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Stephen F. Williams*

The Requirement of Beneficial Use as a Cause of Waste in Water Resource Development

I. INTRODUCTION

The doctrine of prior appropriation is a rule of capture. Under the doctrine, one may acquire a property right in water only by applying it to a "beneficial use," and in no state does reservation of water for future use qualify as a beneficial use. Moreover, with a few special exceptions (for instream uses such as recreation),¹ one must also divert the water. As a result, anyone anticipating a surge of future demand and higher prices for water rights can exploit that insight only by investing in diversion works. Such projects are likely to be premature or economically unjustifiable regardless of their timing. To the extent that premature or otherwise uneconomic investment occurs, the beneficial use requirement—ironically—causes waste.² If this requirement of prior appropriation law is applied to nonrenewable groundwater, an additional waste—premature consumption of the water itself—may result.

Similar waste would result from unmitigated application of the rule of capture to oil and gas reserves—the other great resources to which it nominally applies. All the major oil and gas states, however, have adopted conservation legislation aimed at curing the problem. It is thus curious that neither legislative action nor even scholarly discussion has focused on this defect of prior appropriation law.³

Section II of this paper explains the ways in which prior appropriation law brings about waste in water resource development. Section III then examines the logical cure: authorization of anticipatory water rights which would vest without application to a beneficial use. Finally, Section IV relates that cure to some special institutional features of water resource allocation: the role of governmental agencies as water rights owners and inter-regional conflict over water.

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1. See Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211.

2. I use the term waste in an economic sense: "Waste is a preventable loss the value of which exceeds the cost of avoidance." See S. McDONALD, *PETROLEUM CONSERVATION IN THE UNITED STATES* 129 (1971).

3. The great exception is C. MEYERS & R. POSNER, *MARKET TRANSFERS OF WATER RIGHTS: TOWARD AN IMPROVED MARKET IN WATER RESOURCES* 39-43 (National Water Commission Legal Study No. 4, 1971).

II. WASTE INHERENT IN PRIOR APPROPRIATION LAW

Projects that are economically unjustifiable regardless of their timing can arise in the following way. Suppose that an observer of the water and energy scene believes that by the year 2010 the price of conventional oil will be such as to make oil shale production feasible on a large scale. To some extent he might exploit that insight, and the resultant return from holding water rights for later resale, simply by acquiring existing water rights and leasing them in the meantime to their current users or to others. But that strategy involves paying for the water right itself, while making a new appropriation enables him to avoid that cost.

A new appropriation would, however, require investment in diversion works to transport the water to a place where it could be put to current use under circumstances that local law would not view as wasteful and which would yield some revenue in the meantime. A hypothetical project for those purposes might have the following characteristics. Project cost, discounted to present value at 5%,⁴ is \$5 million (this and all figures are in constant 1982 dollars). The present value of the returns from use of the water at the end of these diversion works, over the maximum useful life of the works, is \$4.5 million. The present value of that portion of the returns to be received between scheduled completion of the project in 1985 and the year 2010 is \$3.2 million. Finally, suppose the investor were confident that he would be able to sell the water rights in the year 2010 for about \$7.5 million. At the 5% discount rate being employed, the \$7.5 million has a present worth of about \$2 million. The expectation of that sale would make the project appear to be a profitable one, even though the purpose for which the water would be sold in the year 2010 would make no use whatever of the diversion works into which our investor proposes to sink resources (see Table 1).

A pivotal component of the returns that our investor anticipates is the \$2 million present value of the proceeds from sale of the water rights in the year 2010. The component is phantom. If it were not for the fact that the law prohibits acquisition of a property right in water without diversion for a beneficial use, there would be no causal link between the \$2 million return and the investment.

If ownership of water rights were possible without application to a beneficial use, investors would pay up to \$2 million to acquire such rights. The payment of \$2 million by the highest bidder would involve no waste, as it would entail no actual expenditure of real resources. Were

4. The hypothesized interest rate is a real one, *i.e.*, net of anticipated general price inflation. The choice of interest rate is arbitrary but does not affect the principle illustrated.

TABLE 1
(All figures are in terms of present values.)

Returns		
From sale of water delivered through these diversion works, 1985–2010	\$3,200,000	
From sale of water rights in 2010	<u>2,000,000</u>	
Total returns		\$5,200,000
Cost	<u> </u>	– 5,000,000
Net apparent gain		\$ 200,000
Less phantom gain: the revenues from sale of water rights in 2010	<u> </u>	–\$2,000,000
Net waste		–\$1,800,000

the state to auction off the rights under the circumstances assumed, it would receive the \$2 million.

We can reframe the analysis in terms of external costs. The investor's diversion of the water denies some other party the opportunity to sell the water in the year 2010. On the facts presented, that opportunity has a present value of \$2 million—a cost that is external to the investor's considerations. Under conventional prior appropriation concepts, the party denied that opportunity is presumably the state. Prevailing western water practice conceals the loss of the opportunity, however, for the state rarely sells rights in unappropriated water; it *gives* them to the first capturer.

