INSTREAM FLOWS, THE STATE AND VOLUNTARY ACTION

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The Problem of Instream Flows

The laws comprising the prior appropriation doctrine, the legal basis of water allocation in the Western states, have traditionally discriminated against the private appropriation or purchase of water rights for the purpose of leaving the water in its naturally occurring streambed (see Huffman 1983, pp. 278–80). Beneficial use has historically been defined in terms of water the use of which is expected, by an outside observer, to result in economic gain for the user (Trelease 1974). Additionally, in order to perfect a right to use a quantity of water, the prospective appropriator had to divert the water from the original streambed and thus "develop" the water by putting it to beneficial use (see, generally, Anderson 1982).

The development of this legal position has produced several dramatic consequences. As a result of the diversionary requirement, some streamflows may be totally diverted, thus destroying any unknown instream value the water may have had.[1] The value of the

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[1]Occasionally, one sees the argument that the diversionary requirement for the appropriation of water may have made sense in the early period of settlement in the West. Such an argument, however, fails to consider the secondary and long-term consequences of this legal position. Should the state legally prohibit the voluntary allocation of a resource to a use that appears to currently have a near-zero value? In principle, if one accepts the argument that the early prohibition of allocating water to instream uses made sense, then we must answer this affirmatively. Logically, however, this position cannot be consistently maintained. First, it assumes that individuals not facing the opportunity costs associated with a certain allocation can, in fact, determine the value of the resource in a given use.

Second, the position assumes omniscience of the future and a static equilibrium in values held by individuals at any two points in time. If such a position had universal

instream flow is unknown precisely because the private appropriation of water for instream purposes has been legally prohibited. In essence, an entire body of potential water bidders has been, and continues to be, prohibited from voluntarily participating in the market for water. The legal exclusion of those who value instream flows (e.g., fishers, and birdwatchers), together with the historical value of zero that has officially (governmentally) been attached to water used to maintain streamflow, have combined to produce a nearly incredible degree of social and political conflict over water use and allocation. The fury and wrath thus generated among those who have been discriminated against by government is quite understandable. While they value the results from instream flows, the state has historically maintained that any other use is more valuable; and they have been prohibited from expressing their values in the economic market for water rights.

The exclusion of potential bidders from the water market has created the situation wherein those individuals who value the use of water for instream purposes turn to the only other force through which they perceive their demands can be potentially realized—the political arena. The remainder of this paper is divided into four sections. First, the arguments for governmental control over the establishment of instream flows are presented. The second section refutes the argument for state control by employing the logic of the property rights paradigm. Evidence of privately owned and managed instream flows is presented in the third part; and a proposal for making the transition to private ownership is offered in the final section.

Government Action Alternative

> To our minds it is utterly inconceivable that a valid appropriation of water can be made under the laws of this state, when the beneficial use of which, after the appropriation is made, will *belong equally to every human being who seeks to enjoy it* . . . .
>
> We are decidedly of the opinion that the beneficial use contemplated in making the appropriation must be one that insures to the *exclusive benefit* of the appropriator and subject to his dominion and control.[2]
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> [*Lake Shore Duck Club* v. *Lake View Duck Club* 1917]

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application, entrepreneurship and the voluntary expression of changing values would effectively be curtailed. The outcome of the application of this position is that government decision makers would determine the social usefulness of every new use for any given resource, if there were any new uses.

[2]Quoted in Kimsey 1975, p. 689; emphasis added.

Instream Flows, A Public Good

The early opinion quoted above on water appropriation in the state of Utah suggests what some have accepted as a significant problem with leaving the provision of instream flows to private economic decisions falling, generally, under the appropriation doctrine. Instream flows and the value derived from such may contain a significant number of the characteristics of a public good (Bradley 1976; Haveman 1972). Indeed, conservationists and environmentalists often seem to maintain this position as clearly stated by an attorney for the National Wildlife Federation: "[I]nstream flows are of necessity a *public good*" (Meyer 1983, p.9).

Assuming for the moment that instream flows are a public good, one of the characteristics is that the benefits generated by the purchase of instream rights would not accrue exclusively to the owner of those rights. Given the nature of a public good, if it is provided by one individual or group, the existence of free-riders is assured. The free-rider is simply that rational individual who does not invest in a resource because he can enjoy the benefits generated by another's investment in the public good. Thus, under-allocation of water to instream flows—the purchase of which generates positive externalities to be captured by free-riders—will result in the private water market.

