefs (policy goals plus perceptions of important causal relationships and variable states) and who engage in some degree of coordinated activity in order to alter the rules of governmental institutions over time (Sabatier and Jenkins-Smith 1993, 25). In Lake Tahoe environmental policy, for example, Sabatier and Brasher (1993) found two quite distinct coalitions in the 1970s and early 1980s: an environmental coalition composed of environmental groups, federal and state pollution control agencies, university researchers affiliated with the Tahoe Research Group, and several out-of-Basin California legislators; they were opposed by an economic development/property rights coalition composed of local chambers of commerce, realtors, and property rights groups, most local government officials, most public utility district officials, and most local
legislators. Conflict among coalitions is mediated by "policy brokers," i.e. powerful actors more concerned with fashioning an acceptable compromise than with achieving specific policy goals.

The model of the individual—and, by extension, the coalition as a corporate actor—in the advocacy coalition framework assumes that goals are usually complex and that an individual's ability to perceive the world and to process that information is affected by cognitive biases and constraints (Schlager 1995; Sabatier, 1998a). The ACF does not assume that actors are necessarily driven by simple goals of material self-interest, nor does it assume that self-interested preferences are easy to ascertain (Green and Shapiro 1994). Instead, it assumes that actors' goals are normally complex and should be ascertained empirically. In processing information, the advocacy coalition framework assumes that actors suffer from a variety of cognitive biases and constraints. First, their ability to process and analyze information is limited by time and computational constraints, thus providing incentives for simplifying heuristics (Simon, 1985). Second, the ACF assumes that actors weigh losses more heavily than gains (Kahneman and Tversky, 1988) and that they remember defeats more than victories. Third, the ACF assumes—consistent with attribution and cognitive dissonance theories—that, on salient topics, actors' perceptions are strongly filtered by their preexisting normative and other beliefs (Loom et al, 1979; Fiske and Taylor, 1984).

The belief systems of various coalitions are organized into an hierarchical, tri-partite structure, with broader levels generally constraining more specific beliefs (see also Jeffery and Huwitt, 1985; Sabatier and Jenkins-Smith 1993,221). At the broadest level, the "deep core" of the shared belief system includes fundamental normative beliefs, such as the familiar Left/Right scale, which operate across virtually all policy domains. At the next level are "policy core" beliefs which represent a coalition's basic normative commitments, causal perceptions, and preferred institutional arrangements across a policy domain or subsystem. Finally, the "secondary aspects" of a coalition's belief system within a specific policy domain comprise a large set of narrower beliefs concerning the seriousness of the problem or the relative importance of various causal factors in specific locales, policy preferences regarding desirable
regulations or budgetary allocations, the design of specific institutions, and the evaluation of various actors’ performance.

This model of the individual and of belief systems has important implications for coalition dynamics. First, policy core beliefs—because they are fairly general in scope yet very salient—prove more efficient guides to behavior over a wide variety of situations than do either deep core beliefs (which give insufficient attention to domain-specific parameters) or secondary aspects (which are too narrow). This, in turn, contributes to the ACF’s assumption that the policy core provides the principal “glue” of coalitions (Zafonte and Sabater 1997). Second, since the ACF assumes that coalition actors use selective perception and a variety of other devices to screen their beliefs from challenge, particularly at the deep core and policy core levels, such beliefs are resistant to change, and the composition of coalitions is hypothesized to be stable over periods of a decade or more. Third, actors in different coalitions will perceive the world through different “lenses” and thus often interpret a given piece of evidence in different ways. This contributes to in-group cohesion. It also produces distrust of people (including experts) in other coalitions who, since they come to conclusions so different than ours, must be either incompetent or motivated by nefarious interests. When combined with the tendency to remember losses more than victories, it becomes easy in high-conflict situations for a mutual “devil-shift” to develop, as each coalition views the others as more evil and more powerful than they probably are (Sabater et al., 1987). As a result, conflict resolution among coalitions is more difficult than classic rational actors models would predict, and coalitions tend to remain differentiated and stable over time (in contrast to Riker 1952).

The advocacy coalition framework explicitly rejects the assumption that most bureaucrats and researchers involved in a policy area will be policy indifferent. Instead, it contends they will have policy belief systems that are about as internally coherent as, for example, interest group leaders. These are at least four reasons. First, people usually choose a career because it is consistent with their underlying values and norms (Fredeman, 1994). Second, researchers and agency officials with advanced degrees will
generally accept the paradigmatic assumptions of their discipline (Brown 1977), including its normative assumptions about what topics are worthy of interest and whose welfare is critical, e.g. in the analysis of risk.\textsuperscript{7} The normative assumptions behind welfare economics and benefit-cost analysis, for example, have been widely discussed (Rhoads 1985, Jenkins-Smith 1990). There also appear to be rather systematic differences between civil engineers and wildlife biologists.\textsuperscript{3} The former generally assume that nature exists for human purposes and that they can mitigate virtually all negative impacts arising from their projects. In contrast, most wildlife biologists tend to view virtually all species as having intrinsic worth and are very skeptical of the ability of humans to manipulate natural systems without unforeseen adverse consequences on one or more species. Third, long-standing, high-conflict policy disputes tend to be rather nasty, with lots of misrepresentations and \textit{ad hominem} attacks. University scientists and even many agency officials who do not have a strong interest in solving the problems at hand tend to depart, creating a selection bias in favor of those with tough hides and committed points of view.\textsuperscript{4} Fourth, most agencies have clear missions and their personnel will generally come to believe in the importance of that mission because of self-recruitment, indoctrination, and interaction with the agency's supportive constituencies (Kaufman, 1960; Kelman, 1981).

We can summarize these arguments in a set of hypotheses. The first two are simply a restatement of the basic contentions of this paper:

Hypothesis 1: Most agency officials, including civil servants, involved in policy disputes will be members of advocacy coalitions, i.e. they (a) will have coherent policy-belief systems\textsuperscript{2} similar to those of relevant interest groups and (b) they will engage in some non-trivial degree of coordinated behavior with interest group leaders and other people with similar beliefs.

Hypothesis 2: Most researchers, including university researchers, involved in policy disputes will be members of advocacy coalitions, i.e. they (a) will have coherent policy belief systems similar to those of relevant interest groups and (b) they will engage in some non-trivial degree of coordinated behavior with interest group leaders and agency officials with similar beliefs.

The advocacy coalition framework does not, however, assume that university scientists and agency officials will be indistinguishable from interest group leaders. Instead, agency officials will usually be more
moderate in their beliefs—particularly in the public expression of those beliefs—because they must be cautious about offending their multiple principals/sovereigns upon whom they depend upon for legal and budgetary resources (Jenkins-Smith et al 1991; Sabatine and Jenkins-Smith 1993, 213).

Hypothesis 3: Agency officials will express beliefs that are more moderate than, but similar in structure to, their interest group allies.

