Successful Collaborative Negotiation over Water Policy: Substance versus Process

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Abstract: Collaborative negotiation has been widely used for developing water policy. Nevertheless, a serious lacuna remains in the understanding of the factors that determine whether the negotiators in this bargaining process will be able to reach agreement. This paper argues that the literature has focused on the *process* that is followed in negotiations, to the virtual exclusion of the *substance* of the issues that are to be resolved. As a consensus can only be reached concerning a change in policy if each party receives compensation for the concessions that it makes, a precondition for collaborative negotiation is that each party must have control over some asset that it can "trade" with the other parties. When this condition is met, it can be said that the process has "substance." The authors identify a number of situations in which negotiations over water policy may possess this characteristic. However, they also argue that there is a large set of cases in which positive net gains are available, but in which at least one party lacks control over an asset that can be exchanged. In these cases, a number of government policies are investigated that could provide stakeholders with the necessary tradable goods and, therefore, could impart substance to the process. Many situations still remain, however, in which collaboration will lack substance, and stakeholders can be expected either to seek alternative means for pursuing their goals or to waste their effort in endless bargaining. **DOI: 10.1061/(ASCE)WR.1943-5452.0000517.**

Introduction

Collaborative negotiation has become one of the most widely used techniques for developing water policy. In the United States, for example, it is estimated that there are more than 2,500 watershed councils (Konisky and Bierle 2001); approximately 700 habitat conservation plans (U.S. Fish and Wildlife Service 2013); and 42 Great Lakes remedial action plans (Beierle and Konisky 1999), most of which use consensus building to reach agreement among stakeholders. In addition, numerous ad hoc collaborative processes have arisen, involving, among others, the West Slope of Colorado (Denver Water 2013), the Imperial Valley (Haddad 2000), Rhode Island's Naragansett Bay (Burroughs 1999), the Umatilla region of Oregon (Neumann 1996), Montana's Milk River (Cosens 2003), and the Sacramento–San Joaquin Delta (Madani and Lund 2012). At the same time, hundreds, if not thousands, of books, articles, and reports have been written about collaborative negotiation by academics, policy institutes, and government agencies. Ansell and Gash (2008), for example, survey 137 such studies, and Reed (2008) provides a bibliography of another 178.

Nevertheless, a serious lacuna remains in the understanding of the factors that determine whether the negotiators in this process will be able to reach agreement. In this paper, the authors argue that this failure results because the literature has focused on the *process* that is followed in negotiations, to the virtual exclusion of the *substance* of the issues that are to be resolved.

Consider, for example, the archetypal case in which the actions of a set of "upstream" stakeholders, Group A, has caused harm to a set of "downstream" stakeholders, Group B. Group A might be mining companies or farmers whose activities have polluted a river, thereby endangering aquatic life, reducing potability, or affecting recreational opportunities downstream. The members of Group B, consisting of environmentalists, consumers of drinking water, and recreationists, have demanded that the government revise its existing water policy to improve water quality. Assume that, in an attempt to find a solution that satisfies as many stakeholders as possible, the government has convened a collaborative negotiation process. Following the received wisdom in the academic literature, it has ensured that an efficient process has been put in place. Yet, despite the application of this process, negotiators have failed to reach a mutually agreeable outcome.

Most proponents of collaborative bargaining would respond by arguing that this failure could have been avoided by improving the process. Researchers have argued, for example, that efficient bargaining requires that decisions be based on consensus (Beierle 2000; Dakins et al. 2005); that government agencies provide neutral, skilled facilitators and technical assistance (Forester 1982; Chess and Purcell 1999; Reilly 2001; McKinney and Harmon 2007); that the parties vow to treat one another with respect (Habermas 1984; Innes and Booher 2010; Judkins and Larson 2010); that the government commit to implement agreements reached by participants (Chess and Purcell 1999; Beierle and Konisky 2000; Davidson and Lockwood 2008); and that the parties be encouraged to negotiate over interests, not positions (Fisher and Ury 1981).

This paper offers an alternative, or at least supplementary, explanation for the potential failure of such negotiations: that collaborative negotiation is a "barter" transaction and, as in all such exchanges, one party can only be expected to make a concession to others if it receives something in return. When stakeholder Group B would like the members of Group A to reduce their pollution-causing activities, Group B must offer Group A something in return; otherwise Group A has no incentive to concede.

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But in the example presented previously, the downstream Group B may have nothing to offer. Even though individual environmentalists and recreationists in Group B may value clean water, transactions costs may make it difficult, if not impossible, for them to cooperate among themselves to collect the funds necessary to compensate members of Group A. For collaboration to function, it is not sufficient that the appropriate negotiation *procedures* are in place; it is also necessary that each party has something of *substance* that it can offer to others.

The authors argue that it is common for negotiations over water policy to lack substance, as the term is used in this paper: in many situations, at least one of the parties lacks control over resources that can be traded for concessions by others. Hence, one of the necessary preconditions for consensus—that opportunities exist for both parties to benefit—is absent. When this is the case, collaboration may only be a viable option if the government intervenes to ensure that all parties have control over some aspect of policy that they can exchange with other stakeholders.

This paper, first, identifies a number of circumstances in which each of the parties controls sufficient resources that collaborative bargaining can be expected to lead to mutually advantageous changes in water policy. Second, with respect to the remaining cases, types of government intervention that might be introduced to create the preconditions necessary for successful collaboration are identified. Finally, it is argued that, even in the presence of government intervention, citizen groups, such as environmentalists, may be unable to use collaborative bargaining effectively.

