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Allocation of Rights to Water: Preferences, Priorities, and the Role of the Market

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Allocation of Rights to Water: Preferences, Priorities, and The Role of the Market†

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I. INTRODUCTION

The purpose of this article is to suggest revision of the underlying rationale by which water resources are allocated. The basic proposition is that market forces should be permitted to play an expanded role in the allocation of water rights thus encouraging or at least permitting efficiency in water use.

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During the past several decades much has been written concerning modifications of, or alternatives to, existing allocation systems, but few changes have ever become part of the legal systems. In particular, suggestions that the market be permitted to allocate water have been rejected out of hand.[1] The nearly universal reaction of decisionmakers has been that markets were not to be trusted and must be subordinated to systems which were thought better to protect the rights of those who could not compete on an economic basis.[2] The implicit assumption has been that legitimate interests of the public would be jeopardized by making rights to water negotiable.

In recommending establishment of transferability in water rights, it is not contended that governmental participation will no longer be necessary. On the contrary, the role of government must still be substantial. In the first place, governmental action will be required initially to apportion rights to water between public and private sectors. Those rights retained in the public domain must be administered. Also, desired investments in water resources which will not be made by private entities, such as major flood control projects, must continue to be made by the government. Furthermore, those rights which are not to be set aside or purchased for the public domain must be identified, recorded, and made available for allocation to private entities. The government must also act as arbiter and referee as these rights are exercised and exchanged.

The issues addressed in this article deal with the institution of property rights which is fundamental to every economic system. To be workable, any system of property rights must protect grants made by that system from intrusion. Property rights which are uncertain or ill-defined are of little value; only rights which are clear and stable can be enjoyed and used to their fullest extent.

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1. *But see* NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE (1973) (Commission recommendations make extensive use of market principles).
2. But of this present system, the following represents an almost unanimous viewpoint:

> The standards now used are too vague to be applied with any degree of consistency. Thus, there is no real assurance that judges, juries, or administrators will make the right decisions in terms of general welfare. Decisions are now based on perceived societal preferences rather than a demonstrated preference ordering of the sort that can be provided through the price system by the difference in the prices that various individuals are willing to pay.

Johnson, *An Optimal State Water Law: Fixed Water Rights and Flexible Market Prices*, 57 VA. L. REV. 345, 357 (1971).

However, an inherent feature of the water allocation systems in most states today is that property rights are ill-defined. Additionally, most jurisdictions have enacted limitations on, and priorities and preferences in, the use of water resources which are inconsistent with, and in some instances diametrically opposed to, the distribution of rights which would result from the operation of a system of free market transfers.

Theoretically, the only priorities and preferences that a market recognizes are those which reflect the "highest and best use" as defined in economic terms. In other words, that person who can derive the highest net return from a particular use of a given unit of water will be able to buy and use the water for that purpose. The frameworks within which water rights are currently allocated and water development investments are made discourage, and sometimes preclude, such a reallocation.

Opposition to the market comes from several sources; constitutional draftsmen, judges, legislators, administrators and scholars have tended, for reasons not readily apparent, to be more suspicious of the market as an allocative mechanism for property rights in water than for other forms of property. They presume that a market system cannot smoothly function to allocate rights to water. With the evolution and perfection of model systems, it is hoped that these "sensory" objections can be overcome.

Additional opposition arises from concern about third party effects such as the potentially detrimental influences that water transfers could have on areas of origin.[3] Others who are using water for purposes which yield a low value of product-per-unit of water fear that they will be unable to compete. Although these reactions may be understandable, those who oppose permitting mar-

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3. With the exception of a few small drainage basins in arid regions, no river system has been fully regulated or used. In fact, only a small part of the country's total flow volume has been harnessed and applied for human benefit, though references are frequently made to water "shortages." Actually, in most geographical areas the problems involved in water resource development are not attributable to the shortage of water, but rather to a natural misallocation.

Oeltjen, Harnsberger & Fischer, *Interbasin Transfers: Nebraska Law and Legend*, 51 NEB. L. REV. 87, 88 (1971). As a result of this "natural misallocation" it is economically desirable to transfer water from areas of abundance to areas where it can be used. Questions of whether the transfer would be ecologically sound or free of detrimental effects on third persons are most assuredly going to arise.