This analysis applies despite the fact that many of the actors on the water development scene are public entities that do not pursue pecuniary profit. Even a public entity may rush forward with diversion and transportation facilities in order to assure supplies for the future since, under current law, that is the only way to obtain a secure property right in such supplies. However, since the public entity normally does not anticipate future sale of the resulting water right for some completely different use, the diversion and transportation facilities are more likely to be consistent with the long-range use of the water. In such a case, the rule against anticipatory rights causes waste by requiring the public entity to expend resources on diversion and transportation *sooner* than is necessary (see Table 2).

Here the beneficial use rule has accelerated production by 15 years. The gross cost is \$5,000,000 less \$2,405,000, or \$2,595,000. The cost is a real one. Society must forego the product that that capital could have

5. This figure represents the \$5 million cost, discounted by another 15 years because construction is deferred for 15 years.

TABLE 2

(All figures are discounted to present value.)

	<i>Construction to be completed in 1985</i>	<i>Construction to be completed in 2000*</i>
Returns		
From use of water, 1985–2000	\$2,200,000	—
From use of water, 2000 on	<u>\$3,000,000</u>	<u>\$3,000,000</u>
Total returns	\$5,200,000	\$3,000,000
Costs		
	<u>–\$5,000,000</u>	<u>–\$2,405,000⁶</u>
Net gain	\$ 200,000	\$ 595,000
Increase in costs from accelerating construction (\$5,000,000 minus \$2,405,000)		\$2,595,000
Increase in benefits from accelerating construction (\$5,200,000 minus \$3,000,000)		<u>– 2,200,000</u>
Net loss from accelerating construction		\$ 395,000

*The developing agency can both defer construction for 15 years and acquire a presently secure right in the water only if the law accepts the concept of anticipatory rights.

furnished in the 15 years from 1985 to 2000 if it had not been misapplied to construction of water diversion facilities.⁶ The cost is offset, to be sure, by gains from use of the water in the 1985–2000 period, but as those gains equal only \$2,200,000, the net social loss is \$395,000 (\$2,595,000 minus \$2,200,000).

Where nonrenewable groundwater is involved, additional losses are likely in the form of premature depletion of the reservoir. Under a rule of capture, any potential extractor tends to disregard a key cost of present extraction: the value lost as a result of foreclosing later extraction. Like two boys attacking a single milk shake with two straws, well drillers are likely to extract the water at a faster than optimal rate. One who anticipates rising real prices for water, and concludes that its present net value would be greater if extraction started five or 20 years in the future, cannot defer drilling on the basis of these calculations. What he does not extract today, he may never be able to extract. Moreover, to the extent that there is no regulatory agency able to keep the number of wells at the optimal level, the race to extract may well lead to an excessive number of wells. These problems are, of course, very closely analogous to those generated by application of the rule of capture to oil and gas. In the oil and gas context,

6. If the real price of construction (*i.e.*, its price relative to other prices) is rising, that would offset the usual gains that accrue from deferral of expenditures. Of course, if expected future real prices of construction are much higher than current real prices, investors generally will accelerate construction, thereby increasing the current real price and reducing the gap between the current price and the expected future price. Thus the offset seems unlikely to be large for any extended period.

however, state legislatures have sought to cure such problems with well-spacing and allowable regulations⁷ and with provisions that facilitate unitization.⁸

So far as renewable water supplies are concerned, the essence of the cure would be to allow people to acquire a right to water without putting it to any beneficial use. Alternatively, one might simply recognize holding for future use as a form of beneficial use, thereby preserving more of the existing nomenclature. A new form of water right would thus come into existence—an “anticipatory water right.”⁹

III. ANTICIPATORY WATER RIGHTS AS A CURE: PRACTICAL PROBLEMS

The proposal of anticipatory rights raises a series of practical problems and possible objections. Some problems relate to (a) the initial allocation of such anticipatory rights, others to (b) the effects of such a change after initial allocation.

A. *Initial allocation*

If anticipatory rights were allocated without charge, as current-use rights are, obviously the amount sought would vastly exceed the available supply. Moreover, those to whom such rights were allocated would enjoy a windfall. The solution suggested by Meyers and Posner, which appears clearly sound, is an auction of some sort, perhaps modelled on government auctions for oil and gas leases.¹⁰ Presumably bidders would be willing to offer roughly their estimate of the present discounted value of the proceeds of sale of the water for the uses which they anticipated.

7. Well-spacing regulations restrict the number of wells that can be drilled into a reservoir, providing, *e.g.*, that no more than one well may be drilled for each 80 acre tract. Allowable regulations restrict the rate of flow per well or per tract.

