Environmental Planning and Cooperative Behavior
Catalyzing Sustainable Consensus

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Resource scarcity has often been framed as a leading cause of civil strife and conflict by political scientists, sociologists, and planners alike (Lewicki, Gray, and Elliot 2002; Dobkowski and Wallimann 1998). Poverty as a result of droughts, or a general paucity of natural endowments, has frequently been correlated with a rise of belligerence in societies—environmental literature is also rife with terms such as *resource wars, water wars, green wars*, and so on.[1] Planners have generally shielded themselves from such discourse by relegating these matters largely to the domain of political theorists. However, there is a growing realization among planners that underlying ecological indicators are the means by which communities often express their concerns at planning forums (Beatley and Manning 1997). Even so, the environmental concerns that are expressed in the planning arena are often taken in isolation of the overall sociopolitical conflict that may be undermining the fulfillment of the planning objective. While scholars of planning have a strong literature on collaboration and participation for achieving cooperative outcomes, the focus of these writings has generally been on resolving immediate disputes (Forester 1999; Gray 1991; Healey 1997; Innes 1996; Susskind et al. 1999) rather than on going the next measure to try to use the cooperative process for resolving larger conflicts. While some recent writings are beginning to focus on the wider applicability of planning processes in galvanizing adversaries toward peace (Booher and Innes 2002; Mandell 1999), this literature has not focused on environmental planning as an operational arena. When dealing with environmental criteria, issues are usually studied on a technical basis or socio-specific basis rather than using them instrumentally to resolve larger conflicts that would in turn facilitate the proposed plan (Margerum and Hooper 2001).

The political science literature has reinforced this approach by focusing on the negative social consequences of resource scarcity. Recently, the confluence of environmental discourse and the literature on international security has led to a persistent hypothesis that environmental concerns can very often be at the core of interstate conflicts (Homer-Dixon 1999; Kaplan 2000; Walton 1993). While there are different schools of thought within this area of study, all of them begin with the proposition that environmental resources may be initiators of conflict. Indeed, even a study on conflict

Abstract

Environmental concerns have been framed in the planning profession as manifestations of resource scarcity, and hence a contributing factor in community conflicts. While mismanaged environmental scarcity can certainly lead to conflict, there is also considerable potential to stimulate cooperation on the basis of environmental scarcity itself. In the language of game theory, the latter outcome can be obtained by converting "dilemmas of common competing interests" to "dilemmas of common aversion." The cooperation which would result from the use of environmental concerns as a binding element in conflicts among parties, is likely to catalyze a more "sustainable consensus"—a robust contract between erstwhile adversaries. Planners are in a unique position to glean the positive attributes of environmental indicators since they can bridge technical knowledge of environmental impact with an understanding of sociopolitical context at community consultation forums. This paper attempts to provide the theoretical basis for this approach and develop examples of how such a strategy for conflict resolution may be implemented.

Keywords: *environmental security; resource wars; consensus catalysis; common aversions; linkage politics; epistemic community; escalation*

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management conducted by the United Nations Environment Program focused only on the dispute-oriented properties of environmental issues (Schwartz and Singh 1999).[2] My aim in this article is to challenge this line of thought and to explore ways in which resource scarcity and environmental protection of resources can in fact be catalysts for resolving otherwise intractable disputes. Furthermore, this approach should permeate the planning profession so that environmental criteria are not thought of as one of many variables within a complex planning conflict but, rather, as a preferred avenue of engagement and effective implementation of plans.

Although the conventional line of study may be largely accurate in certain cases of absolute resource scarcity and zero-sum games involving a limited resource, in conflicts with multiple causality, environmental factors can in fact become catalysts for cooperation.[3]

The counterpoint to the environmental security literature has been offered by scholars such as Deudney and Matthew (1998). However, this literature tends to approach the issue by underplaying the extent of environmental harm and presenting cornucopian arguments. Still another approach has been posited by scholars such as Wolf (1998) who rely on historiographic analysis to show empirically that the triggers of past conflict can seldom be traced to environmental scarcity concerns, particularly in the case of water.

I will try to take the argument a step further and argue that environmental issues can, more tangibly, be reasons for cooperation. Not only can the inclusion of environmental issues in negotiations mitigate conflict, it can also lead to a more lasting peace than what might otherwise be obtained. The cooperation that ensues is thus sustainable in two ways—first, promoting environmentally viable outcomes in terms of planning criteria and, second, being able to maintain a cooperative bond among potentially adversarial parties. The use of the word *sustainable* to describe this process implies that there is a self-correcting mechanism built into a contract that has environmental linkages. Whenever there is a proclivity for violation of a contract, the environmental basis for the cooperation prevents the party from going forward with that violation because there is mutual aversion of environmental harm. Also, all too often, the cases that are framed as "conflicts" over resources are in fact conflicts over identity and other intangibles. Environmental issues may be the means by which the parties are brought face to face to resolve their differences, and hence the erroneous impression is cast that environmental concerns are causing the conflict.