Similarly, university researchers should be more willing than their professional colleagues in agencies and interest groups to alter important perceptions in the policy core and secondary aspects because they are not constrained by the official position of their organization on such topics. That same lack of constraint—"academic freedom"—would also predict greater variation among university researchers in their beliefs than officials from specific interest groups or administrative agencies.

Hypothesis 4: University researchers involved in a policy dispute will demonstrate greater variation in beliefs than officials from interest groups and administrative agencies.

All the above hypotheses are consistent with the advocacy coalition framework, although the first two are clearly more critical than the latter two. As a contrast, we'll use the "policy indifference" argument as a null hypothesis:

Policy Indifference Hypothesis: Agency officials (especially civil servants) and university researchers do not have coherent policy belief systems.

The rationale is that people who don't care about substantive public policy have no incentive to develop coherent policy belief systems relating general values, perceptions of causal relationships and state parameters, and policy preferences. Instead, agency officials will be preoccupied with procedural due process, administrative efficiency, and obeying superiors—e.g., "neutral competence" (Kaufman 1956; Hecht 1975)—while university researchers will be preoccupied with pursuing good science for its own sake. In both cases, their policy beliefs should be somewhat randomly related, rather than similar to those of specific interest groups.
The remainder of this paper explores these arguments with respect to water policy involving the San Francisco Bay/Delta. After briefly providing some background on that policy dispute and our data base, we examine the views of agency officials, university scientists, and interest group leaders on a variety of different beliefs, in addition to their perceptions of allies and opponents.

II. Background

A) Case Selection: San Francisco Bay/Delta Water Policy

The advocacy coalition framework seeks to understand “wicked problems” (Hoppe and Peterse (1993)—i.e. those characterized by (a) a large number of actors from multiple levels of government, (b) substantial technical complexity and uncertainty, and (c) high political conflict. These are the types of situations simpler resource dependency (Pfeffer and Salancik, 1978) and institutional rational choice (Scharpf 1997; Ostrom 1998) frameworks have difficulty with because of the large numbers of actors and the uncertainties of preference formation. Water policy in the San Francisco Bay/Delta clearly meets these criteria.

In addition, the San Francisco Bay/Delta is one of the most important bodies of water in the United States. It is the defining characteristic of “The Bay Area,” home to 7.5 million people. The Bay/Delta constitutes the most valuable wetlands area in the Western U.S. and a critical link on the Pacific Flyway. In 1980, its fisheries were valued at $27 million, but have declined substantially in recent years. Most importantly, the Delta is the hub of the state’s major water delivery system which transfers water from the Sacramento and other Northern California rivers to the South Delta, where massive pumps from the Federal Bureau of Reclamation’s Central Valley Project (CVP) and the California Department of Water Resources’s State Water Project (SWP) deliver it though hundreds of miles of canals to farming areas in the San Joaquin Valley (which supplies 45% of the nation’s fruits and vegetables) and to over 15 million people in Southern California (San Francisco Estuary Project 1992).

[Insert Figure 1 about here]
Figure 1: California's aqueduct system showing major CVP and SWP facilities. Inset: The Sacramento-San Joaquin Delta

Source: Sharing Scarcity: Gainers and Losers in Water Marketing, University of California Agricultural Issues Center
San Francisco Bay/Delta water policy has witnessed a series of major controversies over the past thirty years. In the 1960s, the major issue was the filling of San Francisco Bay by land developers, ports, and airports. This led to the creation of the Bay Conservation and Development Commission (BCDC) in 1965 and its strengthening in 1969. In the late 1960s and throughout the 1970s, the major focus switched to water pollution from municipal treatment plants, industries, and surface runoff. Thus, in the late 1970s, attention shifted upstream to the Delta and particularly to the relative importance of various factors—water diversions, pollution, overfishing, and the 1984-87 drought—on the precipitous decline of most Delta fisheries. This is an issue of tremendous economic and political importance, since most efforts to protect specific fish populations will adversely affect water supplies to San Joaquin Valley agriculture and Southern California urban areas.

Over the past twenty years, there have been at least five major attempts to deal with water flows and fisheries in the Delta. In 1978, the State Water Resources Control Board (SWRCB) proposed water quality standards for the Delta which substantially affected diversions, but these were subsequently brought into question by a 1985 Federal appellate decision. Second, in 1980-82 Governor Jerry Brown sought an engineering solution—building a “ Peripheral Canal” around the Delta with strong environmental protections—but this was defeated in a 1982 statewide referendum by a strange alliance of environmental groups, San Joaquin farmers, and Southern California fiscal conservatives (Monto 1993). Third, two of the critical fisheries, the winter run salmon and the Delta smelt, were listed as threatened under the Federal Endangered Species Act in November 1991 and April 1993, respectively. Fourth, in 1992 Congress approved the Central Valley Project Improvement Act (CVPIA), which seeks to substantially enhance the BOR’s and U.S. Fish and Wildlife Service’s role in fisheries enhancement within the CVP and to encourage the CVP to engage in water marketing with Southern California cities. Finally, in 1994 informal negotiations among water agencies, agricultural water districts, and environmental and fishery organizations (both agencies and interest groups) resulted in the Bay/Delta Accord, which established a new set of water quality standards to protect Delta fisheries at reasonable cost (Sabatier 1998b).
B. Data Base

The data base for this paper comes from responses to a 14-page questionnaire mailed in the winter of 1992-93 to an estimate of the set of actors who in 1992 were interested and actively seeking to influence some aspect of Bay/Delta water policy (e.g., fisheries, water quality, water supply, etc.). The names were obtained from three sources: 1) people active in the San Francisco Estuary Project or in SWRCB hearings on the Bay/Delta, 2) the major actors in critical agencies and interest groups concerned with some aspect of Bay/Delta water policy, and 3) people nominated as influential by the advisory committee to our project. This produced a tens of 779 names, of whom 421 responded, for an overall response rate of 55%. In addition, 20 people were added from a companion 1984-92 elite panel survey when they said they were as active in 1992 as they had been in 1984. Finally, since we are primarily interested in comparing the responses of elites from different institutions, 18 people are counted twice because they held two elite positions: one on the board of a regional agency, the other as a state or local government official. Thus our data set consists of 465 respondents.

III. Results

In order to test these hypotheses, we must first group our 465 respondents into a reasonable number of organizational affiliations. We then examine the distribution of opinions among officials from a variety of organizational categories on several deep core, policy core, and secondary beliefs. Next will come several regression analyses to see if civil servants have belief systems which are as coherent/constrained as those of other actors. Then we shall look at various actors' perceptions of their allies and opponents to see, on the one hand, if agencies and university researchers were perceived by interest group leaders as active political actors and, on the other, if agency officials and university researchers viewed each other as allies and opponents.
Figure 2: Mean scores of affiliation categories on Neo-Classic Conservation Scale

(high=7)

(low=1)
A. Categories of Organizational Affiliation

Cluster analysis using individuals as the unit of analysis would be the ideal way to test the ACF hypotheses concerning similarity of belief systems. Unfortunately, a cluster analysis of our 465 respondents is simply unmanageable—at least from a presentation standpoint. The individuals must be aggregated in some fashion. So we first do so by organization, on the assumption that individuals within an organization will have relatively homogeneous beliefs because of the self-selection and indoctrination processes discussed previously. Even this, however, is insufficient, since our 465 respondents come from about one hundred private groups and local, state, and federal agencies that play a recurring role in Bay/Delta water policy. In order to reduce these to a reasonable number, we have further aggregated them into the following twenty categories of organizational affiliation. Different organizations have been collapsed into the same affiliation category (a) if they have similar functions and/or locales (e.g., Bay local governments) and (b) if their respondents expressed similar views on our attitudinal scales.