To keep the analysis tractable, the paper is limited primarily to intrajurisdictional disputes (e.g., within one state in the United States or Australia or within one province in Canada) in which the collaborative process has been initiated by the government. This focus allows for the assumption that a third party—the government—will be available to enforce the agreements that stakeholders have reached through collaboration. However, introduction of the government into the analysis requires that an explicit model of government motivation be developed to explain, first, why the government might wish to send policy disputes to a collaborative process and, second, why it would be willing to enforce the agreements that were reached through that process. The authors begin, therefore, with a simple model of government motivation.

Government Motivation

As collaborative *policy*-making must be organized, or condoned, by the government, it is important to understand what the government's motivation might be for delegating its authority to stakeholders in this way. For this purpose, the "government" of a jurisdiction is defined as the set of individuals elected to govern that region, particularly those who belong to the party holding the majority of seats. Following the seminal work of Anthony Downs (1957), it is assumed that these individuals act as if their primary motivation is to maximize the probability that they will win future elections. This assumption is made not because it is believed that politicians have no other goals but because any party that fails to maximize votes will also fail to be elected and, therefore, will have no direct effect on government policy.

It is further assumed that although all proposals for changes in government policy will provide benefits to some voters, most changes will also impose costs on others. If the harm suffered by the latter group is sufficiently large, members of that group may choose to vote against the incumbent party in the next election. Thus, the government has an incentive to modify its proposed policies to obtain endorsement from as many groups as possible—particularly from groups composed of large numbers of individuals—although it may also be concerned with relatively small groups if each member of such a group stands to experience significant gains or losses from changes in policy, as those individuals can be expected to make vocal and financial attempts to sway other voters.

The government faces a number of problems when attempting to identify what the effects of different policies will be. The most important of these is that many values are measured purely subjectively. The decision maker needs to know whether environmentalists, for example, would be willing to accept a reduction in water flows in one river system in return for an increase in a second system, or an increase in use of one type of fertilizer in return for a reduction in another. Would recreational users be willing to accept a reduction in sport fishing rights along a river in return for an increase in fishing rights in a nearby lake? Would farmers be willing to accept a reduction in their rights to extract fresh water from a watershed if they were given access to "gray water" pumped from adjoining urban areas?

One way of dealing with these uncertainties is to invite the affected parties to reach agreement among themselves concerning the new policy, that is, to have them engage in collaborative negotiation. Presumably, if all stakeholder groups agree that Policy X is preferable to the status quo, then if the government was to implement Policy X, it would stand to gain votes from those who most strongly supported that policy and would be unlikely to lose votes from the remaining groups. Using this positive model of government motivation, it is possible to derive a number of hypotheses concerning government involvement in collaborative policy-making:

- Uncertainty: The government will be particularly supportive of collaborative bargaining when there is uncertainty concerning the relative costs and benefits of changes in policy perhaps because of difficulties in measurement; otherwise, the government itself would develop policy.
- Consensus: The government will encourage stakeholders to base their collaborative decisions on consensus because, in that case, the government can be certain that each of the affected parties believes that the benefits of the proposed policy exceed the costs and, therefore, will be unlikely to object to the proposed policy at the time of the next election.
- Salience: The government will not require that "consensus" be unanimous. If some stakeholder groups have little ability to affect the outcomes of elections, for example, because they represent very few people or because they are poorly organized, the government may not be concerned to ensure that they are represented at the negotiations or that their concerns are reflected in the policy that is chosen: the goal of the government is to win a majority in elections, not to win every possible vote.
- Fairness/equity/efficiency: A corollary of the preceding argument, which may appear unpalatable to some, is that governments are predicted to act as if they are uninterested in broad measures of social welfare, such as fairness, equity, or efficiency. Rather, the overarching desire to succeed at the polls will impel both the party in power and its opponents to focus on incremental changes to policy that are supported by as many voters as possible. And where they fail to adopt this approach, perhaps because of their ideological leanings, they can be expected to fail to win elections against more calculating opponents and hence will have little impact on government policy.

In the following sections, this understanding of government motivation is used to investigate whether governments can be expected to ensure that collaborative bargaining processes contain sufficient "substance" that participants will be able to reach a consensus

outcome. The vote-maximizing model predicts that if such a process lacks substance, the government has an incentive to respond by reconstituting the issues in such a way that all stakeholder groups have control over some aspect of public policy that can be traded for concessions from the remaining groups. As all parties will view any resulting consensus-based policy as preferable to the status quo, the probability that those parties will vote for the governing party will be increased.

Substance

Typically, collaborative negotiation processes are introduced when multiple stakeholder groups disagree concerning the direction that water policy should take. A vote-maximizing government responds by bringing the affected parties together to collaborate on the development of new policy. The government's only role in this process is to establish a structure for the negotiations (e.g., identifying which parties are to take part and providing funding for research and collaborative decision making) and to provide a commitment that it will implement any proposal that is reached through consensus.

Before such a consensus can be reached, two conditions must be met. First, any change in policy must be efficiency improving, that is, any costs that are imposed on one party must be offset by benefits to that party; otherwise, the affected party will not agree to the change. Second, any party that proposes a change in policy must have the ability or authority to commit to offering compensation to any of the other parties that are negatively affected. For example, it is not sufficient that environmental groups would be willing to accept a relaxation in regulations concerning the use of chemical fertilizers in return for an agreement from farmers that the latter would extract less water from a river; the environmental groups must also have the authority to offer that exchange.