For these reasons, some have argued that market-oriented solutions underlying the prior appropriation doctrine are inappropriate for the provision of instream flows. The only alternative, presumably, becomes political allocation of water resources wherein minimum instream flows could be established and protected via governmental power.

A proposed solution often generated from this argument is the establishment of a "safe minimum standard" for streamflows (Bayha 1976; Bradley 1976; Dewsnup 1976; Ciriacy-Wantrup 1952). Under this alternative, the state would be required to specify minimum streamflows, specific to each waterway, necessary to protect natural vegetation, fish, and wildlife. Compensation would then be made to present rights-holders for any damage that may result to their water rights. If, in fact, the maintenance of instream flows is a socially desirable outcome, compensation could be made and the result would leave everyone at least as well-off as before the reallocation, and some individuals would be better off than they were before the transaction. Proponents of government action thus argue that such a reallocation would be in the direction of Pareto optimality (see Hirshleifer 1976; and Hirshleifer, DeHaven, and Milliman 1969, for thorough

discussions of this concept). A justification for the state provision and protection of instream flows can thus be derived from presumed peculiarities attached to water that may invalidate the underlying transfer mechanism of the prior appropriation doctrine.

The Public Trust Doctrine

A second and increasingly popular (see Steinhart 1980) attempt at justifying and extending governmental power over allocating water to instream uses has developed around the seminal article by Sax (1970) expounding the virtually limitless possibilities of using the then little known public trust doctrine in protecting the environment. In analyzing the U.S. Supreme Court decision in *Illinois Central Railroad Company* v. *Illinois* (146 U.S. 387, 1892), the case providing the judicial basis of the doctrine, Sax concludes (1970, p. 490):

> When a state holds a resource which is available for the free use of the general public, a court will look with considerable skepticism upon *any* governmental conduct which is calculated *either* to reallocate that resource to more restricted uses *or* to subject public uses to the self-interest of private parties.

In other words, the public trust doctrine appears to provide a foundation for the position that there are certain inalienable rights that accrue to the general public in certain kinds of resources, one of which Sax specifically suggests is water (1970, p. 485). These "social rights" remain even after transfer into private ownership (see Sax 1970; Cohen 1970; Kimsey 1975). And government is the "public guardian" of the social rights (Cohen 1970, p. 388), holding the resources "in trust."

> The [public trust] resources . . . must serve as the welfare of the nation. In the highest sense, therefore, they should be regarded as property held in trust for the use of the race rather than for a single generation and for the use of the nation, rather than for the benefit of a few individuals who may hold them by right of discovery or by purchase.[3]
>
> [National Conservation Commission 1909]

Kimsey (1975) reviewed the extent to which courts have relied on the public trust doctrine in promoting "social rights" in contradistinction to "private rights." He found that courts have restricted the sale of "important public trust assets" to private entities, have prevented transfer of public assets to private ownership when such transfer "would ignore the public interest," and have protected public access to resources that had been previously transferred to private

[3]Quoted in Cohen 1970, p. 388.

ownership (1970, p. 699). In short, when public trust assets are involved, the state cannot abrogate its responsibility as guardian of those assets even upon transfer to private ownership (see Sax 1970).

Those who use the public trust doctrine as the basis of state provision of instream flows generally assert the following. Most, if not all of the states in which the prior appropriation doctrine is applicable have governmentally asserted that actual ownership of water is maintained by "the public" (i.e., the state) even while individuals may obtain a usufruct (use) right (see below, and Anderson 1983b, for a history of this development). Thus, since ownership of the resource is vested in the state for the benefit of the public, the public trust doctrine imposes the fiduciary responsibility on the state to provide for the public interest. And, the argument continues, while economic growth and development were at one time in the public interest and were facilitated by private rights incorporated in the prior appropriation doctrine, instream flows are now in the public interest and thus must be provided by the state for use by the public (see, generally, Sax 1970; Kimsey 1975; Cohen 1970; Radasevich and Sabey 1977; Steinhart 1980).