Agencies

1) U.S. Bureau of Reclamation and the California Department of Water Resources, the agencies that operate the CVP and SWF water projects that send water from the Delta to the San Joaquin Valley and Southern California.

2) U.S. Army Corps (n=8). These are civil servants from the U.S. Army Corps of Engineers, the federal agency primarily responsible for regulating dredging and construction in wetlands.

3) USFWS/NMFS (n=13). These are officials, primarily civil servants, from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, the two federal agencies responsible for fisheries and endangered species.

4) CA Fish and Game (n=11). These are officials, primarily civil servants, from the California Department of Fish and Game. While their views generally parallel those of their biologist colleagues in the two federal wildlife agencies, state agency personnel differ on the Peripheral Canal and thus are kept separate.

5) EPA/Ashio Resource Agencies (n=30). About a third come from the U.S. Environmental Protection Agency, with the rest coming from a variety of federal and state natural resources agencies, including the State Lands Commission, the California EPA, and the U.S. Soil Conservation Service; almost all are civil servants.

6) SWRCB (n=11). These are officials, primarily civil servants, from the State Water Resources Control Board, the state agency primarily responsible for both water quality and water rights/flows.
Under the state board are several regional boards, including two in our survey: respondents from the three organizations expressed different enough views that we decided not to aggregate them.

7) San Francisco Bay PCB (n=13). These are board members and senior staff (most of the latter, civil servants) from the San Francisco Regional Water Quality Control Board which has jurisdiction over San Francisco Bay and a portion of the Delta.

8) Central Valley PCB (n=10). Similarly, these are board members and senior staff from the Central Valley Regional Water Quality Control Board, a board with jurisdiction over the Sacramento Valley, the San Joaquin Valley, and the remainder of the Delta.

9) BCCD/misc. Regional Agencies (n=29). These are primarily board members and staff from the Bay Conservation and Development Commission (BCDC), which regulates building and fill along the Bay shoreline; also a few from other Bay Area regional parks/planning agencies.

10) Bay/Delta Local Govt (n=43). These are elected officials and senior staff from general purpose local governments and water supply agencies in the Bay/Delta.

Interest Groups:

11) Southern California (n=22). These are elected officials and senior staff from water agencies in Southern California who either testified at Bay/Delta hearings or are on the boards of the SWP or CVR Contractors Association. They are treated here as interest groups because they have no formal governmental authority in the Bay/Delta (Smallbury 1984).

12) San Joaquin Valley/Sawatch Ag (n=25). These are primarily elected officials or senior staff from water or irrigation districts in the San Joaquin Valley who testified at Delta hearings or were on the CVR/SWP boards. It also includes 7 representatives of statewide agricultural organizations, such as the Farm Bureau, Grange, and Agricultural Chemicals Assn., who testified at the SWRCB hearings and whose responses were very similar to those from the San Joaquin Valley.

13) Sacramento Valley (n=10). These are officials from general purpose local governments slightly upstream of the Delta or from water districts in the Sacramento Valley (i.e. north of the Delta) who testified at the Delta Hearings or were active in the Project Jury. They are treated as interest groups because they have no formal governmental authority in the Bay/Delta.

14) Private Dischargers (n=28). These are primarily water quality specialists with industries that discharge wastes either directly or indirectly (via sewer systems) into the Bay/Delta.

15) Public Dischargers (n=27). These include board members and senior staff from the five publicly-owned sewage treatment works (POTW's) in the Bay Area or the association of such dischargers.

16) Business/Ports (n=27). This includes 14 representatives from business associations (primarily the Bay Planning Coalition) and 13 from ports and airports—all in the Bay Area. These groups tend to have similar views, in part because of their common interest in development along the Bay shoreline.

17) Environmental/Sportsmen Groups (n=54). These are senior staff and critical board members from the principal environmental and sporting hunting groups concerned with the Bay/Delta.
Resources (and Misc.)

18) University/Miss. Researchers (n=32). These are primarily university faculty who have been active in Bay/Delta research. It also includes a few researchers from institutes in the Bay Area, such as the Tiberon Center. Most were taken from the lists of technical advisors to the Estuary Project.

19) Consultants (n=23). These are researchers in consulting firms who have been active on Bay/Delta water issues, either as advisors to the Estuary Project or as participants before SWRCB hearings.

20) Other (n=28). This is a miscellaneous group composed of journalists, leaders of educational fora, union leaders, a few state legislators, and anonymous respondents. This category is not mentioned in most of our analyses, although its members are included in the overall means.

This diverse set of actors from agencies and legislators at multiple levels of government, interest groups, and researchers is typical of many policy subsystems—except perhaps for the relatively large number of university scientists (Marin and Maynez 1991; Heint et al. 1993; Krooke et al. 1996).

B. Attitudes of Policy Actors

This section provides the mean scores for each organizational category for a variety of attitudes, ranging from very broad ideological orientations to specific perceptions and preferences. Each figure also provides the overall mean, standard error bars for each organizational category, and an indication of whether the means for specific organizational categories are significantly different from the overall mean. 10

For most agency categories, there is no statistically significant difference between civil servants and elected/appointed officials. 11 In cases where there is—chiefly involving the San Francisco and Central Valley Regional Water Quality Control Boards—these will be noted.

In general, the advocacy coalition framework predicts that agency officials and university researchers will have views similar to, but somewhat more moderate than, their interest group allies and that the same patterns will persist across all levels of their belief systems. The policy indifference hypothesis predicts that university researchers and agency officials (particularly civil servants) will cluster around the overall subsystem mean, as the easiest and safest point of view.
Figure 2 presents the data on a 6-item Neo-Classical Conservation Scale representing support for markets and property rights (see Appendix A for details). This scale is at the deep core time it applies to a wide variety of policy domains.

At the upper-right portion of the figure, representing the most conservative positions, were officials from San Joaquin Valley/statewide agricultural groups, Bay businesses and ports, Southern California water districts, and private dischargers from the Bay Area. All were significantly different from the overall subsystem mean. The two water export agencies (the BOR and DWIR) were also on the conservative side of the spectrum, although not significantly different from the mean. At the bottom-left, liberal end were environmental/sportsmen's groups, EPA and state/federal/state resource agencies, BCDC and other Bay regional agencies, university researchers, and, marginally, the two federal fisheries agencies (p<.10). Several agency categories, including Bay local governments and the water quality agencies, were near the overall mean, consistent with the policy indifference model. In the cases of the Central Valley and San Francisco Water Quality Agencies, however, this “indifference” was simply the average score between a conservative board (EPA = political appointees) appointed by a Republican Governor and a relatively liberal staff (CS = civil servants) comprised primarily of water quality engineers and biologists. University researchers were clustered at the liberal end of the scale, suggesting that not much has changed since the 1960s (Ladd and Lipset 1975).