It is only when these two conditions have been met that a collaborative negotiation process can be said to possess what has been called substance. This section investigates the circumstances in which negotiations over water policy can be expected to have this property. It is argued that although such circumstances are not uncommon, many situations remain in which collaboration will fail, even when the benefits of change exceed the costs, because those who gain lack control over the changes that would be necessary to compensate those who lose. It is then considered, in a separate section, whether it would be possible for the government to introduce variations in the collaborative process that would remove this constraint.

For the purposes of this section, collaborative processes are categorized according to the source of demand for policy change: from a single stakeholder group, from the government, or from *within* a stakeholder group.

Single Stakeholder

The archetypal source of conflict over water resources arises when stakeholder Group A proposes a change to policy that benefits its members but imposes a cost on members of Group B. In such cases, the government may be reluctant to accept the proposed change without the approval of all or most stakeholders. Collaborative negotiation may provide the means for obtaining this approval *if* Group A is able to offer compensation to the members of Group B. Three methods by which such compensation might be offered are discussed.

Linked Policy Change

First, Group A may be able to make concessions on a related policy change, over which it has control, in exchange for Group B's agreement to accept the initial change proposed by Group A. For example, when Denver Water (Denver's water utility) applied to increase the amount of water that it extracted from the Colorado River basin—in an area known locally as the West Slope—the Colorado government requested that Denver Water first obtain agreement for this change from residents of West Slope. In a collaborative negotiation process that involved 34 stakeholder groups, the residents of the West Slope agreed to allow extraction of additional water in exchange for promises by Denver Water that it would use its reservoirs to supply West Slope communities with water during times of low flow in local rivers and to use its dams to ensure that the rate of flow through those rivers was maintained at a level that would protect fish and other wildlife (Denver Post 2012; Denver Water 2013). Effectively, West Slope residents had been given control over a "linked" policy, the allocation of additional water rights in their region that they were able to exchange for concessions from Denver Water concerning release rates from its reservoirs.

Similarly, there is evidence that the Federal Energy Regulation Commission (FERC), which issues licenses on federally owned reservoirs in the United States, will be more likely to accept applications to increase annual hydropower generation if agreement can be reached with stakeholders, such as environmental and recreational groups. For example, environmental groups might agree to support an application to increase power generation if the generator agreed to vary the release rates from its dams in such a way as to protect endangered species of fish downstream (Madani 2011). Again, the implied requirement for consensus in this case provides environmental and recreational groups with control over an aspect of policy (release rates) that they are able to exchange for concessions to a linked aspect (power generation) that is controlled by the power generators.

Despite the potential for "trades" of this nature, this approach is limited by the requirement that the party that is initiating the request to change policy have control over a second, or linked, aspect of policy that can be offered in compensation. But this is often not the case, particularly when it is environmental groups that wish to initiate the change. For example, if the residents of Colorado's West Slope had been seeking a reduction in the amount of water extracted by Denver Water, it is not clear what they could have offered in compensation. Furthermore, even if one party was willing to accept an alteration in a government regulation in return for some concession by a second party, such an offer may not be binding on the regulator. If environmentalists were willing to accept a relaxation of regulations on timber-harvesting rates in return for an agreement by logging companies to reduce pollution of a waterway, that offer would not be binding in the absence of explicit permission from the government. This possibility is discussed in the following.

Finance Compensatory Changes

Instead of offering to accept a modification in a related aspect of policy, those who benefit from a change in policy could offer to *pay* for that change, creating the possibility of a net gain for both parties. For example, the Metropolitan Water District of Southern California (MWD), which provides water to Los Angeles, San Diego, and surrounding counties, has agreed to pay the Imperial Irrigation District (IID) to invest in a number of conservation practices, including lining canals to prevent seepage, replacing leaky canal gates, and constructing a lateral interceptor

(Haddad 2000). The water saved has become available for transfer from the IID to consumers in MWD. Similarly, downstream users, such as cities and water-bottling companies, in South America have used "water funds" to compensate communities in the Andes for preserving a clean, regular supply of water (Goldman-Benner et al. 2012).

There are numerous other situations in which beneficiaries have paid to increase water supply or reduce pollution. For example, in some cases in which cattle have polluted water supplies by disturbing river banks and stream bottoms, cities downstream have offered to stabilize banks by planting appropriate vegetation or by providing watering stations that reduced the need for cattle to drink from creeks and rivers (C. Bruce, "The use of collaborative bargaining in agricultural policy-making," working paper, University of Calgary, Canada). In others, water has been conserved in agricultural areas through the use of drip irrigation and microirrigation (Haddad 2000).

It has also been proposed that cities could build treatment plants and pipelines that would allow them to distribute their storm water and gray water to agricultural districts for use in irrigation in return for an agreement by farmers that they would reduce the amount of water they extracted from rivers. The Delta Stewardship Council (2010, 3–20), for example, reported that approximately 617×10^6 m^3 (500,000 acre/ft) of recycled water was used in California in 2002 primarily to irrigate agriculture and that the state expects to recycle approximately $2{,}467 \times 10^6$ m^3 (2 million acre/ft) by 2030.