Nevertheless this hypothesis is not an assertion of "win-win" environmentalism. Very specific conditions are needed for this phenomenon of "cooperative catalysis" to occur. The term *catalysis* has its origins in chemistry and is defined as a process by which a chemical can stimulate a reaction between two relatively inertial substances. Just as chemical catalytic processes require specific temperature or pressure criteria for efficacy, an active negotiation climate with appropriate mediation may be required to make the parties realize the mutual gains from keeping environmental matters in mind.

There are some examples of consensus catalysis using environmental factors, for example, friendship parks for species conservation, that are being used as goodwill gestures by otherwise adversarial countries. However, much of the work in this regard tends to only offer these environmental issues as somewhat superficial icebreakers that are completely exogenous and relatively inconsequential to the conflict at hand. Fariello (1999) has posited the idea in a recent paper that uses the peace parks between Peru and Ecuador and the proposed park between North and South Korea as examples.[4] However, she prefaces her proposition by stating that a basis for mutual problem solving can be developed when "environmental issues . . . are neither a component of the conflict nor of vital interest to the parties."[5] Thus, her approach tends to underplay the salience of environmental issues, even though she describes peace parks as an example of cooperative catalysis. As discussed later in this article, such parks are promising initiatives that can build trust and should be more central to the overall conflict resolution effort. The aim of this article is to look at environmental issues as integral components of a multiple-causality conflict and thereby explore opportunities for using them as a means of fostering and sustaining cooperation.

▶ The Theoretical Basis for Cooperation

Cooperation versus conflict has been a seminal area of social science inquiry because of the critical role the dialectic between these two phenomena plays in human societies. This essential debate in social theory is broadly characterized by variations on two fundamental schools of thought—realism and liberalism.[6] Both schools of thought positively consider stakeholders to be purposive and rational actors. However, realists maintain that relations between stakeholders are premised on fear and mistrust and that anarchy is the norm. Any cooperation that may occur is usually coerced in some way and is motivated by a desire to perpetuate power struggles.[7] In contrast, liberals believe that self-interested actors engage in cooperation as the norm and that conflicts are a periodic anomaly. Liberal thought has more recently given way to neoliberal institutionalism that attempts to explain the emergence of conflict, particularly between nations, as primarily a problem of compliance. Realists argue that such an explanation still begs the question as to why there is no compliance. Liberals

Table 1.
Conventional prisoners' dilemma approach
to environmental issues: Dilemmas of
common competitive interests.

	B1 *(Cooperate)*	B2 *(Not Cooperate)*[a]
A1 (cooperate)	3, 3	1, 4
A2 (not cooperate)[a]	4, 1	2, 2[b]

Note: Cell numbers refer to ordinally ranked preferences (4 = *best*, 1 = *worst*). The first number in each cell refers to A's preference, and the second number in each cell refers to B's preference.
a. Dominant strategy.
b. Equilibrium outcome.

Table 2.
Dilemmas of common aversion
and divergent interests.

	B1 *(Cooperate)*[a]	B2 *(Not Cooperate)*
A1 (cooperate)[a]	3, 3	2, 4[b]
A2 (not cooperate)	4, 2[b]	1, 1

Note: Cell numbers refer to ordinally ranked preferences (4 = *best*, 1 = *worst*). The first number in each cell refers to A's preference, and the second number in each cell refers to B's preference.
a. Dominant strategy.
b. Equilibrium outcome.

have usually approached such attacks by purporting normative theories of how cooperation can be achieved.[8]

Conflict and cooperation are often analyzed by economists from both liberal and realist positions by using game theoretic models. While a detailed description of such analyses is beyond the scope of this article, it is important to keep in mind that such tools are widely used in formulating theories and that they have certain advantages and limitations when dealing with environmental resource concerns.

Using a tempered mix of game theory and political science discourse, Stein (1993) presents the question of *Why Nations Cooperate* as a series of dilemmas of strategic choice, exemplified by two simple games (Tables 1 and 2). For the purposes of this article, it is only important to understand which of the dilemmas of strategic choice is most appropriate for environmental issues. A and B represent two contending parties who have a choice to cooperate or not cooperate depending on their interests. Ever since Garret Hardin (1968) published his celebrated paper on "Tragedy of the Commons," there has generally been a propensity to frame environmental problems as dilemmas of common competing interest (Table 1). Referring to the classic environmental example of a common property resource (a grazed grassland), Stein stated that

> this is not, as it may seem at first, a dilemma of common aversions in which the actors' least preferred outcome is the depletion of a valuable resource (through overgrazing). Rather each actor most prefers to be the only user of a common resource. (P. 41)[9]

While Stein's (1993) assertion that the grazing example is a dilemma of common interests may be an accurate representation of societies without environmental knowledge, it may be argued that in this day and age, with increasing awareness of environmental issues, the dilemma is indeed one of common aversions. The common aversion in this case is the depletion of scarce resources.