Refutation of the Necessity for State Control

> A fundamental principle of the law of water courses is that the corpus of water in a natural water course is the property of no one. This absence of private ownership is variously expressed as one of the "negative community," "common," "public," or "the property of the state in trust for the people." The doctrine of public ownership of available water supply has been declared in many states and lays the foundation for state control over the management and the use of water.
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> [Ditwiler 1975, p. 668]

The Nature of Property Rights

Property rights are social institutions. As such, they are social creations, patterned forms of interrelationships, which help individuals form expectations they can reasonably hold when dealing with other members of the society (Demsetz 1974). Property rights identify, and exist as the institution of, ownership of resources in that they specify who can use a particular resource, and who reaps the benefits and pays the costs associated with usage. "The prevailing system of property rights in the community is, then, the sum of economic and social relations with respect to scarce resources in which individual members stand in relation to each other" (Furubotn and Pejovich 1974, p. 3).

Historically, the property rights attached to beneficial uses of water under the prior appropriation doctrine were private rights (Cuzan 1983; Anderson 1982), which incorporated both the right to exclusive use and the right to transfer the water to others. The social outcome from exclusivity and transferability is that explicit indicators of values held by individuals relative to alternative uses of the resource develop. These explicit indicators ("prices") facilitate the spontaneous allocation and reallocation of a resource to its highest-valued uses (see, among many, Sowell 1980).

Much of the value of private property rights attached to the use of water stems from the certainty regarding the right to exclusive use of water and from the certainty that one can transfer those rights to others who may place a higher value on them. The result, at the societal level, of certainty, exclusivity, and transferability is the dynamic, automatic reallocation of water in a manner consistent with changes in values attached by individuals to different uses.

While private property rights initially formed the basis for the prior appropriation doctrine in the West, common property forms of ownership, where the state is the nominal owner of water, have been increasingly incorporated into law since the first gathering of state legislators. The second legislature of the state of Utah (1897) declared that all waters in the state belonged to the public, i.e., the state (UWRL 1978). In all prior appropriation states, the *use* of the water was to be considered a private right after certain conditions were met; the *ownership* of the water, however, and explicitly the ownership of the water in the stream, remained and so remains today in the hands of the state.

Because the various types of property rights arrangements (i.e., private or public ownership structures) provide varying degrees of certainty with respect to an individual's interaction with others, one can argue that the various forms of institutions that arise after property rights are specified are a result of the specific type of property right relationships stated in the laws. For example, property rights associated with agricultural water use are generally private and are thus protected against damage from other rights-holders. While it is recognized that a problem may exist as to whom the burden of proof of damage or no damage falls, it must also be recognized that new appropriations, changes in use or diversions, and transfers of rights are scrutinized closely by present rights-holders in the effort to protect their exclusive rights to use their water. This careful examination often requires the use of experts paid by the present and potential water owners/users as a reflection of the value they attach to their

private use rights.[4] There has not been an equivalent institutional development emanating from state ownership of instream flows, unless one wishes to consider the state water engineers, the Bureau of Reclamation, or the Corps of Engineers as protectors of their rights to instream flows.

The public ownership structure, in addition to yielding a lack of private institutions attempting to protect their exclusive right to instream flows, has legally prohibited individuals who value instream flows from voluntarily expressing that value in the market for water. The state, under public ownership, assumes all authority over how much water will be left in any stream, regardless of the level of demand for instream flows. Until recently, the official position on instream flows was that they were valueless. Thus, all water was subject to diversion if any off-stream use could be shown to have a value greater than zero.

Minimum Requirements

The "minimum requirements" solution proffered by the governmental action alternative would reverse the value of instream flows historically mandated at zero and, ultimately, set the value at the other extreme if the law were inflexible. An infinite value would be placed on instream flows and uses because the water would be prohibited from being transferred to other uses (Ditwiler 1975). If, on the other hand, the requirement was flexible (a much more likely characteristic than inflexibility, see Kimsey 1975), that is, if the decision maker in the appropriate state agency could increase or decrease streamflows as "emergencies" arose or as the "public interest" changed, we should expect emergencies and increased conflict over the "true" public interest to become the norm (Trelease 1974). If this is the case, nothing would be gained but an increased level of uncertainty, the further centralization of decision-making power over water allocation in the state, and increasing levels of political and social

[4]It is unfortunate that some of the benefits accruing to water owners from particular uses must be dissipated in actions designed to protect their exclusive rights to use their water. However, protection costs are necessary or real costs and, as such, account for certain actions or resource allocations not occurring. See Brownstein (1980, p. 97).