Direct Financial Compensation

Alternatively, instead of paying for infrastructure that would allow irrigation districts to conserve water, cities and environmental groups have often been able to achieve their ends by purchasing water rights from users. In some cases, this has been done indirectly by paying farmers to leave portions of their land fallow, thereby reducing the amount of water extracted from rivers and aquifers. For example, the MWD has a 35-year agreement with the Palo Verde Irrigation District to leave between 7 and 28% of Palo Verde area farms fallow, depending on water needs (MWD 2013). In other cases, farmers have been paid to reduce their use below the level that is permitted under their water rights. In Australia, water rights have been separated from land ownership, allowing for the development of a market in water rights (Grafton et al. 2012). In at least five western states in the United States, private entities have been permitted to purchase in-stream rights (Scarborough 2010). In Montana, the Fish and Wildlife Department has negotiated a number of leases in which it pays farmers to leave specified amounts of water in-stream (Environmental Quality Council 1998).

There are, however, two important constraints on the use of financial incentives as a source of collaboration. The first of these is that many groups, particularly environmental nongovernmental organizations (NGOs), encounter the free-rider problem when trying to raise funds. As the environmental benefits of water policy are common property, each supporter of environmental change will obtain the benefits of any improvement whether he or she contributes financially. The anticipated result is that many supporters will wait for others to pay for improvements, and insufficient funds will be raised.

Also, as mentioned previously, even if the necessary funds could be raised, government regulations often prohibit private citizens from negotiating changes in public policy among themselves. For example, in many jurisdictions, the government will either not allow water rights holders to sell their rights or will make that sale very difficult. Similarly, in many cases, citizens would be prohibited from "negotiating around" regulations concerning environmental impacts.

Thus, even if the current water policy is inefficient, stakeholder participants in a collaborative bargaining process may be unable to reach a consensus concerning a change to that policy because the policy itself lacks components that can be traded against one another, because one group cannot raise the funds necessary to compensate affected stakeholders, or because the government sets constraints on the issues that can be negotiated. In the terminology used in this paper, the process would be said to lack substance, as there is nothing that stakeholders can exchange that would make all of them better off. The government will only be able to achieve its goal of satisfying this large segment of its electorate if it intervenes to ensure that every party controls a salient aspect of policy. This issue will be revisited in the following.

Government Policy

In some cases, the need for change is so widely accepted that governments do not find it necessary to obtain advice from a collaborative process before initiating a revision to policy. Nevertheless, if that policy is composed of numerous characteristics, the government may recognize that the particular *mix* of characteristics that it chooses could be inefficient, that is, that a restructuring of the policy would be preferred by all stakeholder groups. In such cases, the parties to a collaborative procedure might be able to identify changes in that policy that would benefit all of them.

In the 1980s, for example, chronic overflows from Providence, Rhode Island's, sewer system polluted Naragansett Bay to such an extent that all parties agreed that a revised policy was necessary. Initially, Providence's water supplier, the Narragansett Bay Commission (NBC), developed a detailed proposal for dealing with this issue. (Burroughs 1999). However, when this proposal was widely criticized, NBC constituted a collaborative decision-making body composed of government agencies, nongovernmental environmental organizations, and business representatives. This body considered 16 alternative techniques for meeting EPA guidelines and ultimately reached a consensus that appears to have satisfied all parties.

Similarly, in 1992, a number of residents of Quincy, California, became dissatisfied with government agencies' management of the Lassen, Plumas, and Tahoe National Forests. (Quincy Library Group 2009) They responded by forming their own collaborative process, which met at the Quincy Library (and hence became known as the Quincy Library Group). Using a consensus-building approach, this group was able to integrate the concerns of all three of the major stakeholders in that region: environmentalists, foresters, and municipalities. Again, substance was provided to their negotiations by the inefficient government policy that formed their "fallback position" or best alternative to a negotiated agreement (BATNA). Ultimately, the Quincy Library Group's proposals formed the basis of the federal Quincy Library Group Forest Recovery and Economic Stability Act of 1997.

One of the best-known examples of the use of collaboration to resolve inefficiencies in government policy arises from application of the U.S. Endangered Species Act (ESA). The goal of this act is to protect endangered species by placing very strict constraints on the use of land or water that provides habitat for listed species. It is well recognized, however, that the conditions established under the ESA often do not represent the least costly methods of achieving its goals. For example, if the habitat of an endangered species is situated in a geographical area that has a very high value for uses such as agriculture or housing, it will often be possible to find alternative techniques for preserving the identified species at lower costs than the method specified in the ESA. It might be less expensive, for

example, to preserve an aquatic species by creating an artificial wetland than by preserving an existing pond, or instead of removing a dam to restore a river's natural rate of water flow, it might be possible to regulate water releases in a way that mimicked the natural flow.

As the Fish and Wildlife Service (FWS) has recognized this source of inefficiency, it has permitted landowners to present alternative proposals—habitat conservation plans (HCPs)—for achieving the goals of the ESA; in some cases, FWS has given preference to HCPs that were constructed with the cooperation of environmental groups. In effect, the latter have been given control over aspects of the proposed policy that they can then trade for changes that benefit both them and the landowner. Although this practice arose through informal practices, it offers insight into an approach that the government might choose to introduce formally when some groups lack policy issues that can be exchanged.