8. Unitization entails a cooperative plan of exploitation, under which each owner's return is independent of the number of wells on his tract or their rate of flow. The owner's return depends instead upon his proportional contribution of mineral-bearing land to the unitized area and on the extent to which he has contributed capital to the extraction process.

9. Such a right would also constitute part of any rational market-oriented program for extraction of nonrenewable groundwater. The other parts of such a program are beyond the scope of this paper.

Besides removing the incentive for the sort of wasteful expenditures described above, recognition of such a right would create improved incentives for current owners of appropriative rights to adopt water-saving technology and practices. The primary incentive for a right holder to invest money in water-saving is the prospect of either applying the saved water to some purpose of his own or selling the resulting extra water. But under present law, even assuming a jurisdiction that has removed the more arbitrary obstacles to sale of salvaged water rights, one who frees up water by water-saving techniques cannot hold his legal right to the saved water unless he more or less immediately sells it to someone then ready to embark upon applying it to a beneficial use of the traditional sort. At any specific time, there may be few potential buyers ready to embark on such immediate use. Recognition of anticipatory rights would increase the number of potential current buyers, and thereby create a better market for sale of the water rights freed by water-saving.

10. See MEYERS & POSNER, *supra* note 3, at 42-43.

The auction solution would give some concrete meaning to the vague proposition, so much a part of current water law, that the unappropriated waters of the state belong to "the public."¹¹ An auction would enable the public to realize on that purported ownership—now a matter of rhetoric—in the form of receipts flowing into the state treasury.

Not only does an auction solve the twin goals of (a) avoiding windfalls and (b) equating supply with demand, such a method also averts problems that arise when government allocates rights on the basis of vague notions of merit or public interest. The Federal Communication Commission's allocation of valuable radio and TV channels exemplifies such a method. The result is that applicants invest enormous resources in hiring high-priced lawyers to put on a largely meaningless show—meaningless because the criteria for the public interest are necessarily so elusive. Interminable and unmanageable procedures, inconsistent results, and corruption are also likely.¹²

Identifying the "public interest" in connection with anticipatory water rights would be no easier. An auction decentralizes and objectifies the process of identifying anticipated projects with the greatest value. Bidders who win through excessive optimism will bear the loss. As a consequence, individuals unskilled at estimating future values will tend to be driven from the field and individuals with the necessary skills will tend to prevail.

The uses that will generate the highest returns for the owners of the water rights are not *ipso facto* the uses with the highest value when all other interests are also taken into account. Uses will vary in the extent to which they generate external costs or benefits, *i.e.*, costs or benefits external to the calculation of the owner. But the problem of varying externalities is completely independent of the ownership of anticipatory rights. If it is appropriate for government to constrain actual water uses in the light of those externalities—whether by prohibiting or taxing disfavored uses, by subsidizing favored ones, or by administrative review of such effects as part of the process of change in water use—government may do so whether or not people are able to hold anticipatory rights.¹³

B. Effects of ownership of anticipatory rights

The primary objection to ownership of anticipatory rights is likely to be expressed as a fear of "speculation" and "hoarding." "The big oil companies will grab up all the rights." "Money means nothing to those companies." The fear deserves a very close look.

The first answer to such opposition is that prohibition of anticipatory rights does not prevent speculation. Rules proscribing reservations for

11. See, *e.g.*, COLO. CONST. art. XVI, § 5.

12. See S. BREYER, REGULATION AND ITS REFORM 78-89 (1982).

13. For a discussion of the impact that administrative review procedures can have on the process of converting anticipatory rights to active use rights, see Section III.B.1.(c), *infra*.

future use merely force the would-be speculator to disguise his activity by wasting resources in the construction of diversion works that are either economically unjustifiable regardless of their timing (as in Table 1), or are premature (as in Table 2).¹⁴

Second, in the case of nonrenewable water resources, behavior that is often labelled speculative has the effect of reserving the resource for use at future times when, according to the speculator's calculation, its value will be higher. It is the prospect of enjoying a greater return (even after all costs and returns have been discounted to present value) that induces a resource owner to hold it for sale at a later period. Future consumers compete with present ones simply because resource owners anticipate their demand and respond to the prospect of enhanced returns by deferring extraction. Unless we wish to deprive future consumers of the use of exhaustible resources, we should not condemn the process that makes such use possible.¹⁵

While fear of speculation and hoarding constitutes a primary objection to ownership of anticipatory rights, a related fear is that such rights will cause waste. This objection assumes that water will not be put to use between the time of acquisition of the right and ultimate application of the water to the longterm use for which it was acquired. But anticipatory water rights need not prevent other uses in the interim. Suppose X is holding anticipatory water rights based on his expectation of an application to oil shale in the year 2010. Y comes along with a project that could use the water from 1982 through 2009, and the benefits from use in that period exceed the costs of the project. Clearly this creates an opportunity for a mutually favorable transaction between X and Y. And, assuming that there are many Xs and Ys (that is, many people holding anticipatory water rights and many people interested in renting them for the intermediate or short-term), there would be a competitive market for such rentals. But the owner or lessee of the rights, in considering investment in diversion works, would measure the costs against returns over the leasehold period; the skewed calculation represented by Table 1 would not occur.¹⁶

14. See MEYERS & POSNER, *supra* note 3, at 41.

15. For a consideration of this reservation process and some of its frailties, see Williams, *Running Out: The Problem of Exhaustible Resources*, 8 J. LEGAL STUD. 165 (1978); SCARCITY AND GROWTH RECONSIDERED (V. K. Smith ed. 1979).