2) Policy Core: Flows & Fisheries Scale. Now let’s look at a scale containing a variety of normative and perceptual items related to fisheries and flows in the Bay/Delta (see Appendix A for details). We treat it as policy core because it deals with an extremely important aspect of Bay/Delta water policy that has ramifications for most other aspects (Zafirone and Sabotier 1997).
The results in Figure 3 support the advocacy coalition framework. At the pro-environmental end were officials from the two federal fishery agencies, environmental/sportsmen’s groups, EPA et al., California Fish and Game, university researchers, and BCDC et al., as well as civil servants from the San Francisco Regional Water Board. At the other end of the scale—indicating skepticism that Bay/Delta environmental quality and fisheries were declining and opposition to strong measures to protect them—were officials from San Joaquin/statewide agricultural groups, Southern California water districts, the BOR/DWR, and political appointees from the Central Valley Regional Water Board. All had means significantly different from the overall mean. These patterns are quite similar to those seen previously on the Conservation Scale. They provide evidence for two distinct coalitions, each comprised of interest groups and officials from several different types of agencies, with the attitudes of university faculty placing them clearly in the environmental coalition. The data here (and elsewhere) also suggest that some aggregated categories, namely consultants and Bay Area local governments, tend to hold positions close to the overall mean.

3) Critical Coastal Perceptions. We now pass to a purely perceptual item involving a critical aspect of Bay/Delta fisheries. Figure 4 presents respondents’ perceptions of the importance of water diversions (including the CVP and SWP pumps, but also upstream diversions) on the decline of Bay/Delta fisheries. In ACF terms, this is important enough to be labeled a policy core perception because it deals with Bay/Delta fisheries as a whole, and fisheries are a critical aspect of Bay/Delta water policy.

[Insert Figure 4 about here]

The results on diversions in Figure 4 are virtually a mirror image of the previous policy core scale. The federal and state fishery agencies, EPA et al., university researchers, environmental groups, BCDC et al., and, marginally, SWRCB officials (p < .10) are at one end; the San Joaquin/state agricultural organizations, Southern California water districts, and BOR/DWR are at the other. Public and private dischargers, Bay businesses/ports, and Central Valley Regional Water Board officials occupied positions
on the water development side of the overall mean, but did not attain the .05 significance threshold (except for Central Valley RWQCB political appointees).\textsuperscript{16}

4) Specific Policy Proposals. Finally, Figures 5 and 6 present the positions of our organizational affiliation categories on two of the most important and controversial policy proposals affecting Bay/Delta fisheries: (1) the listing of the Delta smelt as a threatened species and (2) the construction of a Peripheral Canal around the Delta to provide water supplies to Southern California and the San Joaquin Valley while hopefully reducing the impact of the export pumps on Delta fisheries.

[Insert Figure 5 about here]

The lineup on the Delta smelt listing in Figure 5 provides further evidence of our familiar coalitions: an environmental coalition composed of the two federal fisheries agencies, environmental/sportsmen’s groups, university researchers, EPA et al, BCDC et al, and California Fish & Game. At the other end was the familiar water development coalition composed of San Joaquin/statewide agricultural groups, Southern California water districts, and the BOR/DWR—together with Bay businesses and ports, and public dischargers. The boards of both regional water quality agencies favored the water development coalition, while staff were either neutral or favored the environmental coalition.

[Insert Figure 6 about here]

The lineup on the Peripheral Canal in Figure 6 has some familiar elements but also several anomalies. In strong support, as one would expect, were the BOR/DWR, Southern California water agencies, and San Joaquin/statewide agricultural groups. But also in strong support were officials from the California Department of Fish and Game and the SWRCB. These agencies had adopted the position in the early 1970s that (a) the export pumps were here to stay and (b) the best way to minimize their impact on fisheries was to build a canal from north of the Delta directly to the pumps. The defeat of the Peripheral Canal in the 1982 statewide referendum did not change their views.\textsuperscript{17} At the opposing end of the scale were the familiar environmental groups, BCDC et al, university researchers, and officials from federal fisheries and resource agencies (although the latter were significant at only the .10 level). In addition,
environmental groups were joined on this issue by an array of economically, privately dischargers. The probable explanation is that dischargers were worried the Canal would divert so much water around the Delta that not enough would be left to dilute pollution concentrations.

The results throughout this section indicate substantial support for the basic ACF propositions (Hypotheses 1 and 2) that most agency officials and university researchers will not be grouped around the overall subsystem mean (as suggested by the policy indifference hypothesis) but instead will consistently have positions close to their interest group allies. On most issues, there were two coalitions with positions significantly different from the overall subsystem mean: An environmental coalition composed of environmental/fisheries interest groups, federal and state fisheries agencies, EPA and other federal/state resource agencies, BDC and other Bay regional agencies, and university researchers. They were opposed by a water development coalition composed of San Joaquin/statewide agricultural groups, California water agencies, the two major water export agencies (the Federal Bureau of Reclamation and the California Department of Water Resources), and the politically-appointed board of the Central Valley Regional Water Quality Control Board. On the other hand, consultants (as an aggregate category) and several agencies—including the U.S. Corps of Engineers, the SWRCB, and Bay Area local governments (as an aggregate category)—were not part of discernible coalitions, but instead seemed to be either near the subsystem mean or to approximate the positions of different coalitions on different issues. 16

What about the hypothesis (of 3) that agency officials—particularly civil servants—will express more moderate beliefs than their interest group allies? Table 1 provides the means for various agencies and interest groups involved in the water development coalition and the environmental coalition on all the attitudinal items presented in this paper, together with an indication of whether the means of agency officials (as the aggregate) were significantly different from their interest group allies.

[Insert Table 1 about here]

Is the water development coalition, on four of the five items BOR and DWR officials held more moderate views than their allies in San Joaquin and Southern California water districts and those
<table>
<thead>
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<th>Field</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>12/15</td>
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<td>2/28</td>
</tr>
</tbody>
</table>

**TABLE 1: Differences between Internal Group, Agency Officials, and University Researchers Within a Coalition**
differences were statistically significant. Within the environmental coalition, the specific agencies usually had more moderate views than their interest group allies, and these differences were significantly different in the aggregate on three of the five items. Note, however, that on two of the items—diversions as a cause of fishery decline and support for listing the Delta smelt as a threatened species—officials in the two federal fishery agencies held more extreme views than their interest group allies. On the whole, however, these results present fairly strong support for Hypothesis 3.