For examples of the problems arising from intra-basin transfers, see Ellis, *Water Transfer Problems: Law*, in WATER RESEARCH 233 (A. Kneese & S. Smith eds. 1966).

ket forces to control the allocation of water rights will most likely vigorously defend the market system as the only acceptable means for allocating most other goods and services.

II. PREFERENCES, PRIORITIES, AND WATER DOCTRINE[4]

A. Riparianism

The precise origin of the American law of riparianism is the subject of considerable dispute among legal historians and commentators. Whether it emanated from French civil law or English common law, the principal development of the riparian doctrine in the United States[5] apparently originated with two early American jurists, Story and Kent.[6]

In the landmark 1827 case of *Tyler v. Wilkinson*,[7] Justice Story is said to have first employed the term "riparian" in analyzing the nature and extent of the right which persons owning land contiguous to a watercourse have to the use of the water therein:

> In virtue of this ownership he has a right to the use of the water flowing over it in its natural current, *without diminution* or obstruction. But, strictly speaking, he has no property in the water itself; but a simple use of it, while it passes along. The consequence of this principle is, that no proprietor has a right to use the water to the prejudice of another. It is wholly immaterial, whether the party be a proprietor above or below; . . . the right being common to all the proprietors on the river . . . . This is the necessary result of the perfect equality of right among all . . . . I do not mean to be understood, as holding the doctrine, that there can be no diminution whatsoever, and no obstruction or impediment whatsoever, by a riparian proprietor, in the use of the water as it flows;

4. The limitations on private property rights in water can be broadly classified as priorities and preferences. For purposes of this article, priorities will concern all rights and limitations inherent in a permit or an appropriation system. The remaining rights will be generally classified under the heading of preferences. This latter classification is not to be confused with the more technical definition of "preferences" in water law which connotes a statutory or constitutional scheme by which certain uses are preferred over other competing uses of another class. Unless the text demands otherwise, the term "preferences" will be used in its general sense.
5. The riparian doctrine forms the primary basis of laws governing the use of watercourses in thirty of the states lying east of the hundredth meridian, Mississippi having statutorily adopted the appropriation doctrine. The doctrine is also recognized in varying but generally limited degrees in several western jurisdictions.
6. 1 WATERS AND WATER RIGHTS § 15.2A (R. Clark ed. 1967).
7. 24 F. Cas. 472 (C.C.D.R.I. 1827) (No. 14,312).

> for that would be to deny any valuable use of it. . . . [T]here must be allowed of that, which is common to all, a *reasonable use*.[8]

This language succinctly illustrates both the nature of the riparian proprietor's correlative, usufructuary right incident to ownership of riparian land and the two principal allocation theories which evolved under the riparian doctrine: "natural flow" and "reasonable use."

According to the natural flow theory, each riparian has the right to receive the flow of the watercourse "undiminished in its natural quantity and quality."[9] The practical effect of this theory is substantially to restrict economic development and utilization of water resources, since no one but the last riparian downstream can divert water from a watercourse without violating natural flow principles. Although vestiges of the natural flow doctrine are evident in some jurisdictions, the theory has been largely abandoned in favor of the doctrine of reasonable use.[10]

The reasonable use theory generally permits a riparian owner to consume, within the natural watershed, amounts of water "reasonable" in light of similar reasonable requirements of other riparian owners.[11] The determination of what uses are reasonable is basically a question of fact in light of all the circumstances and may vary from jurisdiction to jurisdiction and from time to time. A primary criterion in the determination of reasonableness is the character and purpose of the use itself, isolated from surrounding circumstances; the question is whether the use is reasonable in view of the needs of the user.[12]

The fundamental preferential use developed through the riparian doctrine is classified as "natural," "ordinary," or "domestic." This classification of uses reflects a right of self-preservation and creates in the riparian owner a preference to supply the needs of himself, his family, and his livestock for such purposes as drinking, cooking, and cleansing. These uses are recognized as reasonable *per se* and, under general riparian principles, the upstream riparian can