Perhaps the most realistic representation using this typology would be Table 2, which represents a dilemma of common aversions but divergent interests. Indeed, many of the players for whom one might try to catalyze consensus fall into this predicament. There are two equilibrium outcomes in this case. However, each player has a preference for a different outcome. The key here is to be able to coordinate regimes. An example of this situation, to better illustrate the dynamic (also used by Stein 1993), would be two cars at an intersection that has no stop light. Both drivers would like to avoid a collision but neither would like to wait. Therefore, a regime would be needed to ensure that the situation can be contextually managed. In the United States, this is done by giving the person on the right the right of way. Both players are likely to agree since there is a chance that either of them could be in that kind of situation over time.

As described in the next section, the element of time is critically important in these games and particularly in environmental decision making. The real challenge for consensus builders is to frame environmental harm as a common aversion regardless of whether interests on other matters are divergent.

► **Environmental Cooperation**
  and Consensus Catalysis

The next question to ask is whether environmental concerns have certain characteristics that are conducive to consensus catalysis. A pioneering study in the field of environmental cooperation is Peter Haas's (1990) treatise on the Mediterranean Action Plan. Haas posits that since environmental issues are often predicated on scientific knowledge, they can lead to the emergence of "epistemic communities," which are able to dissociate themselves from political bickering and catalyze cooperation. He argues that it was the emergence of such communities of knowledge that led to the Med Plan and also to

other agreements such as the Montreal Protocol on Ozone depletion.

Haas has been criticized for inferring too much from his observations about the plan. Zartman (1992) suggests that "the much-vaunted epistemic community is a result, rather than a motor, of environmental negotiations." Susskind (1994) has argued that Haas's (1990) model breaks down when actual policy responses to environmental harms are being negotiated. He goes on to state that this hypothesis has a potential for relegating scientists to the role of another interest group. Therefore, any potential for cooperation through the supremacy of science is likely to alienate developing countries that are all too often complaining about disparities in scientific and technological expertise.

These critiques of Haas's (1990) theory are valid in terms of empirical observations of certain international treaty regimes. However, they tend to miss his larger point that environmental issues have at least a potential for injecting a degree of objective and depoliticized discourse in negotiations.

As noted earlier, environmental harm can be considered a mutual aversion for stakeholders in conflicts, and thus there are some prospects for potential cooperation based on this premise as well. However, as illustrated by the example of cars at the cross-section, to have a stable outcome from such a game, there must be some sort of agreement about how to share benefits of cooperation *over time*. Indeed, game theorists have known for decades that iterative games reduce the likelihood of defection even in prisoners' dilemmas.

In his landmark simulation study of cooperative behavior Axelrod (1985, 126) stated that "mutual cooperation can be stable if the future is sufficiently important relative to the present." He termed this phenomenon "the shadow of the future." Such a concept is reminiscent of sustainable development discourse that is often defined in terms of intergenerational equity (Weiss 1989). Environmental impact of human activities are often realized in the long term, which is a perennial problem for economists who are faced with the risk-averse convention of discounting the future—thereby reducing the present value of environmental benefits that will accrue in the future (Heal 1998).

The arguments thus far have established that cooperation can be catalyzed if the future is considered as important as the present (enlarging the shadow of the future). At the same time, environmental issues are also likely to be considered more important if the future is considered as important as the present. Initially, the preceding two statements appear to be congruent, and hence it may be argued that the problem is how to make people appreciate the future. The argument presented here suggests that there is a feedback system vis-à-vis environmental concerns that makes organisms, including humans, realize that the future is indeed important. This feedback system may be a result of genetic programming in animals that want to perpetuate their genes or it may be predicated in ethical notions of sustainability for future generations. It is irrelevant whether one thinks of this system as genetically determined or a learned construct.[10] The disagreements within human societies are not about whether human beings want future generations to be prosperous (particularly one's own progeny) but rather about whether there is a threat to their existence in the future and how to balance the likelihood of such a threat with present costs.

If potential adversaries are able to think of future consequences of present actions because of their common aversion to environmental harms, there is a greater likelihood that they may also bring the same outlook to other points of contention. Nevertheless, some tangible ways by which the shadow of the future can be better appreciated need to be developed. An international conference on the subject of cooperation held at Princeton University in 1984 (Oye 1985) concluded that the key ways of enlarging the shadow of the future are as follows:

- long-time horizons for agreements,
- regularity of stakes,
- reliability of information about the others' actions, and
- quick feedback about changes in the others' actions.

These are all key factors which are being considered important in the growing literature on environmental conflict resolution as well (Susskind 1994; Napier 1998; Rydin 2003).