16. In reality, of course, the investor must deal in probabilities of future value. Changes may occur after completion of the diversion works that would make it profitable to use those works indefinitely. But in deciding to proceed, the investor will discount such changes in accordance with their probability. Thus he will proceed only when the present value of the costs of the facilities are less than the *expected* present value of the returns. The expected value of returns sums up the returns under each plausible scenario, discounted in each case for probability. Thus if there are only two scenarios, A and B, and if scenario A has a probability of 1-in-3 and returns of \$1 million, while scenario B has a probability of 2-in-3 and returns of \$3 million, the expected value of the returns is ($\frac{1}{3} \times \$1$ million) plus ($\frac{2}{3} \times \$3$ million), or \$2,333,333.

Of course lessees of such rights would have to pay the owners rent, an expense that would be unnecessary if the water had remained unowned. But in a competitive market the rent would be no more than what was economically sound—the value of the most valuable alternative use precluded by the lessee's use of the water. No lessee should get the water unless his use is sufficiently productive to enable him to pay such a rental.

Even in markets with only one owner of anticipatory rights, that owner would still want to maximize his returns by making rentals. Such a monopoly position might cause fewer anticipatory rights to be leased than in a competitive market. The solution to such a problem would be a prohibition on any one entity's holding an excessive fraction of the total anticipatory rights outstanding.¹⁷

A parallel fear expressed in the speculation and hoarding epithets is that owners of anticipatory rights will fail to sell them to water developers even when the time is ripe. But a properly functioning market provides incentives to discourage speculators from holding on to their properties for longer than is in the public interest. For example, what prevents an owner of undeveloped land from refusing to allow its development after the time for such action is ripe? If people with ideas for alternative uses can readily make bids for undeveloped land, the owner who persists in holding his land undeveloped incurs opportunity costs. He must forego not only the money offered by bidders but also the income that he could earn by investing that money. A speculator in coffee (or any other commodity in which definite property rights exist) incurs similar opportunity costs: if he fails to sell a bag of coffee today, he must forego the income that he could enjoy from the proceeds of the rejected opportunity to sell. The holder of a bag of coffee is constantly trading off the present value of a future sale against the present value of a current one. If the price bid by current consumers were to exceed the present value of the proceeds of a future sale, some holders would sell off (thereby bringing the price relationships back into equilibrium, so that the present value of a future sale just equals the current price).

To describe the incentive mechanisms which encourage speculators to sell at the right time is not, of course, to say that the right number of speculators will necessarily do so at the right time. But the market provides great rewards for those who decide correctly. Denial of those rewards to speculators who decide incorrectly constitutes a substantial penalty for them. Natural selection is likely to eliminate (or at least confine to a small portion of the market) all would-be speculators except those who are, on the average, good at choosing their timing.

In a properly functioning water market, similar incentives would op-

17. For a discussion of this solution to monopoly problems, see Section III.B.2, *infra*.

erate on the owners of anticipatory water rights. Suppose, for example, that X has acquired water rights in anticipation of sale for oil shale purposes in the year 2010, at a price that he calculates will yield returns with a present value of \$2 million. If entrepreneur Y conceives of a project that will start immediately and that will yield net returns with a present value higher than those of X's project, he should be able to offer X a sum large enough to induce him to sell. If the present value of the net returns from Y's project are, for example, \$3 million, both parties can gain by a sale from X to Y at any price between \$2 million and \$3 million.

There are, however, two impediments to the sale or conversion of anticipatory rights. The first is transaction costs and the second is the risk of monopoly ownership of such rights.

1. *Transaction costs*

High transaction costs might buffer an owner of anticipatory water rights from feeling the full brunt of these opportunity costs. For the opportunity costs to have bite, the owner must be more or less continually exposed to opportunities to sell, at prices at (or close to) the true market value of his rights. If high transaction costs cause bids to be rare and to come in at less than the true market value of his rights, then there will not be enough bids, or the bids will not be high enough to impose adequate opportunity costs on the owner.

Relevant transaction costs might apply at two stages: simple *sale* by the owner of the anticipatory rights, and *conversion* of the rights to an active use. The transaction costs for negotiation and execution of a sale should be no greater than for an ordinary sale of a parcel of real property. However, conversion of anticipatory rights to active use is in some respects similar to conventional water rights transfers, such as changes in manner of use, in place of use or in point of diversion. Such transfers typically entail high transaction costs.