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8. *Id.* at 474 (emphasis added).
9. *E.g.*, Harvey Realty Co. v. Borough of Wallingford, 111 Conn. 352, 359, 150 A. 60, 63 (1930); Hendrick v. Cook, 4 Ga. 241, 256 (1848).
10. *See, e.g.*, Dumont v. Kellogg, 29 Mich. 420, 18 Am. Rep. 102 (1874). *See* F. TRELEASE, WATER LAW 10-12 (2d ed. 1974); 1 S. WIEL, WATER RIGHTS IN THE WESTERN STATES §§ 745-48 (3d ed. 1911).
11. *See, e.g.*, Stratton v. Mt. Hermon Boys' School, 216 Mass. 83, 85, 103 N.E. 87, 88 (1913). *See generally* Fischer, Harnsberger & Oeltjen, *Rights to Nebraska Streamflows: An Historical Overview with Recommendations*, 52 NEB. L. REV. 313, 316-17 (1973) [hereinafter cited as Fischer].
12. Lauer, *Reflections on Riparianism*, 35 MO. L. REV. 1, 9 (1970).

exhaust the water source to supply these needs even though a lower riparian is deprived of water for his own domestic purposes.[13] In this situation, the upstream riparian obviously occupies a preferred position *vis-a-vis* the lower riparian. On the other hand, a riparian needing water for domestic purposes can generally require "upstream" riparians to curtail non-domestic uses.

The courts have characterized those riparian uses not generally considered as arising out of the necessities of life as "artificial," or "extraordinary." Common examples are water for manufacturing, power, recreation, and irrigation. Where conflicts arise among artificial uses, the test of reasonableness determines which use will be preferred.[14]

The application of the natural/artificial use test has spawned inconsistency and uncertainty in many jurisdictions. For example, in arid and semi-arid regions of the West, the use of water for irrigation is necessary for successful farming and in a very real sense may be considered "necessary for survival." In response to these conditions, judicial and legislative[15] modifications generally have resulted in assignment of a preferred status to irrigation users.[16]

Another problem area arises when a municipality claims rights as a riparian proprietor to supply the needs of its inhabitants—the stream flows by the city and the inhabitants' uses individually fall within the domestic classification. Although there are conflicting holdings, the general rule has developed that a municipal corporation cannot, as a riparian proprietor, claim the right to supply the domestic needs of its inhabitants from the stream.[17]

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13. 1 H. ROGERS & A. NICHOLS, WATER FOR CALIFORNIA § 177 (1967); 2 H. FARNHAM, WATERS AND WATER RIGHTS § 467 (1904); 1 S. WIEL, *supra* note 10, § 741; J. GOULD, THE LAW OF WATERS § 205 (3d ed. 1900). But note that this natural preference for domestic use does not usually extend to municipal use, *i.e.*, the general rule is that only the lot owners on the stream are accorded this preference. For a discussion of artificial uses in general, see 1 S. WIEL, *supra* note 10, at 803-07.
14. 1 WATERS AND WATER RIGHTS, *supra* note 6, at 84.
15. *E.g.*, The Nebraska Constitution declares water for irrigation a "natural want." NEB. CONST. art. XV, § 4. *See* 1 S. WIEL, *supra* note 10, § 742 (author argues that these modifications were caused by a misunderstanding of the application of the term "natural uses").
16. *See, e.g.*, Harris v. Harrison, 93 Cal. 676, 29 P. 325 (1892); Frizell v. Bindley, 144 Kan. 84, 58 P.2d 95 (1936).
17. 1 C. KINNEY, IRRIGATION AND WATER RIGHTS 816 (2d ed. 1912). *See also* Trelease, *The Concept of Reasonable Beneficial Use in the Law of Surface Streams*, in ECONOMICS AND PUBLIC POLICY IN WATER RESOURCES DEVELOPMENT 272, 278 (S. Smith & E. Castle eds. 1964).

    It has been uniformly held that such municipal demands cannot have the preference granted to the individual domestic

Such inconsistencies as these have led to a modern tendency to disregard the natural/artificial use classification in favor of a single reasonable use standard.[18] But even with the change in nomenclature, most jurisdictions continue to allocate preferentially to the "necessary for survival" demands of riparians over the use of water for other purposes.[19]

As noted earlier, an adjudication of reasonableness results in a determination that one type of use is of relatively greater "value" than another as between the riparian litigants. This method of allocating rights allegedly serves to maintain a flexible system of water rights. Indeed, flexibility is generally regarded as one of the riparian doctrine's most commendable features. In the words of one writer, the riparian doctrine "facilitates an adjustment of conflicts between uses in accordance with the needs of each user and dictates of general public interest."[20] Thus, in areas in which certain uses may be considered especially important, for instance irrigation in Nebraska and Texas, such uses would be preferred under local application of the reasonable use rule.