However, the careful critic may argue that much of the argument presented here assumes that potential adversaries would somehow link environmental issues to other disputes. Indeed, it is quite possible to have cooperation on resource issues without having any agreement on other matters and to persist with hostility on other fronts. How can one conclude that environmental issues can have any functionality in the context of resolving larger disputes? In the context of water, scholars such as Miriam Lowi (1995) have argued against the "hydro-functionalist perspective" by giving examples of countries such as India and Pakistan that have ostensibly cooperated on water issues through the Indus Basin Treaty but have continued to remain archenemies in the larger scheme of things. As Lowi states in the conclusion of her book *Water and Power*,

> Given the experiences in resolving riparian disputes in both the Jordan and the Indus Basins, the realist critics of functionalism are correct: states that are adversaries in the high politics of war and diplomacy do not allow extensive collaboration in the sphere of "low politics," centered around economic and welfare issues. In fact the spillover effect runs in

the opposite direction: economic and welfare collaboration is retarded by "high politics" conflicts between states. (P. 196)

The problem lies with the way in which governments consider water, and other environmental issues, to be "low politics." There is still a propensity for political decision makers to think of environmental problems as "luxury" agenda concerns that are deemed to be exogenous to the immediate needs of the populace. However, literature on sustainability often asserts that in the larger scheme of development and livelihood, environmental issues are integral and entirely consequential to the basic needs of a population such as food and shelter. Even in the case of the Indus Basin, it may be argued that the treaty is what brought the two countries closer, and in its absence, the situation could have been much worse. This is where planners can play an integral role in providing a forum for linking environmental concerns to larger disputes.

In other words, the problem is one of realizing that environmental harm is an issue of common aversion in the most profound sense to various stakeholders in a conflict. Within the context of the Middle East, there has been considerable progress in water and environmental talks since Lowi's (1995) aforementioned treatise on the topic. Even in the current climate of intense territorial conflict in the Middle East, among the few forums where the two parties are willing to come together for dialogue pertain to environmental matters. During the peak of hostility during the current Intifada, the Joint Water Commissions of the two sides met at the Erez Crossing in January 2001 and issued a joint statement stating that "both sides wish to take this opportunity to reiterate their commitment to continued cooperation in the water and wastewater spheres."[11]

To add another dimension to this debate, Lejano and Davos (1999) have tried to use analytically rigorous game theoretic models to study cooperative solutions for sustainable water resource management in Southern California, and they find that cooperation is sustainable given certain key insights about environmental equity. Such issues of equity are frequently addressed by planners and, when brought to the decision-making process, can greatly reduce conflict between erstwhile adversaries. For example, the role of planners as mediators, particularly in the area of mediating asymmetric disputes pertaining to siting of environmentally harmful facilities, holds the potential for further benefit in bringing together divided communities (Pijawka et al. 1998). However, this is an area that needs further empirical work to ascertain the efficacy of such conscious efforts by planners.

Cooperation on environmental grounds can eventually lead to a better sense of communication and bring the parties closer to resolving other disputes after various momentary impasses. The concept of "trust," which is arguably an essential element of cooperation, can also be engendered through interaction of parties over environmental matters.[12] However, some more substantive ways of operationalizing this trust need to be considered. Linkage studies, a hybrid field of game theory and comparative politics, is a particularly promising area of research in providing a compelling analytic framework to better understand consensus catalysis.

► **Linkage Politics**

The first organized effort to understand issue linkage in political science was initiated by James Rosenau (1969) and culminated in a volume titled *Linkage Politics.* However, this book and subsequent work in the arena of linkage theory and field theory[13] were largely focused on understanding the linkage between domestic politics and international relations.

At the broadest level, issue linkage can be considered a means of catalyzing consensus through Thomas Schelling's (1980, 25) "focal points," which he defined as "intuitively perceived mutual expectations, shared appreciations, preoccupations, obsessions, and sensitivities to suggestion." Environmental concerns could certainly be conceived as having the characteristics of focal points if appropriately articulated and understood by all players in a conflict.

Linkage can also be thought of in terms of a substantive means of enlarging the zone of agreement between parties. This area of negotiation theory has been admirably studied by James Sebenius (1983), building on the analytically rigorous work of Howard Raiffa (1980). In a classic paper titled "Negotiation Arithmetic" Sebenius used vector analysis to show how issue linkage can lead to constructive and destructive engagement in negotiations. This was a prelude to his later work on the sequencing of issues in negotiations (Sebenius 1996). Clearly, there are times when linking a certain intractable issue can lead to deadlock in negotiations. A sterling example of this phenomenon is the linkage of Jerusalem's independence in the Middle East Peace Process. The parties agreed earlier on to de-link this issue to avoid deadlock and stalemate. Since it has been linked again to the process, the agreements have begun to unravel. However, there are also numerous instances when issue linkage can clearly increase the zone of agreement and allow for agreement between conflicting parties who would otherwise not achieve a resolution.

Figure 1 shows a stylized representation of how the linkage of two issues within an environmental context can lead to a zone of agreement, whereas a separation of the issues would lead to deadlock. Debt-for-nature swaps are an interesting example of such issue linkage that can be constructive and

have been used in the context of interna-
tional planning efforts.[14] If one considers
the issues individually, developed coun-
tries value conservation efforts along the
vector segment OA. On the other hand,
developing countries value debt relief
along segment OC. Individual consider-
ation would not lead to any zone of agree-
ment. However, linking the issues, or tak-
ing their vector sum, leads to the
segments ABC, and this allows for a
Pareto-optimal zone of agreement to
emerge in the northeast agreement quad-
rant, shown by the bold segments. Such
arrangements have indeed worked in
countries such as Bolivia, whereas before

Value for Developed Countries

Agreement Quadrant

A

Conservation

B

O

Debt Relief

C

Value for Developing Countries

Figure 1.   *Vector diagram of constructive issue linkage (after Sebenius 1983).*

there would be only debates over debt restructuring on one
hand and environmental activism against government polices
on the other (Occhiolini 1990).