If protection costs are high relative to the value of the water in a particular use, then one of two outcomes are possible: Either water will not be allocated to that use or alternative forms of social organization will voluntarily arise (i.e., protective associations) designed to lower the costs of protection. See Anderson and Hill (1975). Neither outcome is costless. The relevant comparison is between the cost of protective actions designed to ensure exclusion and the opportunity costs associated with the foregone uses of the resource, not between perfectly specified and enforced (i.e., "costless") property rights and protection costs.

conflict. It is certainly not the case that streamflows would necessarily be enhanced.

Ultimately, the establishment of minimum streamflow standards mandates governmental action. Because of this, the following questions become most appropriate and must be addressed by advocates of this position: Who is to decide when an emergency exists? And, whose values are to take priority and represent the public interest at any given time—those who value instream uses or those who value alternative uses?

The Divisible "Public Good" and the Chimerical "Public Trust"

Part of the argument for government control of instream flows was centered on the idea that these flows have certain public good characteristics— the benefits are not divisible and exclusion of free-riders is costly. But instream flows are really no different than the provision of resources for any other use, as the following illustrates.

The values attached to a given resource are not inherent in that resource but are derived from the uses to which it can be put. The value associated with a property right to a resource does not stem from the legal ownership of the resource, but from an ownership of the effective right to use that resource (Coase 1960). While this point may seem trivial, it is quite important. If the use to which a given resource may be put can be individualized in the sense that only those persons willing to pay the costs associated with the provision of the good may capture the primary benefits from use, then the nature of the good is fundamentally private and not public.

As discussed above, the property rights associated with the use of instream flows within the present structure are usually public. That is, because private property rights cannot legally be attached to uses of instream flows, then by definition the provision of these flows becomes a nonexclusionary "public good." This is so, however, precisely because the attachment of private property rights to instream uses has been legally precluded.

Instream flows may represent a classic example of the existence of a governmentally defined public good. Indeed, those who employ both the public good argument and the public trust doctrine to increase state control over water resources may be aware that instream flows are a public good only because of government fiat. When instream flows are considered within the context of the newly favored public trust doctrine, it becomes clear that the state has specifically excluded the possibility of instream flows becoming private goods. The state has thereby mandated that they are public goods. Indeed, it would seem that those who use the public good argument in conjunction

with the public trust doctrine are caught in an illogical trap: If instream flows are by their very nature public goods, then the courts could not have found it necessary to develop and apply the public trust doctrine in the effort to maintain the public good nature of the streamflow. It seems reasonable to conclude that the courts have done so precisely because various litigations made it appear as if private property rights were about to become attached to uses of certain resources. In the case of instream flows, if they are indeed public goods, then no one would even attempt to establish exclusivity (i.e., private ownership) because it would be impossible to do so. This, of course, is not the case.

Thus, if one thinks only in terms of the existing structure of property rights, then the provision of instream flows is the provision of a public good. But there is no inherent characteristic associated with use of instream flows that makes this governmentally defined public good immutable. Indeed, if one accepts the proposition that property right structures are social creations, then it follows that there are few (if any) uses of resources that are intrinsically of a public good nature. At minimum, then, the burden of proving a good is "of necessity" a public good falls on those who so argue. Given that the uses associated with instream flows can be privatized (as discussed below), the argument that the provision of these flows is equivalent to the provision of a public good is erroneous.

Exactly what do the proponents of the public trust doctrine believe will be accomplished by employing the doctrine toward the end of protecting instream flows? Will the use of the doctrine, in fact, preserve and protect instream flows? The answer to the first question is fairly obvious. They believe that the doctrine will " prevent the destruction and alteration of resources, and . . . [preserve] public access to resources" (Kimsey 1975, p. 688), and thus protect instream flows. Cohen (1970, p. 392) expresses the prevalent belief that the rules underlying the public trust doctrine

> will result in a shifting to the despoilers of the burden of coming forward with the evidence proving the necessity for despoiling the trust corpus. . . . The despoilers should be required to show that their actions are for the promotion of the public benefit, consistent with the public trust.

Has Cohen suggested anything that would lead one to believe that instream flows would be protected under the public trust doctrine? I think not. Indeed, it may be possible, as Sax notes (1970, p. 482), for any action considered to be in the "public interest" to be incorporated under the doctrine:

> [I]t hardly seems sensible to ask for a freezing of any future specific configuration of policy judgments, for that result would seriously hamper the government's attempts to cope with the problems caused by changes in the needs and desires of the citizenry.