Despite its apparent flexibility, the reasonable use theory is by no means free from criticism.[21] The very nature of the reasonable use test creates uncertainties as to who may use the water, how much can be used, for what purposes it may be used, and for what period of time it will remain available. A use, though adjudged reasonable today and entitled to preferential treatment, may not be so considered tomorrow due to changed circumstances.[22] Moreover, upstream riparians who begin to exercise dormant rights to reasonable use may significantly alter the availability of water to other riparians, even though their uses are likewise considered

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> user. But in several instances it can be determined from the context that statutory references to "domestic use" probably include the use of water for what is more commonly called "municipal use."

Id. at 278. *Accord*, 1 H. FARNHAM, *supra* note 13, §§ 136a-137a (1904); 1 C. KINNEY, *supra*, at 816.

18. 1 S. WIEL, *surpa* note 10, § 743.
19. *E.g.*, Prather v. Hoberg, 24 Cal. 2d 549, 150 P.2d 405 (1944); Frizell v. Bindley, 144 Kan. 84, 58 P.2d 95 (1936).
20. Fisher, *Western Experience and Eastern Appropriation Proposals*, in THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES 75, 78 (D. Haber & S. Bergan eds. 1958).
21. Farnham, *The Improvement and Modernization of New York Water Law Within the Framework of the Riparian System*, 3 LAND & WATER L. REV. 377, 378, 431-33 (1968).
22. See a pro-riparian author's view of this criticism in Lauer, *supra* note 12, at 13-15.

reasonable.[23] A further complicating factor is that judicial opinion regarding what is "reasonable" is diverse.

Casting the burden of allocating water rights on the judiciary as a matter of policy should also be questioned. Litigation is generally time-consuming, expensive, and uncertain in its outcome. Furthermore, even the results of "successful" litigation tend to be narrow in scope. Judgments pertain only to the facts as they exist at a certain time and only to the parties before the court. Also, issues being litigated may be unduly influenced by precedent. Adjudication rarely grants any broad degree of protection to the successful litigant or to others in similar situations.

In addition to the above allocational preferences, the very definition of the riparian right creates property interests in some to the exclusion of others. First, only those persons whose land borders the stream are entitled to compete for rights therein. Second, even these rights are limited by such doctrines as the "source of title" test[24] and the prohibition against transbasin diversion.[25]

Of all the facets of the doctrine, the absolute preference for riparian versus nonriparian land seems to have the greatest justification in economic reality. The advantages of owning land which borders on a stream will likely be capitalized into the price of land. The shortcoming is that so many limitations have been placed on the use of the water that in many cases little value remains. For example, rights cannot be sold apart from the land, nor can water be transferred to areas outside the watershed. Also, upstream riparians cannot sell downstream because they already have a duty to share—an interestingly socialistic concept which developed at a time when the industrial revolution and *laissez faire* economics were coming into prominence. All matters considered, the riparian doctrine has rightly been displaced, modified, or largely ignored

23. Riparian rights are generally not lost through mere non-use. Fischer, *supra* note 11, at 317.

24. "Under this test, if a parcel of riparian land is cut off by conveyance from access to a watercourse, the conveyed parcel is declared to be non-riparian unless the conveyance specifically provides otherwise . . . . Land once made non-riparian by severence [*sic*] can never again regain riparian status . . . ." *Id.* at 322-23. The converse is the "unity of title test." "Under this test riparian rights extend to the entire tract held in common ownership at the time of the claim, no matter how acquired . . . ." *Id.* at 323.

25. Oeltjen, Harnsberger & Fischer, *supra* note 3, at 89-91. This prohibition would include the taking of water from the watershed even if used upon land under the same ownership and contiguous with the land which borders the stream.

when modern water allocation systems were being devised.[26] But the systems which were designed to remedy the shortfalls of the riparian doctrine have also fallen far short of any ideal.