  However, this approach basically reflects a bargaining out-
come that does not necessarily mean that potentially
adversarial parties could agree upon issue linkage per se, par-
ticularly if their BATNA (Best Alternative to a Negotiated
Agreement) is relatively high—in other words, the opportu-
nity cost for no agreement is relatively low.

  Moreover, the factors that can lead to sustainable coopera-
tion beyond such bargaining regimes still need to be explored.
To do so, a discussion of time horizons and discount rates is
essential. To test the sustainability of linkages, Susanne
Lohmann (1997) has done an elaborate study of issue and
player linkage to provide a conceptual framework within
which to think about sustainable cooperation.

  Lohmann (1997) predicates the sustainability of coopera-
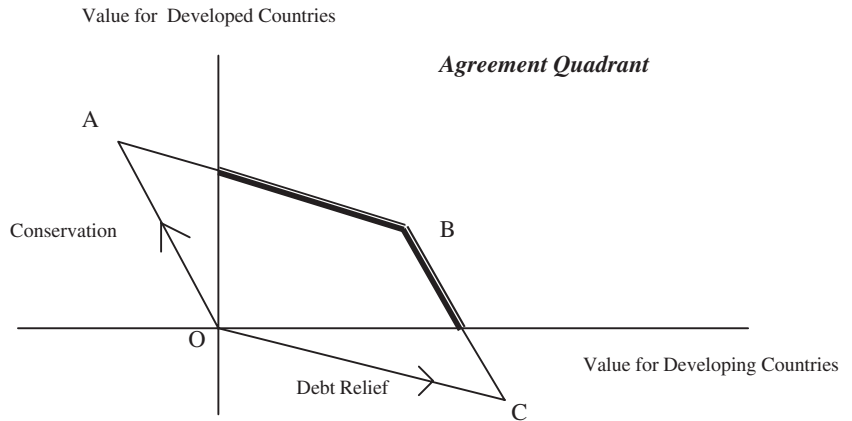tion on a "discount factor' (δ), which essentially measures how

much the future is valued by players relative to the present. A
lower value of a discount factor indicates a higher discount rate
(future is more heavily discounted relative to the present) and
vice versa. The scale she has formulated is quite instructive in
understanding the dynamics of cooperation and could indeed
be a starting point for further investigation of her theory
within an environmental framework.

  Figure 2 shows her scale for issue linkage reflecting the
challenge for potential adversaries to cooperate relative to
their perceived discount factors. More important, it shows us
that there are times when issue linkage works and does not
work, all within a spectrum of discount factors—simply how
much we value the future. Issue de-linkage is likely to be more
successful at lower discount factors, and issue linkage is sustain-
able on both issues with slightly higher discount factors.

  The key is to find out where on the spectrum parties lie and
how to move them in the direction of constructive engage-
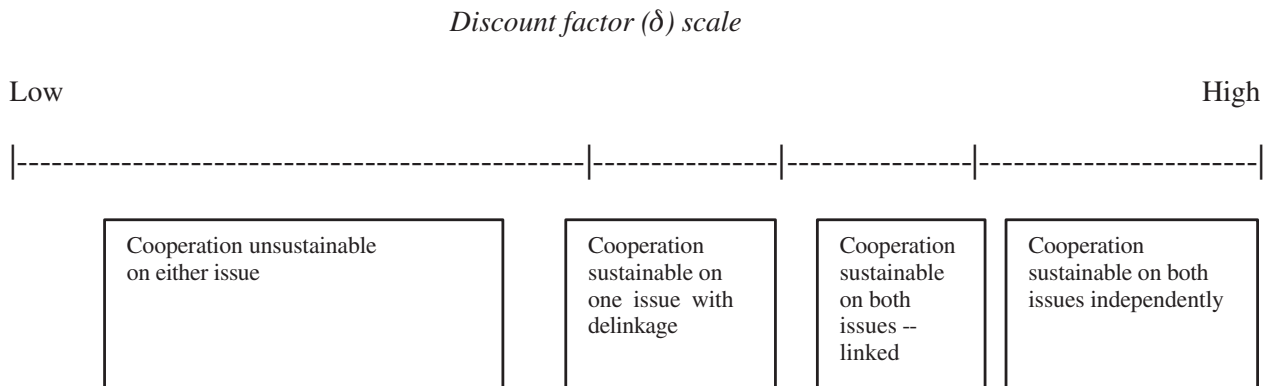ment. To move from a discussion of linkage to a discussion of

Discount factor (δ) scale

Low   High

|---|---------------|---------------|---------------------|

| Cooperation unsustainable on either issue | Cooperation sustainable on one issue with delinkage | Cooperation sustainable on both issues -- linked | Cooperation sustainable on both issues independently |

Figure 2.   *Issue linkage and sustainable cooperation (after Lohmann 1997).*

Table 3.
The dynamics of issue linkage.