With respect to university researchers, the data in Table 1 indicate that, on four of the five items, their views were significantly more moderate than those of their interest group allies (although not necessarily more moderate than officials from specific agencies). The standard errors from Figures 2-6 do not, however, support the argument in Hypothesis 4 that university researchers in a policy dispute will demonstrate greater variation in beliefs than officials from interest groups and agencies. 20

C. Do Civil Servants (and University Faculty) Have Coherent Policy Belief Systems?

The policy indifference hypothesis predicts that, since civil servants and university faculty are indifferent to policy issues, they should have poorly integrated policy belief systems. In contrast, the advocacy coalition framework predicts that, since most civil servants and university faculty involved in policy disputes are members of coalitions, their belief systems should be as coherent/constrained as those of other policy elites, such as interest group leaders or legislators.

In order to test these competing hypotheses, Table 2 presents the results from two sets of multiple regression equations. The first set attempts to explain support for the Peripheral Canal and the second for listing the Delta smelt as a threatened/endangered species. The independent variables are two deep core scales, two policy core scales, and several relevant perceptual items. 21 For each policy proposal, we ran the same equation twice: once for the entire set of respondents (composed largely of interest group leaders and political appointees), and then only for civil servants.

[Insert Table 2 about here]
The conditions are summarized as follows:
1.75
1.97
0.90

Comparison

Admitted

Anterior Equations

Economic Perspectives
Living of Small Wages
Shaping Times

Fetal Development

Werbish & Company

Reproductive

Gametogenesis
Sperm and Oocyte

Preimplantation

Genetic Loss - Sexual

Disease as Cause of Premature

Explanatory Variables

Independent Variable

Before (n=101)

Above (n=97)

Female

Support for Abortion

Support for Legalization

Regression: Effects of Explained Variables on Support for Two Policies

Table 2: Comparison of Multiple Regression Results for All Respondents and for Civil Servants
On both sets of equations, the results for civil servants are similar to those for the total set of respondents, in terms of the percentage of variance explained (adjusted R²), as well as the sign and magnitude of the regression coefficients. In both cases, the Chow F-test for structural difference in all parameters was not significant (Cooene 1993). These findings suggest that civil servants involved in Bay/Delta water policy in 1992 had belief systems which linked normative positions, causal perceptions, and policy preferences in about as coherent or constrained a manner as those of other policy elites—thus providing additional support for Hypothesis 1.

We ran the same equations for university faculty and, again, the Chow F-test revealed no significant differences between them and the population as a whole. 21 We don’t present the regression coefficients because of problems with multicollinearity and small degrees of freedom. But these results provide at least a little additional support for Hypothesis 2.

D. Perceptions of Allies and Opponents

Thus far we have presented evidence that the officials of most federal and state agencies—as well as university researchers—involved in Bay/Delta water policy have coherent belief systems that are fairly close to, although somewhat more moderate than, their interest group allies. Thus they have met the first of two conditions for being “members” of advocacy coalitions. But what about the second condition, i.e. engaging in “a non-trivial degree of coordinated activity over time” (Sabatier and Jenkins-Smith 1993,23)?

Although we lack direct measures of the behavior of agency officials and university researchers, our questionnaire does provide systematic data on who respondents perceived their allies and opponents to be. These are relevant in at least three ways. First, the advocacy coalition framework would expect agency officials and university researchers to admit having “allies” and “opponents”—at least to the extent that they admitted being members of coalitions. In contrast, the policy-indifference model would expect neither bureaucrats nor university researchers to have “allies” and, even less so, “opponents.” Thus the policy indifference model would expect the non-response rate to these items to be much higher for agency officials and university researchers than for other policy elites. Second, the advocacy coalition framework would
expect to find both interest groups and other agencies among the allies and opponents of both agency officials and university researchers, since all would be regarded as potential members of coalitions. In contrast, the policy indifference model would expect that, even if bureaucrats and university researchers admitted having allies and opponents, these would be limited to interest groups. It would make little sense to think of other agencies and researchers in these terms, since the vast majority of such actors would, according to this model, be policy indifferent. Third, perceptions of allies and opponents are presumably based in part on the past behavior (rather than simply the private attitudes) of officials in those organizations. While our 1992 survey did not explore this assumption, a very preliminary analysis of a similar question in a 1997 survey of Bay-Delta water policy elites suggests this is, in fact, a reasonably valid indirect indicator of several types of coordinated behavior.22

One part of the questionnaire gave respondents a list of 20 types of organizations (roughly the same as our organizational affiliation categories) and asked them to indicate up to three “with whom you identify or regard as allies” and up to three “which you regard as your principal opposition.” Table 3 indicates, for respondents from organizations in the two potential coalitions, their perceived allies, grouped by type of organization and coalition. Table 4 does the same for perceived opponents.

Looking first at the bottom row of the two tables for the percentage of non-respondents from each affiliation category, 0-15% of agency officials refused to list any perceived allies, compared to 4-8% from the various interest groups and 16% of university researchers. None of these differences among agency officials, interest groups, and university researchers were statistically significant at the .05 level. The percentage of agency officials refusing to list any opponents increased slightly (particularly for the BOR/DWR and EPA et al), but even so, over 85% of federal and state agency officials listed at least one opponent. University faculty were comparable (19%), while respondents from interest groups were slightly more willing to acknowledge having opponents, but the differences between agency, interest group, and university personnel were, again, not significant.
<table>
<thead>
<tr>
<th>Potential Allies</th>
<th>Respondents' Institutional Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Potential Environmental Coalition</td>
</tr>
<tr>
<td></td>
<td>U.S. EPA</td>
</tr>
<tr>
<td></td>
<td>BoCC</td>
</tr>
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<td>Supporter Groups</td>
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<tr>
<td></td>
<td>Local</td>
</tr>
<tr>
<td></td>
<td>Regional</td>
</tr>
</tbody>
</table>

TABLE 3: Percentage of Respondents in Various Affiliation Categories Who Perceive Groups as Allies
Turning to various actors' perceptions of their allies and opponents, the results provide fairly strong support for the advocacy coalition framework. In Table 3, for example, among BOR/DWR officials, 75% cited each other as allies, while 35% cited agricultural interests and Southern California cities. Generally only about 3% cited various members of the environmental coalition, with the exception of 30% citing the various fishery agencies and 15% citing university researchers. The data were similar for agricultural groups and Southern California water agencies. Both cited themselves and the BOR/DWR as allies about 75% of the time, while citing each other about 20%. Very seldom did either cite members of the environmental coalition as allies, with the exception of 15% Southern California representatives citing environmental groups as allies. These anomalies reflect the politics of the recently-passed Central Valley Project Improvement Act, in which Southern California cities switched allegiance from San Joaquin agricultural interests to environmental groups over the issue of water transfers. The results are even stronger for members of the environmental coalition. With the exception of a trivial percentage of university researchers, none of the respondents in the six categories listed members of the water development coalition as allies. In contrast, 55-87% of the actors in each category listed environmental groups as allies! In short, the citation patterns for allies in Table 3 reveals two rather distinct coalitions, each composed of both agencies and interest groups. In addition, the citation patterns by agency officials in the two coalitions were fairly similar to those of their interest groups allies.