Yet conversion of anticipatory rights in fact differs sufficiently from conventional water rights transfers that transaction costs need not prove excessive. Those costs seem to fall into three classes: (a) ones that simply would not apply to conversion of anticipatory rights; (b) ones that might apply, but which any legislature willing to recognize anticipatory rights would want to correct; and (c) ones which would remain in the absence of some innovation.

(a) *Transaction costs inherently inapplicable to sales of anticipatory rights.* A major source of high transaction costs for conventional water rights transfers is the need to protect junior appropriators who are dependent upon return flow from the water in the area of its original use. The relevant transaction costs involve information-gathering and legal

proceedings. The parties engaged in the transfer, and any juniors challenging it, must obtain evidence as to historical use and as to the portion of the withdrawn water that returns to the stream. Then, through some combination of litigation or bargaining, they must work out the terms of protection for juniors who would be adversely affected by the transfer.¹⁸

However, no such evidence-gathering or legal proceedings would be necessary in connection with the transfer of anticipatory rights, for there would be no juniors with any legal right to "return flow." To the extent that there were junior appropriative rights in use, they would necessarily be subordinate to the right of the owner of anticipatory rights to withdraw the entire amount of his paper right. If the anticipatory owner were only entitled to withdraw the consumptive portion of his historic use, that would of course be zero percent, and his right would be utterly worthless. Accordingly, recognition of an anticipatory right necessarily requires that the holder be able to change it to an active use without being subject to the restrictions of "historic use" or of juniors' interests in the non-consumptive portion of the right.

(b) *Transaction costs qualifiedly inapplicable and amenable to legislative eradication.* Conventional water rights transfers are impeded by various statutes, administrative rules, and administrative attitudes. In some states, for example, statutes virtually prohibit such transfers.¹⁹ The prohibitory laws appear designed to prevent owners of paper water rights, which far exceed the needs of the property to which they were originally applied, from enjoying a windfall through sale of the excess.²⁰ This statutory goal of preventing windfalls is inapplicable in the case of anticipatory rights acquired by bidding at auction.²¹ If the bidding has been genuinely competitive, there would be every reason to suppose that the winning bidder has paid the expected present value of the right acquired.²²

In some states doubt exists as to the power of water districts to sell

18. As a matter of substantive law, the right transferred is typically reduced in order to protect juniors. That reduction is not here treated as a transaction cost, as it is necessary to compensate juniors for real losses that the transfer would otherwise impose. One may view the pre-transfer water right as having two components, one owned in full by the nominal owner and transferrable by him, the other owned *de facto* by the juniors. On transfer, the portion owned *de facto* by the juniors is split off and (by virtue of cancellation of the nominal owner's right) functions to protect the value of their rights.

19. See, e.g., NEV. REV. STAT. §§ 533.040 (1981), 533.325 (1979); OKLA. STAT. Tit. 82, § 105.22 (1981 Supp.); S.D. LAWS ANN. §§ 46-5-33 to 46-5-35 (1967 & Supp. 1982).

20. See E. MEAD, IRRIGATION INSTITUTIONS 174 (1903); MEYERS & POSNER, *supra* note 3, at 25-27.

21. I assume *arguendo* that the windfall prevention goal might under normal circumstances be sufficient to justify the transfer restriction. In fact there are cogent reasons to repeal such statutes altogether. See MEYERS & POSNER, *supra* note 3, at 25-27.

22. See note 16 *supra* for a discussion of expected values.

off water rights.²³ Inherent in any legislative decision to recognize anticipatory rights would be approval for institutional holders of those rights to transfer them. Such power to transfer would be essential if anticipatory rights were to be an effective means of removing incentives to speculative investment in diversion works.²⁴

These restrictions on transfers or clouds upon the legality of transfer generally tend to arise out of attitudes that are inconsistent with recognition of anticipatory rights. While those attitudes might constitute a formidable obstacle to recognition of such rights, any legislature that was persuaded of the advantage of recognizing anticipatory rights would almost surely be ready to eradicate these restrictions or clouds.

(c) *Transaction costs applicable to conversion of both anticipatory and conventional rights.* A serious obstacle to changes in the use of conventional water rights is that, although the parties engaged in the transfer must protect juniors who would be adversely affected, the transferee typically obtains no property right in the return flow at the new location. Thus the parties to the transfer confer an uncompensated benefit on water users downstream of the point to which the transfer is made. Their inability to capture the value of that benefit, coupled with their duty to protect adversely affected juniors, amounts to a de facto tax on transfers.²⁵

The impact of this de facto transfer tax on the conversion of anticipatory rights to active use rights would be to load the dice as between types of