Linkage Type	Objective Reality	Target Decision Makers' Perception	Basis for Issue Connections	Outcome
A: Substantive link	Connected	Connected	Knowledge	Stable issue area
B: Failed substantive link (perceived as tactical)	Connected	Unconnected	Power	Temporary solution to externalities
C: Tactical link	Unconnected	Unconnected	Power	Unstable issue area
D: Failed tactical link (perceived as substantive)	Unconnected	Connected	Misunderstanding	Contingent (unstable issue area if consensual knowledge changes)

Source: Aggarwal (1998).

how environmental cooperation may bring adversaries together, it is instructive to also examine the framework for issue linkage presented in Table 3. This is largely derived from the work of Vinod Aggarwal (1998), who is interested in studying ways in which institutions bargain with each other. Since many environmental issues are handled institutionally, this may be a particularly prescient framework for us to consider. The key problem in cases of environmental linkage arises when stakeholders do not perceive a substantive link (A) and instead think that environmental issues are tactical and opportunistic (B). Environmental issues are seldom in Categories C or D, particularly if one is willing to take a long-term view of economic and social problems.

Planners can play an important role in relaying the objective reality of environmental concerns that may otherwise be perceived as a tactical link and hence not made part of the overall conflict resolution process.

► Preventing Conflict Escalation: Process Issues

Finally, to understand the dynamics of conflict resolution processes wherein environmental criteria may be included, it is instructive to examine various ways in which destructive or violent conflicts have been empirically prevented.[15] The most violent conflicts in human history are ostensibly generated by a perception of difference that tends to be based on lines of ethnic differentiation. It is therefore interesting to look at cases where ethnic differences have existed with the emergence of violent conflicts and compare those cases with other instances of ethnic difference in societies where conflict has not been manifest in any violence. Louis Kriesberg (1998) presents such a comparison of conflicts in the former Yugoslavia and compares it to the successful attempts of deescalating destructive

conflict in Quebec. He presents a matrix of policies that can successively lead to de-escalation of conflict as shown in Table 4.

The boldface cells in Table 4 represent the zones where environmental issues can lead to consensus catalysis. Many of the preferred goals stipulated in this table are dependent on a degree of dispassionate involvement on the part of stakeholders. To use a frequent refrain from negotiation discourse, environmental issues can "enlarge the pie"—or augment the frontier of possibilities for achieving an amicable resolution.

The boldface cells in Table 4 also show that the positive inclusion of environmental criteria can begin at various stages of the process depending on the extent of the adversarial relationship. It would be naive to assume that environmental factors could solely bring adversaries to the negotiating table in cases where extensive armed conflict has occurred. However, as soon as some measure of deterrence of violent acts has been ensured, environmental factors can plan a constructive role in moving the reconciliation process forward and also anchoring the process with indicators of performance.

► Synthesizing the Planner's Role

This article has attempted to provide various arguments for using environmental criteria as a means for resolving complex conflicts. Environmental planners are often thrust into such situations of conflict where their expertise is often relegated to merely providing technical advice on derivative issues. However, the analysis in this article suggests that planners may indeed play a more active role in resolving the overall conflict by bringing to bear their expertise in both the natural and social sciences and their unique position of convergent authority. This role may be exercised at the international level or at the local level. Countries at war over resources or local

Table 4.
Policies to prevent destructive conflicts.

Phase	*Preferred Goal*				
	A: To Correct Underlying Conditions	*B: To Prevent Destructive Acts*	*C: To Prevent Escalation*	*D: To End Fighting*	*E: To Move toward Resolution*
1: Conflict emergence	Economic growth; dialogue; reduced inequality; integration, shared identity	Use legitimate institutions; dialogue; conflict resolution training	Crosscutting ties; nonviolent training; unofficial exchange	—	
2. Threat of isolated destructive acts	—	Deterrence; reassurance; external mediation or intervention; crisis management; precise policies	Noninflammatory information; limiting arms; tit-for-tat; humanitarian assistance; peace keeping	Negotiation; reframing conflicts; confidence-building measures; mediation	Negotiation; mutual reassurance; unofficial exchanges; superordinate goals
3. Extensive destructive acts	—	—	Changing expectations of victory/defeat; intervention; constituency opposition; limiting arms	Mediation, external intervention; limiting arms; negotiation	Superordinate goals, interdependence; confidence-building measures; problem-solving workshops
4. Protracted and extensive destructive acts	—	—	—	GRIT; problem-solving workshops; unofficial exchanges; step-by-step negotiations; constituency opposition	Acknowledging hurts; superordinate goals; no humiliation; external enemy; mutual recognition; shared identity

Source: Kriesberg (1998).
Note: Boldface cells represent the zones where environmental issues can lead to consensus catalysis. GRIT = Graduated Reciprocation in Tension-Reduction Strategy (originally, presented by Osgood 1962; studied in further detail by Goldstein and Freeman 1990).

communities with ethnic strife between rival gangs may both benefit from this approach. While differing expertise and criteria for legitimacy may be needed for the planner's involvement at different scales of planning, the overall approach is equally applicable. Table 5 aims to synthesize the lessons gleaned from the analysis for environmental planners. There are three pathways planners may pursue, individually or collectively, to catalyze consensus in such arenas.