[Insert Table 4 about here]

The citation patterns for opponents in Table 4 are similar to those for allies in Table 3. Members of the water development coalition tended not to list each other as opponents (except for the 23% of Southern California officials displeased with agricultural interests), while 59-92% listed environmental groups as opponents and 30-82% listed the U.S. EPA as an opponent. Among members of the environmental coalition, only very small percentages listed each other as opponents, while 30-90% listed members of the water development coalition as opponents. And the percentage of negative citations by agency officials and university researchers tended to be quite similar to those of their interest group allies.
The possible exception was BOR/DWR officials, who tended to have a somewhat less negative view of the EPA than did their interest group allies.

One final comment: University faculty tended to view themselves as members of the environmental coalition, i.e., they perceived environmental groups, other researchers and, to a lesser extent, EPA and the fisheries agencies as their allies, while viewing agricultural interests, Southern California cities, and the BOR/DWR as opponents. Table 3 indicates, however, that only about 20% of the other members of the environmental coalition viewed university researchers as one of their three top allies, and Table 4 demonstrates that virtually none of the members of the water development coalition perceived university researchers as opponent. In short, the members of the Bay/Delta water subsystem in 1992 seemed to accept the popular portrait of university researchers as neutral, objective, policy indifferent, etc. That may change as findings from this study become known.

IV. Summary and Conclusions

The evidence from this analysis of Bay/Delta water policy elites provides substantial support for the basic contention of the advocacy coalition framework that agency officials and university researchers active in policy disputes are usually members of advocacy coalitions—rather than being “policy-indifferent.” Officials in many agencies—including the BOR/DWR, state and federal fisheries agencies, EPA and other state/federal resource agencies, and UCDC/Bay regional agencies—had beliefs very similar to those of interest group leaders in their respective coalitions. These beliefs were as well integrated into coherent belief systems as those of other policy elites in the subsystem. Agency officials were about as likely as their coalition partners to see other agencies and interest groups as allies and opponents.

Most of these conclusions also hold for university researchers involved in Bay/Delta water policy. Their beliefs on a wide variety of policy issues placed them clearly in the environmental coalition. There is some evidence that their policy belief systems were as internally consistent (constrained) as those of other policy elites. And their perceptions of allies and opponents were very similar to those of other members of
the environmental coalition. Their findings for university researchers are all the more remarkable because we have made no effort to control for academic discipline or institution.

In terms of the hypotheses presented in the first section of this paper, the data in Figures 2-6 and Tables 1-2 clearly support the first part of Hypothesis 1 and 2. Both agency officials and university researchers tended to have coherent belief systems similar in structure to those of their interest group allies. Whether one regards them as full-fledged "members" of advocacy coalitions depends upon the extent to which one views our data on perceived allies and opponents as reasonably valid indirect indicators of coordinated behavior. If one shares our cautiously favorable interpretation of the indicators, then the second part of Hypothesis 1 and 2 is also confirmed, and the officials of most state and federal agencies and university researchers involved in Bay Delta water policy were members of coalitions. To the extent that one remains skeptical about our indicators, the evidence for the second part is inconclusive. With respect to Hypothesis 3, the evidence in Table 1 provides fairly strong indication that officials in most agencies—with the exception of the two federal fishery agencies—tended to have more moderate views than their interest group allies. University researchers also tended to express more moderate views than their interest group allies (although not necessarily more moderate than their agency allies).

The question now arises, how generalizable are these results? Is there something peculiar about Bay/Delta water policy within the U.S.? Is there something about the U.S.—compared to other Western countries—that makes our agency officials and university researchers who are active in policy disputes behave more like members of advocacy coalitions?

Within the U.S., at least four types of evidence are relevant. First, several studies suggest that both federal and state/local bureaucrats are somewhat more liberal on social and economic issues than are the public as a whole, and these disparities increase within several policy domains. (Meyer and Nagro 1976; Garand et al 1991a,b, but Lewis 1990). Second, at least two other studies have compared bureaucrats' views to those of other elites in their policy subsystem. In an analysis of Forest Service employees in the
intermountain states in the early 1970s, Culhane (1981) found that agency officials’ policy views were more or less equidistant between commodity interests, on the one hand, and environmental groups, on the other. While one might interpret this as evidence of policy indifference, Culhane viewed it as consistent with the Forest Service’s traditional “multiple use” mandate. In a study of water policy elites at Lake Tahoe in the mid-1990s, Salazar and McLaughlin (1993) found a situation similar to the Bay/Delta, with environmental groups and federal/state resource agencies clustered at one end of several attitudinal scales, while property rights groups, business associations, and public utility districts were at the other end. Third, numerous studies of the reaction of officials in social and regulatory agencies to the Reagan Administration’s attempts to use political appointments and budgetary cutbacks to curtail their programs reveal that many civil servants were not policy indifferent but, instead, fought the cutbacks by leaking damaging information to sympathetic Members of Congress and interest groups (Cook and Wood 1989; Durant 1992; Marano 1993a,b).

Finally, the principal-agent literature assumes that the ability of principals to control bureaucratic agents in problematic (Lecl 1984). Public choice theorists, following Niskanen (1971), assume that the source of control problems resides in bureaucrats’ desire to maximize their budgets and/or to minimize their workload. On the other hand, the advocacy coalition framework and the evidence cited above concerning the Reagan Administration suggests that bureaucrats will seek to avoid control by principals when they have value/policy differences, and resistance will be particularly pronounced when principals seek to change the fundamental mission of the agency. Unfortunately, most of the empirical tests of principal-agent relationships have spent much more time analyzing the effectiveness of various type of instruments available to principals than in examining alternative explanations of bureaucratic resistance (Wood and Waterman 1981).

Turning now to Western Europe, Aberbach et al’s (1981) monumental study of the views of high-level bureaucrats and politicians in ten Western countries revealed that, while 48% of senior civil servants...
in the ten countries saw "neutral execution" as a desirable trait, an even higher percentage (59%) supported a "policy-making" role (p. 104). With respect to Left/Right ideology, Hoberg et al. (1981) found that civil servants in most countries had policy views slightly more centrist than most politicians, but their belief systems were as ideologically coherent as elected officials (pp. 122-129). Finally, about a dozen scholars have found the advocacy coalition framework to be useful in explaining policy change in a number of domains in European countries (Sabatier 1998a).

With respect to university faculty, several case studies indicate that many U.S. faculty active in policy disputes behave like coalition members (Primack and von Hippel 1974; Nellis 1971; Mazur 1981). In Europe, there is certainly a long tradition of faculty political activity, particularly on the Left, and some evidence of faculty involvement in reform movements during the 1960s and 1970s (Wagner 1987).

In sum, we suspect our results from Bay-Delta water policy—indicating that many agency officials and university faculty actively involved in policy disputes are members of advocacy coalitions—are representative of many other policy areas in the U.S. and Western Europe. But we'll have to wait for other scholars to do comparable analyses in other policy areas and countries in order to get a better sense of the generalizability of our results.