23. See, e.g., NEB. REV. STAT. § 46-122 (1978 Reissue); 51 Cal. Op. Att'y Gen. 153, No. 68-102 (1968) (saying that a water conservation district held its water in trust to receive and distribute water to landowners within the district, so that it could not sell surface recreational water rights to a land developer); and see CAL. WATER CODE § 22261 (West, 1956) ("Nothing in this article [referring to Water Code §§ 22250-64 (West 1956 & Supp. 1982)] authorizes the sale of any water right" [by an irrigation district]). This incapacity of California water agencies appears to have been remedied by Assembly Bill 3491 (1981-82 regular session), which amends §§ 1009, 1010, 1011 and 1427 of the Water Code, and adds Chapter 3 (commencing with § 380) to Division 1, and Chapter 6.6 (commencing with § 1435) to Part 2 of Division 2, of the Water Code. CAL. WATER CODE codified in Ch. 867, Statute of 1982 (1982). See generally MEYERS & POSNER, *supra* note 3, at Appendix 1.

24. Happily, recent years have reflected some legislative readiness to enhance transferability of water rights. In California, for example, it had been the view of the State Water Resources Control Board that a rights-holder's effort to transfer a water right in any given year demonstrated that he was not applying his water to a beneficial use and was therefore not entitled to it afterwards. See S. ANGELIDES & E. BARDACH, *WATER BANKING: HOW TO STOP WASTING AGRICULTURAL WATER* 10-11 (Institute for Contemporary Studies 1978). State legislation has now corrected this. See CAL. WATER CODE §§ 109, 1011, 1244, 1725-45 (West, 1982 Supp.).

25. See L. M. HARTMAN & D. SEASTONE, *WATER TRANSFERS: ECONOMIC EFFICIENCY & ALTERNATIVE INSTITUTIONS* 8-14 (1970). Where the transfer is to a different stream, the transferee may be able to retain a property right in the return flow from the new use. See *City & Co. of Denver v. Fulton Irrigation Ditch Co.*, 179 Colo. 47, 506 P.2d 144 (1972); Williams, *Optimizing Water Use: The Return Flow Issue*, 44 COLO. L. REV. 301, 311-21 (1973). The exception for imported water is helpful but leaves large quantities of water subject to the general rule.

uses to which the water could be devoted. A 10 percent consumptive use (*i.e.*, 90 percent of the water originally withdrawn returns to the stream) clearly imposes a far smaller burden on the total water system than one which is 100 percent consumptive (zero return flow to the stream). Yet prospective developers of projects with low consumptive use would enjoy no advantage when bidding for anticipatory rights against prospective developers with a 100 percent consumptive use. Nor would they enjoy any possibility of recapturing the value of the 90 percent of the water which they would return to the stream. The most attractive remedy would be to give those who apply the water to an active use the right to resell or reuse such return flow.²⁶

A further type of transaction cost exists in those legal systems where change of water use is subject to administrative review, not merely to protect juniors, but for broader purposes.²⁷ Imposition of such review could be expected to have two effects on the operation of anticipatory rights. First, the review process itself would be a transaction cost. Second, any bidder for an anticipatory right at the initial auction would want to discount his bid against the possibility of administrative rejection of some prospective development, and accordingly the revenues generated by sale of anticipatory rights would be lower.

A state employing such a system would have to determine whether the gains—such as, perhaps, the opportunity to prevent distortions arising from externalities in the application of water to a new use—were sufficient to justify the costs. More precisely, the state would want to determine how to maximize the excess of expected gains over the costs. If many complex issues were cognizable in the review process, and the agency were afforded wide ad hoc discretion, then the costs to water owners—both out-of-pocket costs from participating in the process and uncertainty costs from being unable to plan—would be high. If so, the review process would be a substantial impediment to conversion of anticipatory rights into active use rights. A legislative decision to create a high-cost review process could represent such a preference for administrative discretionary

26. See MEYERS & POSNER, *supra* note 3, at 29–31.

27. For example, Wyoming permits owners of water rights to transfer them with the permission of the State Board of Control, which is empowered to inquire into such matters as “the economic loss to the community and the state if the use from which the right is transferred is discontinued,” and the “extent to which such economic loss will be offset by the new use.” WYO. STAT. § 41-3-104 (1977). See also Comment, *Changing Manner and Place of Use of Water Rights in Wyoming*, 10 LAND & WATER L. REV. 455 (1975). Read broadly, this statute would allow the board to condition grant of a permit on resolution of a very elaborate cost/benefit calculation, including, for example, pecuniary spillover effects of the transfer. Alternatively, of course, one might construe the provision as referring to the economic interests of the exchanging parties, so that their determination to make the exchange would give rise to a virtually conclusive presumption that the advantages of the transfer outweighed its drawbacks.

processes over the market as to be inconsistent with the premises of anticipatory rights.²⁸ But a process limiting the grounds of review and the scope of the agency's ad hoc discretion would not impose unduly high transaction costs on transfer of anticipatory rights.