The first path involves the reframing of conflict by focusing on the dilemmas of common aversion. Environmental pollution concerns are ideally suited for this effort and can be raised by planners in a technical capacity. While this issue might not be central to the overall conflict, raising it as part of the consensus-building process will provide a "neutral cognitive base" for further discussion. In other words, environmental knowledge can be considered an objective area of technical discussion. There may still be disagreements about the extent of pollution and the source, but both parties will at least be willing to collect data. This would work best if neither side is the source of the environmental harm, but it can even show some

promise in cases where pollution has been generated by one or more of the parties.

An interesting case in point is the U.N. Compensation Commission, following the Persian Gulf War, wherein the Iraqis, Kuwaitis, and Saudis have been collectively engaged in collecting data on damages by oil fires.[16] This has occurred even though they have very different objectives—the Iraqis want to show less damage to reduce compensation payments—while the Kuwaitis and Saudis are inclined to show more damage to collect compensation. However, pollution of the Persian Gulf is a common aversion that has at least provided a means of engagement, despite the accusation from the Saudi and Kuwaiti sides that Iraq was responsible for starting the oil fires deliberately.[17]

Even in cases where the central causes of the conflict are zero-sum property rights regimes (one party will gain at the expense of the other), the reframing of the problem as one of joint concerns about mutually destructive resource exploitation can facilitate consensus. Such an approach can be implemented by planners through initiatives such as joint

Table 5.
Consensus catalysis by environmental planners.

Concept	Approach	Action	Initiative	Function
Framing conflict as a dilemma of common aversion	Provide information on joint harms of noncooperation	Institute long-term engagement between parties to monitor environmental harms	Joint audits of environmental criteria and data collection for ecosystem-based planning efforts	Establishes neutral cognitive base for discussion of derivative issues
Linking environmental concerns to other issues	Provide a bargaining opportunity for sides where none was perceived to exist	Negotiate comprehensive agreements rather than individual contracts on specific issues	Interdisciplinary commissions for problem solving that are facilitated by a mutually agreeable mediator	Enlarges "the pie" for positive solutions and adds flexibility for integrative bargaining
Using environmental concerns as a trust-building tool	Provide forums for joint participation in conservation initiatives	Develop conservation plans that would be inclusive of adversaries	Peace parks, good neighbor compacts on riparian conservation and sister city lesson-drawing arrangements	Provides a mutually satisfying experience for parties to exemplify rewards of cooperation

environmental audits to ensure sustainable harvesting of the resources. However, as noted by empirical studies of conflict (Aggarwal 1998; Kriesberg 1998; Ostrom 2000), such linkages are only effective when the parties have reached a level of mutual trust.

Such trust can also be fostered by the inclusion of environmental criteria through a second mechanism in which planners can play an instrumental role. Providing forums for joint participation in conservation activities may help to build trust between adversaries. Such activities are easier if there is geographic proximity between the parties such as neighboring ethnic communities in the inner city or among riparian states. Peace parks, such as the one in the Cordillera del Condor region between Ecuador and Peru (which have had serious territorial disputes in the past), the peace park between North and South Korea, or a proposed park for turtle conservation in Cyprus are possible models in this regard. This approach is also being targeted in Africa by the Peace Parks Foundation, a South African–based charity that has helped to develop transfrontier nature reserves in Mozambique and Zimbabwe and is developing similar programs throughout the region.[18] However, such arrangements are also possible in noncontiguous geographic settings through international forums such as the World Conservation Union or the United Nations.

sister cities programs may achieve the same if the choice of cities and collaborative programs are chosen accordingly. The sister city concept was formally initiated by President Eisenhower as part of the "People-to-People" program in 1956. Originally a part of the National League of Cities, Sister Cities International (SCI) became a separate, nonprofit corporation in 1967. Such organizations can play a critically important role in consensus catalysis, though thus far they have largely been focused on specific lesson-drawing initiatives rather than being part of an active conflict resolution process (Cremer, de Bruin, and Dupuis 2001).[19]

The third path to consensus catalysis using environmental concerns involves the linking of environmental issues to the central conflict resolution process. This is an example of integrative bargaining that would require environmental planners to be part of the negotiation process for the resolution of the overall conflict. This technique is only likely to work if there is a commitment on both sides to think of long-term planning solutions rather than short-term fixes to both technical and social aspects of the conflict (increasing the shadow of the future). However, it is important to appreciate that some linkages may be destructive rather than constructive and a complete conflict assessment, taking into account the opportunity costs for each stakeholder, should be conducted before establishing such a process.