The Pacific Lumber Company (PALCO) Headwaters Plan in California is a widely cited example of the use of HCPs to protect waterways (PALCO 2013). That plan was developed after the identification of four threatened fish species—Coho salmon, Chinook salmon, cutthroat trout, and steelhead trout—in streams running on PALCO land. Rather than close significant swaths of their forest, PALCO established a wide-ranging plan that, among other things, restricted timber harvests, herbicide use, and sediment movement in any area within 52 m (170 ft) of a fish-bearing stream; ensured that sufficient "large woody material" remained in streams whose fish populations required slow-moving pools; and maintained shade cover in areas that required cool water. In each case, the environmental improvements were implicitly exchanged for the right to continue logging in an area in which the latter would otherwise have been severely constricted.

The opportunity for the types of collaboration described here arises not because the government has intentionally introduced inefficient regulations, but because it lacks the information about stakeholders' subjective preferences that would allow it to create efficient policies. In this case, the government's optimal approach might be to offer stakeholders the opportunity to use collaborative negotiations to suggest improvements to new sets of regulations before those regulations were formalized. This, for example, was the purpose of the U.S. Negotiated Rulemaking Act of 1990 (Pritzker and Dalton 1995).

Within Stakeholder Groups

The demand for government-mediated collaborative negotiation may also come from the members *within* a single stakeholder group. Specifically, when two or more parties benefit from a common property resource, the fear of free riding by the other parties may prevent stakeholders from reaching agreement on how to use that resource, even though all of them would benefit from such an agreement. In such cases, the government may be able to broker a collaborative agreement simply by committing itself to the enforcement of any consensus reached by the parties.

With respect to water policy, the most frequently cited example of a common property resource is underground aquifers (Madani and Dinar 2012). Although it may be to the collective advantage of users to store water in an aquifer, to prolong the life of the aquifer and increase the users' long-term benefits, it is to each individual's advantage to rely on other users to provide that water, as there is generally no mechanism to prevent individuals from using water that was stored by others. And if most users attempt to free ride on all the others, an inefficiently small amount of water will be stored.

Even if users were to agree with one another, say, at a town hall meeting, that each of them would store water, it may prove difficult to determine whether any individual had done so, and it would prove even more difficult to ensure that individuals who had not contributed to storage would not extract later on. Only if a monitoring and enforcement mechanism can be devised will it be possible to remove the free-riding incentives in sharing groundwater problems, normally governed by the prisoner's dilemma game structure (Madani 2010). As the government generally has a comparative advantage in providing enforcement mechanisms, and may have an advantage in monitoring, the parties can be expected to be receptive to government involvement. In this case, a vote-maximizing government has an incentive to instigate collaborative negotiations among the parties, with the promise that it will enforce any consensus agreement they reach. Each party will be able to commit itself to the mutually beneficial outcome, which is for both of them to reduce their groundwater extraction (at a cost of reduced short-term benefits) to increase their long-term gains.

There is, however, an important caveat to this conclusion: although the free-rider problem is often referenced in discussions of public policy formation, it may have only limited application to the construction of *water* policy, as water may not be a common property resource. In river systems, for example, the costs generated by one set of users are not necessarily shared among all users but are born by those who live downstream. Even in lakes and oceans, water may follow currents that move in a single direction. In some aquifers, the geological formation and the resulting groundwater gradient are such that one party has better access to groundwater; therefore, its aggressive withdrawal can limit the access of the other party to water [e.g., the Mountain Aquifer shared by Israel and Palestine, with Israel having a better access to groundwater (Just and Netanyahu 2004)]. Only in some aquifers and lake systems can one argue that water rights are an absolute common property.

Summary

The purpose of this section is to ask whether there are circumstances in which there is sufficient substance to the issues involved in water policy that the parties to a collaborative negotiation process could find changes that were mutually advantageous. The authors conclude that there *are* such circumstances and that in those cases governments may find it—and often have found it—advantageous to engage stakeholders in collaborative policy-making. Nevertheless, these circumstances may not be common. Two constraints on the success of collaboration are particularly important.

First, even when there are net gains that could be made, the parties who would benefit from those gains may lack the means by which they could compensate those who would lose. Hence, the latter group would not agree to the required changes, and consensus would not be reached. This situation is most likely to arise when the issues to be resolved concern the environment because, in these cases, the proponents of change are often widely dispersed through society, making it difficult for them to collect the funds necessary to pay for change. Simply placing, say, logging companies or farmers in a room with environmental groups and asking them to construct a mutually beneficial alteration in water policy will not be successful if the environmental groups cannot offer compensation for any of the changes they request.

Second, mutually beneficial changes in water policy are sometimes severely constrained by government regulations, making it difficult for parties to offer changes in the regulated aspects of policy in return for improvements in other aspects. It is possible,

for example, for there to be restrictions on the transfer of water rights from one owner to another.

In the following section, the authors ask whether there are steps that the government might take that would increase the probability that collaborative negotiation will be successful.

Responding to Lack of Substance

The preceding section identified a number of situations in which mutually beneficial changes in water policy are available but in which the parties will *not* be able to reach agreement on those changes, primarily because those who would gain from the change have been unable to compensate those who would lose. This section considers a number of steps that the government could take that would increase the opportunities for all parties to reveal their preferences through trades.

Make Regulations Endogenous to the Bargaining Process

As a rule, the parties to collaborative negotiations are asked to treat government regulations as being fixed: the latter are exogenous to the bargaining process. Thus, a water utility that wishes to transfer water from agricultural to municipal use must work within the existing framework of laws concerning water rights. An environmental group that would be willing to accept an increase in farmers' use of pesticides, in exchange for a decrease in the latter's use of water, may be prevented from doing so by government regulations concerning both water and pesticides.