To the extent these results are generalizable, they will confirm some of the crucial assumptions of the advocacy coalition framework. That, in turn, will strengthen the AC framework as a reasonably coherent alternative to the institutional rational choice frameworks currently dominating much of political science (McCubbins and Sullivan 1987; Schmid 1997; Ostrom 1998).
\[\text{Notes}\]

\[1\text{This is, admittedly, a simplification of a vast literature. In particular, it neglects subsystem dynamics (cf. Fritschle, 1983; Worlham, 1997). For other attempts to develop conceptual frameworks of subsystem dynamics, see Klug and Ragan (1984) and Baumgartner and Jones (1993).}\]

\[2\text{For example, Barke and Jenkins-Smith (1993) provide evidence that biologists perceive significantly greater risks from nuclear waste disposal than do physicists, chemists, and engineers. The latter accept a certain degree of background radiation as "natural" and think in terms of dose-response curves, while biologists are more wary of the effects of any dose on living organisms.}\]

\[3\text{Following are the data from the 1992 survey of San Francisco Bay/Delta water policy elites discussed later in the paper. We present the mean values for respondents from five disciplines: two primarily normative scales, one indicating a Utilitarian View of Nature, the other a Concern for Bay/Delta Fisheries:}\]

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Utilitarian View of Nature</th>
<th>Concern for Fisheries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering (n=74)</td>
<td>3.26</td>
<td>4.72</td>
</tr>
<tr>
<td>Physics/Chemistry (11)</td>
<td>3.40</td>
<td>4.86</td>
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<tr>
<td>Earth Sciences (109)</td>
<td>2.85</td>
<td>5.44</td>
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<tr>
<td>Social Sci/Humanites (109)</td>
<td>2.46</td>
<td>5.50</td>
</tr>
<tr>
<td>Biology (101)</td>
<td>2.15</td>
<td>5.82</td>
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<tr>
<td>Overall mean</td>
<td>2.61</td>
<td>5.40</td>
</tr>
<tr>
<td>F-value (one way ANOVA)</td>
<td>10.4***</td>
<td>8.72***</td>
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</table>

As can be seen, engineers and biologists were on opposite ends of both scales and the differences were significant at the .001 level. By the way, over 60% of the civil servants responding to our survey had advanced degrees.

\[4\text{For somewhat similar arguments, see Nielsen (1971), Privorzk and von Hippel (1974), and Mazur (1981). We're not arguing scientists manipulate or falsify data. Instead, disciplinary paradigms, the values underlying their discipline, and their desire to solve particular problems affect the topics they choose to research, the variables they focus on, the methods they value, when they place the burden of proof in situations of uncertainty, and how quickly they present various results. For example, wildlife biologists are much more likely than engineers to look for species to trouble because their disciplinary norms define species extinction as a serious problem. They are more likely to look to human technological interventions as a likely explanation because they tend to respect the beauty of natural systems. In contrast, engineers assume they can improve on nature. Members within each discipline will readily present results congruent with those assumptions, while incongruous results are likely to be interpreted as tentative and in need of further verification.}\]

\[5\text{A coherent policy belief system is one which contains a logically-consistent set of beliefs pertaining to a given policy domain/subsystem from the three ACF levels: deep core, policy core, and}\]
Secondary aspects. It should contain general normative commitments, perceptions of system parameters and causal relationships, and more specific policy preferences. In this paper, that is, we need to examine both ranges of belief.

"This is only one interpretation of the concept of "neutral competence." Another interpretation includes professional norms. Since the latter, however, involves normative assumptions, we would not regard them as value neutral.

The majority of names came from the various policy and technical advisory committees associated with the San Francisco Estuary Project, a name-only form of agency, interest group, and research leaders that attempted to compile assessments of various Bay-Delta resources and to suggest policies for alleviating identified problems (SFEPR, 1992). Many others came from the boards and critical staff of agencies and interest groups playing important roles in various Bay-Delta issues. To fill in the holes, 20-30 names—primarily mid-level staff in state and federal agencies—were added by our advisory committee. We are quite confident this represents virtually the entire list of important Bay-Delta water policy elites. One of the items in our questionnaire asked respondents to name the individuals or organizations they relied upon most heavily for advice and information. Of the 1260 authorities listed by our respondents, all the organizations and all but two of the 378 individuals were included in our survey.

The following are the number of respondents and the response rate for various categories of actors:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Respondents</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal &amp; state govt. (includes 3 legis.)</td>
<td>96</td>
<td>60%</td>
</tr>
<tr>
<td>Bay local &amp; regional govt. &amp; public dischargers</td>
<td>98</td>
<td>52%</td>
</tr>
<tr>
<td>Central Valley govt. &amp; interest grps.</td>
<td>32</td>
<td>56%</td>
</tr>
<tr>
<td>Southern California govt. &amp; interest grps.</td>
<td>23</td>
<td>65%</td>
</tr>
<tr>
<td>Bay business, ports, &amp; private dischargers</td>
<td>56</td>
<td>44%</td>
</tr>
<tr>
<td>Environmental &amp; sportsmen groups</td>
<td>47</td>
<td>58%</td>
</tr>
<tr>
<td>Consultants, Univ. researchers, Educ, etc.</td>
<td>62</td>
<td>55%</td>
</tr>
<tr>
<td>Journalists and, etc.</td>
<td>6</td>
<td>33%</td>
</tr>
<tr>
<td>Unknown (removed ID)</td>
<td>8</td>
<td>nk</td>
</tr>
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<td></td>
<td>427</td>
<td>55%</td>
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</tbody>
</table>

9 Of the 18, 14 were members of the BCDC Board who were also local or state government officials; 3 were members of the Board of the Central Valley Regional Water Quality Control Board (as well as leaders of water districts or major agricultural organizations), and 1 was with the Aquatic Habitat Institute (as well as the San Francisco Regional Water Quality Control Board).

10 We used a two-tailed t-test to determine if the mean for a specific organizational category was significantly different from the overall subsample mean. If the variance for the organizational category differed significantly (p < .05) from the population mean, we used an unequal variance test. If it didn’t, we used an equal variance test.

11 We compared the views of civil servants versus elected officials and political appointees for six categories of agencies (BOB/BWR, EPA et al., BCDC et al., Bay local govt., Southern California water districts, and San Joaquin Valley water districts) on 10 attitudinal and perceptual items. These were
statistically significant differences at the .05 level on 4 of those 60 relationships, or almost exactly what would be expected by chance. At the .10 level, there were differences on 7 of the 60 relationships. On the Central Valley and San Francisco Regional Water Quality Boards, however, there were significant differences (p<.05) on 8 of the 20 items, primarily in the deep core and policy core, plus the policy item concerning listing the Delta smelt as an endangered species. In both regional water agencies, the boards were more conservative and less environmental than the staff, which is what one would expect given that the boards were appointed by a Republican Governor politically undedicted to San Joaquin farmers while the staff were primarily water quality engineers.