To emphasize how virtually any action judged (by someone) to be in the "public interest" could be included under the doctrine, Kimsey (1975, p. 687) goes so far as to suggest the diversionary requirements and private property rights initially part of the development of the prior appropriation doctrine could be viewed as legitimate under the public trust doctrine. He is worth quoting at length:

> Although the public trust doctrine does not dictate that these public rights [in instream flows] can never be impaired, it does require that substantial impairment must be justified on the basis of some higher public interest. Since the very foundation of the appropriative system was a critical public interest, it would not be inconsistent with the public trust doctrine to say that the overriding interests of the public during settlement and development of the State of Utah required that the waters of the state be initially directed towards establishing a self-sustaining economy capable of supporting the people of the state.

The question to be addressed by those who advocate the use of the public trust doctrine should be, what exactly would the doctrine accomplish with respect to the protection of instream flows? The answer—no one knows. Indeed, the strongest proponent of the use of the doctrine in environmental litigation, Joseph Sax (1970, p. 553), has suggested the degree of uncertainty inherent in use of the doctrine:

> Perhaps the most striking impression produced by a review of public trust cases in various jurisdictions is the sense of openness which the law provides; there is generally support for whatever decision a court might wish to adopt.

So we come to the second question: Will the public trust doctrine, in fact, preserve and protect instream flows? Unfortunately, the response is again—who knows? But the evidence suggests it would not. A few "victories" might be won using the doctrine in the fight to protect instream flows (see Steinhart 1980; Audubon 1983; Sandler 1983). However, given the adeptness with which the Bureau of Reclamation, the Army Corps of Engineers, and the Tennessee Valley Authority have been able to justify (in terms of the public interest) the Central Arizona Project, the Central Utah Project, the Tellico Dam, the Missouri River Basin Project, and many others too numerous to mention, the odds are certainly against those who wish to preserve instream flows in the name of the public interest by using the public trust doctrine. Indeed, as Trelease (1974, p. 212) suggests,

use of the public interest in arguments surrounding water allocation is really meaningless, for "the 'public interest' stands neutral, and the only question is, which people get to use the water."

A Misdirected Bias

Those who argue for governmental ownership and protection of instream flows frequently express vehement hostility toward a voluntary market process for the provision and allocation of resources. They profess to firmly believe that the market process has been responsible for the destruction of environmental amenities they value. In its place, they propose that the government, with the assistance of experts with the correct training, and, presumably, the correct values, take over the responsibility for allocating water resources and, in so doing, protect and further the public interest.

Far from being a new idea, the proposal that instream flows should be owned and managed by the state is as old as the settlement of the West: The state has been and continues to be the sole owner and manager of instream flows. It is precisely the monopolization of ownership of instream flows by the public sector that has resulted in a zero value being attached to the uses of instream flows, the consequent potential for all water in streams to be diverted at some time, and the institutional development of the Bureau of Reclamation and the Corps of Engineers. It has been, and continues to be, the state that legally prohibits the market process from allocating water to instream-flow uses by forbidding individuals who value instream flows from bidding for water.

How can we account for this apparent bias? It might be that it is simply the result of the lack of knowledge and understanding about the spontaneous allocational mechanisms of the market process which tend to reflect social values through private action. Unfortunately, there are other possible explanations that may better correspond to contemporary political-economic reality.

There are two broad groups that stand to gain (at least, potentially gain) from further centralization of power over water allocation. One group is comprised of state officials and bureaucrats who may not be overjoyed by the prospect of a voluntary nongovernmental solution. The reasons are obvious: This group currently gains benefits from politically approving or vetoing requested water allocations, transfers, and uses. Indeed, members of this group derive a significant portion of their livelihoods from the governmental solution to instream flows. It is true that under the private, voluntary solution, this group would lose the political power to allocate water and grant favors, and

the highly valued personal benefits derived from this power. In short, their arbitrary political power would be eliminated.