In most cases, governments will be reluctant to remove or revise regulations, as such changes will act to disadvantage at least one group in society. This is, for example, the reason why laws prohibiting the transfer of water rights from one watershed to another have been so resistant to modification. When farmers sell their rights to utilities that service distant cities, water that would otherwise have seeped into aquifers or run off into rivers is now removed from the system. Thus, there is less water available to local municipalities that obtain their drinking water from aquifers; there will be reduced supply to other farmers who are downstream; and aquatic species may be harmed by the lower flow rate and the altered temperatures of local rivers (Scarborough 2010). In addition, if the extraction of water from the watershed implies that fewer workers are employed in farming or tourism, the economies of local towns will be adversely affected (Blumm 1996; Bretsen and Hill 2009).

But note that even though the reallocation of water rights, as represented here, would leave at least one politically influential stakeholder group worse off, there may yet be reallocations that would make *every* party better off. To identify such reallocations, the government might insist that changes to water policy were to be determined by collaborative negotiation among all parties who were affected and if it committed itself to making the changes to its regulations (or legislation) that were recommended through consensus. That is, the government could make the determination of regulations "endogenous" to the bargaining process. If the supporters of the status quo could be convinced to support change, perhaps because other participants in the consensus-building process had offered offsetting benefits, it would be expected that a vote-maximizing government would be willing to make such a change.

A number of examples can be found of situations in which governments have, de facto, given stakeholders the right to recommend changes in public policy. In Oregon, for example, environmentalists argued that the amount of water that farmers were leaving in the Umatilla River was insufficient to support native fish populations. One potential solution—to transfer water from the nearby Columbia River—was prohibited by an Oregon regulation that restricted the movement of water from one watershed to another. Consistent with the vote-maximization model, however, the government offered to introduce legislation to overturn the existing regulation if a consensus could be reached among all affected parties. The result was that those parties who might otherwise have objected to the removal of water from the Columbia agreed to that removal in return for the provision of additional water to the Umatilla River ecosystem (Neumann 1996).

The HCPs that grew out of application of the Endangered Species Act (discussed previously) also represent a situation in which the government has effectively given the right to stakeholders to modify aspects of government policy. Under the HCP program, the government first announces an intention to restrict citizen behavior in some way, and then it gives stakeholders the right to recommend alterations to those restrictions on the understanding that their recommendations will be implemented. Although the initial impetus for HCPs came from informal arrangements among local stakeholders, the institutionalization of those plans by the Fish and Wildlife Service represents a devolution of regulation making to collaborative decision making.

In those cases in which disputes concern the transfer of water from agricultural use to municipal use, the approach described here, of allowing stakeholders to recommend changes in government regulations, could provide the conditions under which collaborative negotiation would produce socially desirable outcomes. As water utilities are generally able to raise the funds necessary to compensate those who would be harmed by a transfer of water, and if all stakeholder groups must accept the collaborative outcome before the government will be willing to implement it, the government could expect that there would be no major objections to any such outcome.

When disputes concern the preservation of environmental values, however, the situation is somewhat different. Environmentalists are not normally seeking to induce rights holders such as farmers, loggers, and miners to do something that regulations have *prohibited*; therefore, they cannot offer to accept relaxation of those regulations in return for environmental concessions. Instead, environmentalists are generally seeking to induce industry and farm groups to *stop* doing something that has been *permitted*, such as extracting water from a watershed or using certain types of fertilizers or pesticides, and this cannot be achieved by offering to accept a change in current regulations. Rather, it requires that environmentalists be able to offer some positive inducement, such as financial compensation. But, as was argued previously, the free-rider problem makes it difficult for them to raise the required funds. In these circumstances, collaborative negotiation does not provide a framework in which substantial environmental progress can be expected.

Permit the Introduction of "External" Factors

In cases in which there is no efficiency-improving reallocation of *water* uses, it may be in the government's interest to expand the number of issues under consideration by allowing stakeholders to benefit from the possibility of "issue linkage," in which changes in water use can be traded for changes in *nonwater*-related uses. For example, the government might allow environmentalists to recommend that farmers be permitted to develop portions of their land as residential "acreages" in return for an agreement that they would give up some of their water rights. Or urban construction firms might be allowed to increase the density of their residential developments if they were to pay for the construction of wetlands. Expanding the bargaining set through issue linkage

(Just and Netanyahu 2004; Madani 2011; Madani and Hipel 2011) in this way could provide groups such as environmentalists and other NGOs with the tradable assets necessary to induce other stakeholders to alter their behavior.

The collaborative negotiation process could play two roles in identifying the types of nonwater uses that might be traded. First, it could provide a forum in which the parties that were being asked to surrender their water rights would identify the types of concessions that they would be willing to accept in return. Second, if all of the major stakeholder groups were represented in the collaborative process, that process would provide legitimacy to any program that was instituted; therefore, it would increase the probability that such a program would meet the government's vote-maximization goal.

From the government's point of view, an additional advantage to the introduction of nonwater issues is that the latter can often be chosen in such a way that any costs that are imposed are widely dispersed across citizens, thereby minimizing political opposition. For example, the government of New Jersey gave urban real-estate developers the right to increase the density of their projects if they paid landowners in the Pinelands region to leave environmentally sensitive land undeveloped (Johnston and Madison 1997; New Jersey Pinelands Commission 2013). This approach provided direct gains to three major voter groups—environmentalists, farmers, and real-estate developers—while avoiding the necessity to raise taxes and therefore providing an indirect gain to a fourth group—taxpayers. At the same time, the "costs" of this proposal—increased residential density—were felt by a relatively disorganized group—homeowners—many of whom may not have been aware of the connection between the Pinelands project and urban density. In this way, the government was able, on the one hand, to offer benefits to large, vocal segments of the electorate while, on the other hand, keeping opposition to a minimum.