12 In this case, the 13 civil servants were not quite significantly different from the mean, while the 15 political appointees—and the category as a whole—were.

13 Again, however, BCDC civil servants were not quite significantly different from the overall mean, while political appointees and the organizational category as a whole were.

14 The results are similar to those from several other deep core and policy core scales that could not be presented here because of space constraints (see Sabatier and Zafonte 1995, Tables 1-2).

15 Of course, specific local governmental officials and consultants were sometimes members of various coalitions. Our practice of aggregating officials across similar organizations into categories of organizational affiliation represents a conservative test of the advocacy coalition framework since there will be some regression toward the overall subsystem mean for different organizations in the same category.

16 We also looked at different groups' perceptions of the importance of (a) entrancement of fish in CVP/SWP pumps and (b) overfishing/poaching as causes of the decline in Bay fisheries. The distribution of perceptions on the pumps were very similar to those for diversions. Those on overfishing were, as expected, basically the reverse image of the results on diversions (i.e. those ranking diversions high deplumed the importance of overfishing, while those wishing to deflect attention from diversions pointed to overfishing as a cause). The most notable exception on the latter were university researchers, with a mean virtually identical to the population mean. Finally, elsewhere (Sabatier and Zafonte 1995, Tables 4-5) we have presented data indicating that these differences persist—albeit in somewhat attenuated form—regarding interpretations of a specific graph depicting fluctuations in Delta smelt populations over time.

17 The Peripheral Canal would obviously meet the needs of San Joaquin agriculture and Southern California cities. F&G and SWRCB officials argue it would also improve Delta fisheries by the pumps' efforts on the Delta. At present, the pumps not only "entrain" (chew up) millions of fish but also alter flow patterns in the Delta, thereby confusing migratory fish such as salmon. The risk, which these groups feel is acceptable when environmental groups do not, is that the Canal could greatly increase the amount of water diverted south. We wish to thank Jerry Johns (SWRCB), John Budd (U.S. BOR) and Randy Brown (DWR) for their comments regarding the Canal on a previous version of this paper.

18 Recall that specific individuals within these groupings might be members of coalitions, even if the overall mean for the category approximates the subsystem mean.

19 If one runs a two-tailed test, the differences on the Delta smelt item cease to be marginally significant. Otherwise, the results for both coalitions are identical. We present the results from the one-tailed test because the misdirection hypothesis points a direction.
Although the standard errors do not seem to suggest less variation among university researchers than within other categories, we should probably not F-tests on the standard deviations.

Because of space constraints, data on some of these items has not been presented in this paper although they have been mentioned in the footnotes. See Sabatier and Zafonte (1985)—a paper written primarily for Bay/Delta policy practitioners—for details. We here present the results for the full model, although we strongly suspect that a truncated model would produce very similar results.

For the Perihelion Canal equations, the Chow F-test = 0.996 (p = .3114). For the Delta smelt listing, the F-test = 1.28% (p = .2440).

In response to Edella Schlager’s (1985) criticism that our measures of perceived allies and opponents were not actually measuring coordinated behavior, our 1991 Bay/Delta questionnaire attempted to address this deficiency. For each ally listed by a respondent, it asked for the frequency (never, occasionally, or frequently) with which they engaged in four types of activities: (a) share information, (b) voluntarily modify my behavior to assist them, with the expectation of future reciprocity, (c) voluntarily modify my behavior to assist them because we share similar goals, and (d) develop a joint policy position or strategy. Since the survey is still ongoing, we have only very preliminary data. But an analysis of 25 respondents (selected from the middle of a pile of 300 thus far) who listed a total of 64 allies reveals the following frequency distributions:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Share Info</th>
<th>Modify b/c reciprocity</th>
<th>Modify b/c goals</th>
<th>Joint Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>6%</td>
<td>36%</td>
<td>8%</td>
<td>21%</td>
</tr>
<tr>
<td>Occasionally</td>
<td>44%</td>
<td>44%</td>
<td>58%</td>
<td>41%</td>
</tr>
<tr>
<td>Frequently</td>
<td>56%</td>
<td>20%</td>
<td>34%</td>
<td>38%</td>
</tr>
<tr>
<td>Occasionally or more</td>
<td>100%</td>
<td>64%</td>
<td>82%</td>
<td>79%</td>
</tr>
</tbody>
</table>

In sum, in 100% of cases, listing a person/organization as an ally involved at least occasionally sharing information, in 92% of cases, it involved at least occasionally modifying behavior because of shared goals; in 79% of cases, it involved at least occasionally developing a joint policy position or strategy; and in 64% of cases it involved at least occasionally modifying behavior in expectation of future reciprocity. Thus listing a person as an “ally” does appear to be an indirect indicator of several types of past and future coordinated behavior.

Information asymmetries are less the source of the problem than the reason why bureaucrats are able to avoid control with some success.

We would recommend that principal-agent scholars pay greater attention to resolving different explanations for the sources of resistance. The same instrument can have different effects if applied to budget maximizers than to policy advocates—and, among advocates, the effects will obviously vary depending upon whether they share, or oppose, the views of principals.
Appendix A: Scale Construction

The attitudinal scales used here were constructed in two separate operations. First, we used a factor analysis procedure to identify survey items that shared common underlying dimensions. Second, we calculated additive scales using the results of the initial factor analysis and validated them using a reliability analysis.

The first scale was a Neo-Classical Conservation Scale containing the following six items:

- Government laws and regulations should primarily ensure the prosperity of business since the health of the nation is dependent upon the well-being of business \( (r = .68) \).
- A first consideration of any good political system is the protection of property rights \( (r = .66) \).
- Decisions about development are best left to the economic market \( (r = .56) \).
- The best government is the one that governs the least \( (r = .64) \).
- Government planning almost inevitably results in the loss of essential liberties and freedoms \( (r = .61) \).
- The "welfare state" tends to destroy individual initiative \( (r = .59) \).

The second scale was a Concern for Flows/Fisheries Scale. It contains a total of three items focusing on the impacts of water quantity and timing (i.e., flows) on Bay-Delta fish populations. The items included in this scale are:

- Upstream dams and diversions have sufficiently reduced inflows to the Delta so as to pose serious problems for Bay-Delta fisheries \( (r = .67) \).
- Because political power in the state lies primarily in Southern California and the San Joaquin Valley, water policy decisions by the Governor and Legislature are more likely to reflect those needs than concern with Bay water quality \( (r = .66) \).
- In-stream flow requirements from the Sacramento River to the Bay/Delta should be sufficient to restore fish populations to pre-1976 levels \( (r = .52) \).

A reliability analysis on these items produced an alpha of .78.

In calculating individual scores on each scale, we added respondents' scores on specific items and divided by the total number of items on the scale. To deal with missing data, we retained all respondents who had answered at least one item, but changed the divisor to the number of items answered. If the respondent did not answer any of the items on the scale, their score on that scale was "missing."
References