A second group that might not welcome a voluntary solution to instream flows is comprised of precisely those organizations which, ironically, stand to further their stated objectives the most from implementing the private solution. Environmentalist (including hunting and fishing) organizations often express what seems to be a very real fear and loathing of the private solution. A partial explanation for their seemingly inherent dislike of the private solution may be that environmental organizations exist not for the purpose of managing their own resources, but for the purpose of persuading state policy makers to decide in their favor. That is, the primary function of environmental organizations may be convincing the state that transferring resources to uses the members of the organizations wish to enjoy is in the "public interest" and will benefit the "social welfare." If they are successful at this type of political transfer activity, there are two outcomes. First, the members of the organizations capture through the political process what they would have had to purchase under the private solution. In this manner, they effectively reduce the cost *to themselves*, but not to society, because all individuals must bear the opportunity costs associated with the political transfer of use rights (Anderson and Hill 1980).

The second outcome, if the environmental organizations are successful, is that they prevent their opponents—the "special interests" in industry and agriculture—from using the resource. This type of winner-take-all outcome, obvious in arguments for minimum streamflow standards, encourages the attitude of "us" versus "them," leading to increases in social conflict as the battlelines are drawn in the political arena. When the state allocates resources, only one party can "win the battle," and, because neither foe faces the opportunity costs of the political allocation of resources, neither side considers the possibility of mutual accommodation. Each party in the political market tends to place an infinite value on its preferred use[5] and, as long as neither side faces the opportunity costs of infinite values, neither will act "as if other social goals mattered" (Baden and Stroup 1981a, p. 36).

[5]Infinite and absolute values are most frequently proposed by advocates of wilderness areas, although all special interests tend to place infinite values on their preferred interests within the political arena. The following is a clear example. "[W]e believe the value of wilderness is absolute . . . . We take the position that wilderness has intrinsic value and should be left alone because it's the rarest commodity on the face of the earth" (Gaylord Nelson, chairman of the Wilderness Society. Quoted in Shute 1983, p. 70).

Only under a private solution can both environmentalist and other special interests win when a mutually agreed-upon transaction is entered. A voluntary market process based on free exchange yields positive-sum results: Each party in the transaction gains by considering the wants of the other parties. Under the governmental alternative, there must be winners and losers. Resource transfers under this structure are, at best, zero-sum or, more likely, negative-sum (Anderson and Hill 1980). Unfortunately, it appears that it is extremely important to environmentalist organizations that other "special interests" be losers.

The Voluntary Alternative

The historical evidence surrounding the care of instream flows under public ownership indicates, with little doubt, that those of us who place a high value on the amenities produced from these flows cannot afford to trust the state's administration. Which alternative, then, governmental action or private ownership, is more likely to protect instream flows? Fortunately, there is substantial evidence that leads us to the solution.

The English, Scots, and Welsh have a rich history of private ownership of land and water resources (see Bish 1977; Johnson 1971; and especially Sutherland 1968). Most resource utilization is governed by private property rights in one form or another, and a given resource is frequently subject to a diverse set of rights:

> Thus an area of land may give one man the right to collect rent for it, another the right to farm it and another the right to shoot over it. But to own the freehold of land is to own a bundle of rights over the land which can effectively exclude any other party setting foot upon it.
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> [Sutherland 1968, p. 146]

What Sutherland describes is, of course, the classic definition of private property: The ability to capture the benefits and costs associated with a particular resource and to exclude non-cost-bearing individuals from reaping benefits. The same property rights structure has been applied to the ownership and use of instream water flows, a primary use of which is fishing.

Where an allocation of a resource to a particular use is not legally prohibited, and if the use has value as evidenced by an individual's willingness to pay the opportunity cost associated with the right to use, then we expect owners and prospective owners under a private property rights structure to voluntarily allocate a portion of the resource to that use. In England, in the early 1900s, there was little value attached to fishing activities by non-landowners and non-wealthy

individuals (i.e., by a *majority* of the members of society). Fishing rights thus had little social value and certainly would not have been considered part of "the public interest." The owners of streams, however, maintained their fisheries. They did so for their exclusive use because *they* valued *their* fisheries; and they had little concern for the lack of "social value" attached to fisheries by non-owners.