Moreover, even where the state elected to impose a high-cost review process, the owner of the anticipatory rights would face similar costs were he himself to convert those rights to active use. Since the returns from conversion to active use must be discounted for the risks of the review process—regardless of whether it is the holder of the anticipatory rights or a buyer of those rights who wishes to affect the conversion—that process is simply a burden on *any* conversion. The review process would not impede the ability of entrepreneurs who conceive of active uses different from those intended by the original owner to bid the rights away from him.

Finally, a state would logically want to provide for review of conversion of an anticipatory right to active use by whatever criteria (if any) it applied for review of initial *applications* to a beneficial use under its present system, rather than the criteria used for *transfers*. In terms of physical effects, clearly conversion of an anticipatory right is the equivalent of the former, not the latter. Under such a view, application of water to active use would face precisely the same hurdles under the anticipatory rights concept as under the beneficial use doctrine.

In summary, high transaction costs in the conversion of anticipatory rights into use rights would carry a risk of unduly delaying water development. Such transaction costs would tend to shelter owners of anticipatory rights from the opportunity costs inherent in holding on to their rights too long. However, some of the potential sources of high transaction costs are simply inapplicable to the conversion of an anticipatory right, while others are such that any legislature ready to recognize anticipatory rights would surely want to remove them. Suitable legislation also can cure the problem of distortion between uses of different degrees of consumptiveness, and can assure that administrative review of conversion of anticipatory rights is no more onerous than review of the comparable event under conventional appropriation rules.

28. Whatever the costs of the review process, any state requiring such review would be burdening the conversion of low-value active use rights to high-value ones as well as the conversion of anticipatory rights to active use ones. Where the process was very costly, it might well be that the low-value rights held in place by these burdens were of no more value than the anticipatory rights whose conversion was similarly obstructed. Of course the value takes a different form: low-value active use rights presumably accomplish some affirmative physical task, such as watering a field and making crop growth possible, while anticipatory rights offer a far more subtle contribution, that of removing incentives to disguise speculation with wasteful water projects.

2. Monopoly

Monopolistic control of anticipatory rights might also impede sale for longterm uses. Under some conditions a monopolist might profit by selling off, in any given time period, less than the quantity of anticipatory rights that would be sold off in a competitive market.²⁹ But solutions are available. The statute enabling creation of anticipatory rights could provide that no single entity would hold more than some specific percent of the anticipatory rights. The prohibition would have to operate so as to avoid evasion by the use of affiliates. Further, because water transportation costs are high, markets are to some degree local; thus it might be wise to place some additional ceiling on the fraction of anticipatory rights held by any one entity in each watershed.

The problem of monopolistic control seems, therefore, reasonably susceptible of solution. Further complications could ensue, however, if one tried to use anticipatory rights to solve some of the political problems of water allocation; these are discussed below.

IV. ANTICIPATORY RIGHTS IN THE CONTEXT OF INTERBASIN TRANSFERS

Up to this point this paper has considered the recognition of anticipatory rights primarily in terms of avoiding the economic waste that occurs when speculators in water rights must disguise their speculation by making an actual diversion. But there is another dimension to the recognition of anticipatory rights: such recognition may present an opportunity to defuse some of the intense political conflict over interbasin transfers.

Market systems have a tendency to defuse political conflict, largely because anyone who obtains a resource must *pay* the prior owner a price that satisfies that owner.³⁰ Thus the shipment of several hundred billion dollars worth of oil out of Texas does not much alarm the Texans, since that oil is owned by people and corporations who sell only at prices they consider acceptable. (Even in the era of price controls and windfall profit taxes, the point is largely true.) In contrast, in the currently pending litigation over transfer of New Mexico water to El Paso, several of the New Mexico parties have urgently objected that if El Paso is allowed to make the proposed appropriation, it will have acquired the resource "free."³¹ Partly as a consequence of there being no automatic pecuniary compen-

29. The monopolist typically chooses a level of output lower than would prevail under competitive conditions. In the case of sale of a resource over time, however, he will tend to move sales away from the time periods where demand is inelastic and into periods where it is relatively elastic. This tendency might work to accelerate sales. See Williams, *supra* note 15, at 177.

30. For a general exposition of the point, see D. Lee, *The Political Economy of Social Conflict, or Malice in Plunderland* (International Institute for Economic Research, Orig. Paper 36, 1982).

31. See Post-Trial Brief of Defendant Garza and Defendant-Intervenors, at 5, 15-17, *City of El Paso v. Reynolds*, Civ. No. 80-730-HB, (D.N.M. filed April 8, 1982).

sation when water is appropriated for use in another region, there is heavy political pressure for statutes arbitrarily protecting basins of origin.³²

Provision for the ownership of anticipatory rights would seem capable of defusing interregional conflict over water, just as private ownership of unextracted resources plays such a role in oil and gas. To the extent that owners of anticipatory water rights were local individuals or water development agencies, the flow of funds to such owners would tend to temper the political resistance of citizens in the exporting basin. However, there is no reason to think that such local owners would predominate. In the case of oil, local people tend to receive a significant share of the proceeds of sales: the owner of the overlying land will likely be entitled to royalty on the extraction, and the extraction process itself generates local employment. But the lion's share of anticipatory rights in Colorado's Western Slope water, for example, might be held by shrewd investors in New York, Chicago and Los Angeles.