The necessary condition for the success of issue linkage is the existence of a water-related problem in which Party A has dominance over Party B and a nonwater-related (or sometimes water-related) problem in which Party B has dominance over Party A. Linkage of two problems with asymmetric power distributions results in a larger set of issues with power symmetry in which trades become possible and mutually beneficial. Although situations in which governments have introduced nonwater-related issues to spur collaborative negotiations are not common, at the international level linkage to nonenvironmental issues has been successfully used as a catalyst to consensus development in environmental negotiations (Folmer et al. 1993). Therefore, issue linkage does appear to represent a technique that governments might be induced to investigate.

Provide Financial Incentives

In many cases, it is only possible to ensure that a change in policy leaves no stakeholder group worse off if financial compensation is transferred from one party to another. If the beneficiaries of a policy change are, say, municipalities downstream, and if those municipalities are represented in the collaborative process, their offer of compensation to upstream stakeholders could form part of the consensus outcome. In many cases, however, the proponents of changes in policy may lack the ability to raise funds to compensate those who have been harmed. For example, if agricultural practices have created a threat to an ecosystem or recreational area, the value placed by citizens on protection of that system or area may exceed the cost of modifying agricultural practices. The environmental and recreational groups participating in the collaborative negotiations, however, will often lack access to sufficient funds to compensate farmers. Those funds may have to be provided from taxes.

In such cases, a vote-maximizing government can be expected to wish, first, to find some method for determining whether the benefits from a change in policy exceed the cost of the taxes that will have to be raised and, second, to ensure that voters find the increase in taxes to be acceptable. This section considers two approaches that might be adopted by such a government.

Establish a Project Fund

A substantial percentage of water conflicts are local in nature, requiring only relatively small amounts of money to rectify. For example, creeks often become muddied by cattle, dams act to alter seasonal water flows, leaks from septic tanks pollute nearby lakes, logging practices affect spawning grounds, and simple neglect may result in municipal waterways becoming polluted. In such cases, a vote-maximizing government might establish a fund that would provide financing for projects that had been designed collaboratively by stakeholders. If such a fund was small enough, say, on the order of tens of millions of dollars, its impact on the average tax bill might not be noticeable by most taxpayers and, therefore, could not be expected to have a significant effect on their voting behavior. At the same time, those who were involved in the collaborative process would see immediate net benefits from their decisions, perhaps increasing the likelihood they would vote for the government.

This approach is widely used to resolve local issues concerning water pollution. Lubell and Leach (2005) reported that, in the United States, there were over a thousand collaborative organizations they called *watershed partnerships*, of which approximately 150 were in California (Leach et al. 2002); and Konisky and Beierle (2001, 822) estimated there might be "as many as 2,500 groups addressing issues on a watershed basis." Typically, these partnerships are composed of representatives of local environmental groups, civic governments, and industries, and they use consensus-based approaches to develop programs to improve water quality. In most cases, funding is obtained by making applications to programs established by state and federal government agencies, such as the EPA. A typical example is Utah's Jordan River Watershed Council, which reported in 2009 that it had applied to eight federal, state, and municipal agencies for funding of its water quality management plan (Arens et al. 2010).

A potential drawback to this approach is that it provides no means for determining whether the benefits of the proposed projects exceed the costs. If a collaborative group is told that it is eligible for, say, a $1 million grant, its incentive is to free ride on taxpayers, that is, to devise a set of expenditures that exhaust that grant. There is no incentive to economize and no incentive to ensure that the expenditures are "worth" $1 million. Conversely, if the group identifies investments that are worth more than $1 million, there may be no means of funding them.

But from the perspective of a vote-maximizing government, this drawback may be of only minor concern. In the authors' model, the government's goal is not to maximize net social benefits but to remove minor irritants, such as polluted streams and river banks that have become eyesores, in a way that satisfies local voters without raising significant objections from taxpayer groups. Indeed, in some jurisdictions, such as Oregon (Smith 2009), objections from taxpayer organizations are minimized by raising funds through the state lottery system, which is often not perceived to be a tax-raising body.

As the amount of taxpayers' money being devoted to water policy increases, however, the differential between the costs of water projects and their benefits will also increase, making it increasingly likely that taxpayer groups will become aware of the expenditures that are being made with their funds and ensuring that policy

changes will no longer "fly under the radar." In the case of costly proposals, therefore, it is essential that some method be found for ensuring that those who will be affected financially are effectively represented in the collaborative process.

Involve Taxpayer Groups Directly

A vote-maximizing government will face two goals with respect to projects that require significant levels of public funding. On the one hand, it has an incentive to identify projects for which the benefits exceed the costs, as implementation of such projects will raise its standing among voters. On the other hand, it will wish to avoid introducing projects that impose costs that significantly exceed the benefits enjoyed by groups that are large or vocal. In some cases, but not all, a carefully constructed collaborative process may assist the government in reaching both goals.