Today, social values are different. Demand for fishing and the willingness to pay exhibited by non-owners have increased dramatically, and "there are few landowners . . . who can afford to ignore the commercial aspect of the sporting rights which they own" (Sutherland 1968, p. 110). Indeed, the demand for fishing does not go unnoticed and a variety of types and qualities of fishing activities are provided by private, voluntary actions. While some salmon rivers command a relatively high price (a reflection of the value of fishing and the care given to the fishery),[6] other owners cater to the demands of the average urban resident:

> In the 1960s and 1970s smaller, privately managed fisheries that offered exclusivity in exchange for higher rod fees began to break out like an aquatic rush around the country [England]. Now every city and major town . . . has first-rate trout fishing within easy reach, and at an affordable price.
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> [Clarke 1979, p. 219]

It is not necessarily the case that even the best salmon fisheries are beyond the reach of the non-wealthy individual. Angling associations in various locales often charge by the week or rod for the privilege of fishing their waters. For example, Grantown-on-Spey, the Spey being a prime Scottish salmon fishery, charges $25 per week for the right to fish approximately seven miles of the river (Zern 1981; see also Sosin 1981).

Because easily determined values (i.e., prices) are attached to the right to fish in streams, we would expect investment by owners of instream waters both in the management for improved fisheries and in protective actions to safeguard their exclusive rights to use. This is precisely what has occurred. With respect to the investment in fishery improvements, Zahner (1980, p. 16) expresses this care in a striking way:

> No people have toyed with the works of Nature more, and in the doing harmed them less, than the British. . . . To maintain their houses as homes, they retained housekeepers. To keep a proper

[6]In a recent sale of a Scottish estate, which included fishing rights to just under one mile on the Tweed River (a prime salmon fishery), the fishing rights alone sold for $220,000. See Zern (1981).

> garden and park, they had groundskeepers. Gameskeepers for stag and grouse. Then, as keepers of the kept, even gatekeepers to further secure things. And eventually, it was for the British to devise the ultimate in the art of maintenance—the river keeper.
>
> Now, the name itself could easily be misinterpreted—as it has from time to time by our American "river keepers," whom we call "the Corps of Engineers." To keep a river from doing what it is supposed to do would be noxious to the British, as it is to many anglers.

While protection costs to maintain exclusivity or desired use are a problem under any property rights structure, it is more likely that innovative techniques would be implemented under private property structures than under public ownership. This is because the individual owner gains all (or, at least, most) of the benefits flowing from the innovative techniques. Sutherland (1968, pp. 114–15) provides an example of a particularly innovative private, voluntary solution to one landowner's problem of protection costs:

> One large estate owner . . . who was considerably troubled by poachers, solved his problem by inviting the most hardened poacher to form a fishing club, and provided two lochs and a stretch of river for the purpose. It proved highly successful. The club members themselves contributed to the restocking of the water and the landowner's private rights were assiduously respected.

This type of innovative solution would be most unlikely (if not impossible) under public ownership of the fishery. It is, indeed, unfortunate that there exist individuals who engage in thievery, but, while unfortunate, it is also a part of reality and exists to a higher degree than would otherwise be the case because of public ownership. Under private ownership structures, the individual owner rather than the state has a vested interest in achieving the most protection for the least cost because the owner captures the residual that remains. Hence, while the innovative technique employed by the owner in the above example seems to legitimize or benefit poachers, it actually proved quite beneficial to the individual owner and curbed the problem.

Under the British system of property rights, what happens to the owner of the fishery if he or she destroys or diminishes the quality of the resource for whatever purpose? Quite simply, the *owner* loses; the owner loses all the value that other individuals would have been willing to pay him to maintain or improve the quality of his fishery. Again, Sutherland (1968, pp. 113–14) suggests why the private owner is not likely to misuse his property:

> That sporting rights are a desirable amenity is undoubted, but it must be remembered that without careful preservation much of the amenity would not exist. The good-natured farmer who allows anyone to shoot over his land, and does nothing to preserve his stocks, will soon find that there is nothing left to shoot. . . . If he invests in improving his sporting amenities he is surely entitled to make what profit he can from his enterprise. That this should result in the rationing of the commodity by price is no more deplorable than the fact that Dover sole costs more than herring.

On the other hand, who loses when the resource is owned by the state? The person who "manages" the resource certainly does not bear the entire costs of destruction precisely because he is not the owner of the resource. The resource is, by definition, owned by everyone, in common, and thus most (if not all) citizens lose.