► **Conclusion**

While various conflicts are barriers to environmental conservation and the sustainability of development schemes, it is possible to "treat" those conflicts with a more informed inclusion of environmental processes in the dispute resolution system. However, this is not to say that specific cases follow any of the schema that have been discussed here. There is, nevertheless, a potential to think about conflicts and their resolution through an environmental lens. The potential for sustainable consensus catalysis on environmental grounds is largely

dependent on a concomitant commitment of stakeholders to understand and appreciate the collective importance of environmental resources and the threats to their abundance and quality. Further empirical work would be required to ascertain the best pathway to achieving this goal and thereby refining its efficacy.

Most environmental arguments boil down to a matter of perceived threats to the global ecosystem and an appreciation for the nexus of life that constitutes our environment. While many of the examples developed in this article pertain to international conflicts, the same principles can be applied in local planning conflicts as well. Just as the word *catalysis* means "setting free" in its Greek roots, the inclusion of environmental factors in consensus-building processes at any scale can potentially liberate us from short-term approaches to problem solving and inculcate sustainability in every elusive sense of the word.

▶ Notes

1. The modern genesis of this approach can be traced back to Hardin (1968). More recent examples include Starr (1991S) and Gedicks (2001).

2. This study attempts to document cases where environmental issues have been linked to conflict either "directly" or "indirectly."

3. Economists and biologists have also tried to differentiate ecological issues into natural resource scarcity concerns and environmental concerns—implying a difference in issues of resource quantity and resource quality, respectively. It is thus no wonder that we have books titled *Environmental Ecology* and separate courses on "Natural Resource Economics" and "Environmental Economics." However, as I will show, even in cases of resource scarcity and zero-sum games, environmental issues can catalyze consensus if the issue is framed as a dilemma of common aversion.

4. Discussed in Westing (1998). President Nelson Mandela visited Korea in March 2001 to initiate the process for the establishment of such a park in the Demilitarized Zones (DMZ). Plans are currently being prepared for such a park. See *Korean Herald*, 13 March 2001.

5. The concept of peace parks is sometimes assumed to be a postconflict memorial (Macleod 1988). While such efforts are laudable, the aim here is to think of peace parks in a more dynamic sense of trying to resolve an actual conflict.

6. This debate is also manifest in the classical writings of Hobbes and Rousseau or Marx and Kropotkin.

7. Perhaps the most widely recognized scholar in realist theory and probably the first to articulate it in a modern context is Kenneth Waltz (1959, 1979).

8. A highly acclaimed work in the neoliberal institutionalist vein is Axelrod (1985, 1997).

9. Elinor Ostrom's work is perhaps the most comprehensive in bridging theory and empirical observation on common property resources. For a recent synthesis, see Ostrom (2000). The question of cooperation can also be traced back to biological discourse and has often been a subject of much debate for Darwinian ecologists. The fundamental question in their minds is, How do self-serving organisms entrenched in a competitive struggle for survival end up cooperating, often at the expense of their own lives? Matt Ridley (1996) has explored this question from a multidisciplinary perspective in his popular book *The Origins of Virtue*. This debate has also been articulated in anthropology by such venerable scholars as Margaret Mead (1961).

10. The nature-nurture debate on environmental issues has raged in academia for years, particularly after the publication of E. O. Wilson's treatise *Biophilia*.

11. Statement signed by Noah Kinarty, head of the Israeli side, to the Joint Water Committee (JWC), and Nabil El-Sherif, head of the Palestinian side of the JWC (available from the Israel Palestine Center for Research and Information: www.icpri.org). In the spring of 2002, the Watson Institute for International Studies at Brown University in Providence, Rhode Island, brought together Israeli and Palestinian representatives to talk on issues of population and environmental matters. Both sides agreed to participate, realizing the "neutrality" of this topic area. The Arava Institute for Sustainable Development in Israel is also an exemplar of how environmental issues can bring together Palestinians and Israelis.

12. For an elaborate discussion of Trust vis-à-vis cooperation, see Gambetta (1988).

13. Field theory may be considered a branch of the linkage politics literature that posits that linkage can be understood in terms of behavior space (conflict behavior) and attribute space (e.g., economic development). It is a rather abstract formulation involving vector geometry to explain relative position of stakeholders in fields of behavior and attributes (see van Atta [1973] and Rummel [1973] in Wilkenfeld [1973]).

14. An example used in Susskind (1994). The work of Ernst Haas (1980) is also notable in the area of issue linkage in international treaty making.

15. Of course, one must remember that there are certain positive attributes of conflict for social change. However, throughout this article, I have been concerned with destructive conflicts that do not advance any social cause or agenda.

16. For more information on the U.N. Compensation Commission (UNCC), see www.uncc.ch.

17. Environmental planners could play an important role in planning the remediation effort through collective means. Unfortunately, the current UNCC process has been focused on asking countries to submit damage claims and then assessing their validity rather than having a joint problem-solving approach.

18. For more information on this effort, see www.peaceparks.org.

19. For more information, see www.sister-cities.org. It is important to note that there have been some criticisms of sister city programs, particularly those between developed and developing countries. However, much of this can be attributed to the management of the program rather than an indictment of the concept itself. A new initiative on sustainable development was also launched between sister cities at the World Summit on Sustainable Development in September 2002.

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