The probability of achieving these goals can be maximized by ensuring that it is not only those who will benefit from any change in policy who are represented on the collaborative process, but also those who will bear the costs. In this case, a consensus will be reached if the latter group receives a sufficient share of the benefits that it is compensated for its agreement to the negotiated outcome. In general, therefore, it would be expected that a consensus agreement would require that the cost of a change in policy is born by those who benefit from it. For example, a policy to purchase water from rights holders and build a pipeline to transfer that water to urban areas might require that it is residents of the latter who pay for this policy. This is one reason that agreement between Denver Water and the residents of the West Slope (discussed previously) was successful—it was Denver Water and its customers who paid for the water that they received. It may also be the reason that the 1999 CALFED agreement was defeated in a referendum—many of the costs of the proposal would have been born by taxpayers who did not live in the districts (primarily in the Los Angeles area) that would have benefitted.

In cases in which the beneficiaries of a project are spread throughout the electorate, it will prove difficult to draw a close connection between those who pay for that project and those who benefit from it. For example, if a change in policy is intended to improve the environment, it will not be possible to tax only those who support that change, as those individuals cannot be identified. In such a case, a vote-maximizing government could only be expected to send a dispute to collaborative negotiation if it anticipated that any proposal that would arise from that process would be so broadly supported that it would receive little opposition from taxpayers. When such an assumption cannot be made, using a consensus-building process becomes risky for the government, as it becomes difficult to include the individuals who will pay for any outcome recommended by that process. This appears, for example, to be the reason that collaborative negotiation has failed to reach an agreement concerning the rescue of the Salton Sea—the taxes required are substantial and would be incurred by voters, who have little knowledge of the issue (Pitzer 2013; Delfino 2006). Hence, the government does not know how taxpayers will respond to such a recommendation, and for more than a decade, it has stymied all serious attempts to bring a proposal to voters.

In such cases, dispersed groups, such as environmentalists, can be expected to find that their best approach is not to press for collaboration but to engage instead in attempts to change environmental legislation. Ironically, once such legislation has been approved, environmental groups are provided with the leverage necessary to make it worth their while to participate in collaborative processes. For example, in the United States, it has been the opportunity to accept relaxation in various provisions of the Endangered Species Act and the Clean Water Act that has given environmental groups the bargaining power to obtain concessions from land developers, farmers, and cities.

Final Remarks

One of the most commonly recommended methods for resolving disputes about water policy is to invite the affected stakeholder groups to collaborate on the development of new policy. This technique, which the authors have called *collaborative negotiation*, is particularly attractive to governments as they will have some certainty that if they implement any agreement that is reached through consensus, they will meet relatively little opposition from voters.

Nevertheless, many collaborative negotiation processes have been unsuccessful because stakeholders have found it difficult to reach agreement. Observers have often attributed these failures to flaws in the collaborative *process*, and they have recommended procedural changes such as providing skilled facilitators, offering financial assistance for technical research, and encouraging parties to negotiate over interests, not positions. But introduction of these improvements has had only very limited success.

It is argued that this failure has arisen because the designers of collaborative negotiations have given too little attention to one of the main aspects of that process: that before any party can expect the other participants to accept a proposed policy change, it must have the ability or authority to offer compensation to those parties that will be negatively affected. The authors refer to this requirement as the *substance* of a negotiating process. No amount of restructuring of the bargaining procedures can be expected to result in agreement among the parties if they do not have access to concessions that can be traded among them.

The goals of this paper have been, first, to investigate the circumstances under which disputes over water policy can be expected to have substance in this sense and, second, to inquire whether there are policies the government could implement to provide substance when it would otherwise be lacking.

With respect to the first of these questions, the authors find that collaborative negotiation is most likely to be successful when the government has given the parties the authority to revise government regulations in return for other concessions or when the party that is proposing a change to policy is able to offer financial compensation to those who would be harmed by that change. The authors also find, however, that governments normally do not allow parties to use changes in regulations as leverage and that the members of many stakeholder groups are so dispersed through the economy that it is not possible to raise funds from them to compensate other groups for proposed changes to policy. Thus, even if the benefits of a policy change would exceed the costs, a collaborative negotiation process will fail to produce a consensus if the government does no more than provide a *process* through which negotiation among stakeholder groups might take place.

Instead, it is suggested that governments take active steps to ensure that any party that is willing to trade a change in one aspect of water policy for another is able to reveal that preference to the other parties to the negotiating process. Such steps were identified in the paper: (1) the government might signal that if all stakeholders were present at the negotiating table, it would be willing to make any change to government regulations that were recommended unanimously; (2) it could "link" nonwater-related issues to the negotiations over water policy to provide concessions that could be made; and (3) it might provide funds to the negotiators to allow for compensation to be made to those parties that agreed to costly concessions.

The authors find sufficient examples of the first two of these interventions that they are confident that their further use could expand the application of collaborative processes. With respect to the provision of government funding, however, the authors conclude that if the stakeholder groups that recommend a change in policy are sufficiently dispersed through the population that it is not possible to impose taxes on those groups alone, then any tax that has been imposed to pay for a policy change will impose costs on groups that do not benefit, and a consensus may not be reached. For example, collaborative negotiation may not yield a consensus agreement when conservationists propose that taxes be used to compensate logging companies for the closure of roads on public lands. Although both the conservation groups and logging companies may be agreeable to such a proposal, those taxpayers who do not share conservationists' preferences will consider themselves to be disadvantaged, and they will block a consensus. For this reason, it appears that, in many situations, the collaborative process will lack substance, and it will be in the interests of groups like environmentalists' to work outside that process to achieve their goals.

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