A partial remedy for the problem of out-of-state owners would be to allocate the proceeds from the initial auction of anticipatory rights to the water's area of origin.³³ Although there seems no objection to doing so, such an allocation would probably not fully defuse the political conflict. While the auction proceeds would presumably approximate the present value of the water, the discount to present value might make those proceeds look small compared to the region's perception of the future value. Moreover, the proceeds would not capture significant pecuniary "spillover" benefits, such as increases in land value, employment, and entrepreneurial opportunities, that would accrue to the region if it retained the water locally and built an economy on its use. The mystique of water is such that residents of an export region may have a very optimistic view of those spillover benefits.

A further means to help defuse political conflict—in addition to allocating proceeds of the sale of anticipatory rights to the water's basin of origin—might to be relax the anti-monopoly rules in favor of ownership by regional entities of a political or semi-political nature. These entities would certainly include, for example, irrigation districts, and could in-

32. This applies both to in-state transfers, *see, e.g.*, CAL. WATER CODE §§ 10505, 11460 (West 1971 & Supp. 1982); COLO. REV. STATS. § 37-45-118(1)(b)(IV) (1973) (application only to transbasin diversions by a water conservancy district; and to out-of-state transfers, *see, e.g.*, N.M. STAT. ANN. § 72-12-19 (1978); *cf.* NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE 327-333, Recommendation 8-3.b (1973); ANGELIDES & BARDACH, *supra* note 24, at 32.

33. Assuming special statutory provision or reasonably well functioning capital markets, the area-of-origin entity to which the proceeds were allocated could use them to purchase the rights. (Apart from special statutory provision, it could use borrowed funds to pay for the rights, repaying the money when the auction proceeds were disbursed to it.) Thus it would obtain the rights without payment. This possibility relates to the suggestion below that area-of-origin anxiety could be further reduced by some relaxation of anti-monopoly rules in favor of water districts.

clude general purpose municipal governmental units such as counties or cities. As a result, more of the proceeds of *ultimate* sale of the anticipatory rights, on conversion to active use, would flow to the area of origin itself.

But such a change in favor of regional ownership introduces problems of its own. To the extent that local political or semi-political entities own the rights, there is less likelihood of response to economic incentives than would be true if the rights were held by private entities. For example, a political or semi-political owner seems more likely than a private owner to place an unrealistically high value on the rights that it holds. The fact that the entity's managers will have a political interest in the growth of the region seems likely to obstruct recognition of the value of pecuniary offers by water developers from other areas. Further, although journalists are diligent in smoking out certain forms of "waste" by public officials, opportunity costs—the foregoing of returns from a potential sale—seem generally to elude the press. As a consequence, public entities would be more likely than private ones to reject bids by developers with projects that are in fact far more economically valuable than the local uses to which the entity might ultimately allocate the rights.

One way to offset this effect might be to give the political constituency of the entity holding the rights some immediate interest in the proceeds of any sale that the entity might make. For example, if the owning entity were required to distribute the proceeds of any sale to its constituents, then the constituents would put pressure on the politicians to approve realistic bids for uses outside the region. Whatever the solution, the goal of depoliticizing conflict over water transfers is likely to require some compromise of the pure efficiency purposes of recognizing anticipatory rights.

CONCLUSION

Present appropriation law generates wasteful expenditure of resources because it forces people (individuals, private corporations, and public corporations) who anticipate rising demand and rising market value for water rights to invest in wasteful facilities in order to secure rights to future use of water. Such people must disguise their "speculative" intent with diversion works that are economically unjustifiable or premature. Recognition of anticipatory rights in water would remove the incentive for such wasteful expenditures.

Recognition of anticipatory rights should not foreclose any economically sound water development project. Antimonopoly rules should preserve a competitive market both for lease and for sale of the rights in fee simple. Because the predominant sources of high transaction costs for conventional water transfers are either inapplicable to conversions from

anticipatory status, or could be easily removed by a legislature authorizing recognition of such rights, holders of anticipatory rights would be kept under substantial pecuniary incentives to sell those rights for application to active use at a suitable time.

Finally, recognition of anticipatory rights holds out some prospect of helping to defuse the political tension commonly involved in inter-regional water transfers. By helping to provide a mechanism for compensation of citizens in the basin of origin, anticipatory rights can change the bargaining over such transfers. Instead of political wrestling, with the losing region defeated by the winning region, the bargaining can become a process of mutually advantageous exchange. But achievement of this latter goal may partly frustrate the goal of attaining full economic rationality in the allocation and development of water resources.