Conclusion: Getting from Here to There

The adoption of the government "solution" by those who value instream flows indicates a remarkable degree of faith in the political arena that has produced the American counterpart of the English river keepers—the Bureau of Reclamation and the Corps of Engineers—the actions of which have been precisely to "keep a river from doing what it is supposed to do." Faith in the bureau and the corps has never been a dominant characteristic of most environmentalists. Nevertheless, many of them now seem to be placing their trust in these or other government organizations to provide solutions to the problem of instream flows. Faith is certainly not a bad feature for an individual to possess, but it should be tempered with reality. The reality produced by faith in the state to provide and protect any valued commodity or resource has been characterized by conflict, hostility, and "emergencies," often justifying perverse actions in the name of the "public interest." There is no reason to assume that reliance on the state for the solution to instream flows would result in a more positive outcome. Indeed, there is every reason to believe the opposite, since streamflows would be at the mercy of government bureaucrats who increase their wealth by allocating water through political rather than voluntary means.

The solution to the problem of instream flows is theoretically, logically, and empirically obvious. Indeed, it is simply the manifestation of what the British and such groups as Ducks Unlimited and the Nature Conservancy have practiced for a long time: If one wants the best possible care to be given a resource, then private, voluntary solutions are superior to state or public ownership. But, how do we get from the point of centralized control at which we find ourselves

today to the private solution? How do we make the transition to voluntary action?

While it may sound contradictory, perhaps the only way to attain the private solution is to rely on governmental action—but a type of action very different from that for which the state is notorious. While past governmental action has invariably resulted in an increase in the power of the state over water use and allocation, the proposed action would result in a drastic reduction, and eventual elimination of centralized control. The proposal is as follows.

Irrigated agriculture is, by far, the dominant use of water in the Western states and is responsible for most of the diversion of water from streams. It has also received one of the largest subsidies in the history of the United States (see Anderson 1983a; and Berkman and Viscusi 1973), with the possible exception of the military-industrial complex. Further, when streams dry up in the summer months or are flooded out of existence, the standard beneficiaries have been agriculturalists.[7]

It is commonly recognized that irrigation water in the West is priced below what might otherwise be the case in the absence of massive subsidies. This has produced a quantity of water in agricultural use above the level that would otherwise be voluntarily allocated to agriculture in the absence of "cheap" water. Should the government withdraw the subsidy, the price to agriculturalists of using the water would rise, and a certain number of them would leave agriculture. This would increase the water available for reallocation to higher-valued uses.

The second stage in the transition is one that many might find incomprehensible given the arguments developed above. Nevertheless, it is justified on the basis of previous state action. As a result of agriculturalists (and others) paying a higher, non-subsidized price

[7]This may be changing, however, as the following quote from Floyd E. Dominy, former commissioner of the Bureau of Reclamation, suggests (quoted in Berkman and Viscusi 1973, p. 205):

> The major factor in our conservative benefit estimates [of past water resources projects] . . . is our inability to place a dollar value on the intangible effects . . . [which] include stabilization of income, creation of job opportunities, provision of economic flexibility, redistribution of income, dispersal of population, resource preservation and the general economic and social well-being of people. . . . On the other hand, the adverse intangible effects of projects that involve minor infringements of wilderness areas or national parks consistently become of over-riding significance.

Apparently, the beneficiaries of Bureau of Reclamation projects now include virtually everyone, with the possible exception of those who bring to light those "minor infringements of wilderness areas or national parks."

for water, the state will reap a considerable amount of "new" revenue. Since the state created the problem of instream flows by legislative fiat that prohibited those who valued instream flows from purchasing water rights, and since the agriculturalists were primary beneficiaries of the exclusion, an appropriate recipient of the new revenue would seem to be those against whom the state has traditionally discriminated.

For a specified number of years, the revenue would be given to environmentalist organizations for the purpose of purchasing private use rights to instream flows wherever they deemed appropriate and could find willing sellers. This transfer should cost the general public no more than the present subsidy of water to agriculture, although perhaps food prices might rise because of the higher price of water. After the specified length of time, the revenue would be used to pay that portion of the public debt that has accrued as a result of governmental irrigation projects. Upon retirement of the debt, fee simple ownership over the water would transfer to those who purchased it, and the state would completely withdraw from all control over use and allocation of water. The transition to the private solution would be complete.

It is not my intention for the above proposal to be considered final. It is, however, a heuristic step in making the transition to private instream flows. Further, it should appeal to environmentalist organizations which, at present, are perhaps the most formidable opponents to the private ownership of instream flows. Finally, the proposal should facilitate what some have suggested should be a natural coalition between environmentalists, libertarians, and fiscal conservatives (Baden and Stroup 1981b, pp. 6–7). If so, we will have taken a giant step toward equity, efficiency, environmental quality, and freedom.

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