B. Prior Appropriation

While the riparian doctrine forms the principal core of water rights jurisprudence in the Eastern states, the doctrine of prior appropriation is largely predominant in the seventeen contiguous Western states and Alaska.[27] The appropriation doctrine originated with the miners of the California Gold Rush days who diverted large quantities of water from public domain streams and lakes for various mining operations. The right to divert a definite quantity of water was established at the time possession and use were initiated. This "first come, first served" theory of ordering rights reflected customs and rules developed by the miners. Unclaimed natural resources were considered free to all; the first possessor acquired protected and superior rights. These early customs and rules eventually gained judicial and legislative approval and have evolved as inherent features of the present system of prior appropriation.[28]

In its purest form, the appropriation system is dramatically different from riparianism and arguably superior from an economic standpoint.[29] Land ownership is essentially irrelevant to the ac-

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26. For arguments encouraging the retention of riparianism, see Lauer, *supra* note 12, at 11-25.
27. W. HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 80-109 (1942).
28. 1 S. WIEL, *supra* note 10, §§ 71-73.
29. Professor Ciriacy-Wantrup has noted:

> [A]ppropriation rights are far better suited for . . . transfer than riparian rights because the former are clearly defined in quantity, seasonal distribution, priority, points of diversion, and other ways. In this respect, therefore, the appropriation doctrine favors *flexibility* in water rights in the course of economic change.

Ciriacy-Wantrup, *Some Economics Issues in Water Rights*, 37 J. FARM ECON. 875, 880 (1955). *See* Bagley, *Some Economic Considerations In Water Use Policy*, 5 U. KAN. L. REV. 499, 508-09 (1957). But Maloney points out that the doctrine of appropriation does not, in fact, remove the insecurity involved in the riparian system. Maloney, *Florida's New Water Resources Law*, 10 U. FLA. L. REV. 119, 126-27 (1957).

See also Farnham, *supra* note 21, at 377. Farnham suggests that even though it be said that appropriative rights are the most transferable, transferability is not without its difficulties. For instance, where nonuse subjects the right to forfeiture, "an [initial] appropriator will not know whether he has lost part or all of his right" and

> since transfer of appropriate water rights is permitted only if it can be effected without prejudice to the other holders of

quisition of water rights—a right is obtained simply by taking water and applying it to a beneficial use.[30] This water may be used on nonriparian land, and generally may even be transferred outside the watershed of origin.[31]

Possession of an appropriative right connotes an actual taking or diversion of a definite quantity of water on a continuing basis. This possession, coupled with a time priority, serves as the basis of allocating water resources among appropriators during times of shortage. Hence, when water scarcity arises, the senior (first) appropriator possesses a right of priority over others who initiated their uses at a later time. Junior (subsequent) appropriators are required to cease using water that is necessary to satisfy fully the senior appropriators' rights even though the junior diverters' uses also meet the beneficial purpose standard.

If possession becomes incomplete or the right ceases to be exercised, the appropriator loses his right. This feature has the advantage, like the doctrine of adverse possession of land or prescriptive rights to water, of permitting the resource to be put to use rather than being saved for an absentee or nonexistent "owner."

The question of proper use involves the fundamental appropriation concept of beneficial use. Beneficial use has been statutorily defined in several jurisdictions. In Arizona, for example, the legislature lists domestic, municipal, irrigation, stock watering, water power, recreation , wildlife (including fish), and mining as purposes for which water can be appropriated.[32] A similar statute is in effect in Texas.[33] Some jurisdictions, within the context of prefer-

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> water rights on the stream, a prospective buyer of an appropriative right may be faced with a difficult question of fact the answer to which can be obtained only at considerable expense.

Id. at 421.

Moreover, even though an appropriation calls for a certain amount of water, even a senior appropriator may receive less than his appropriation calls for if a drought occurs which is so severe as to reduce stream flow below that necessary to satisfy his right. Thus the statement of quantity in the description of an appropriative right merely sets the upper limit of the right, and assures a certain quantity of water only to the extent that it is available.

30. The property right is of indefinite duration, subject to forfeiture or termination if the right is abandoned or the use ceases to be beneficial. Fischer, *supra* note 11, at 317.
31. J. SAX, WATER LAW, PLANNING AND POLICY 2-3 (1968). As a general rule, appropriations may be made for uses outside the watershed if not injurious to vested rights.
32. ARIZ. REV. STAT. ANN. § 45-141 (West Supp. 1977-1978).
33. TEX. WATER CODE ANN. § 5.023 (Vernon 1972).

ence statutes, establish broad classifications of uses which are intended to meet the general test of beneficial purpose.[34] Judicial decisions have articulated a wide range of uses including railway necessities,[35] the operation of fish hatcheries,[36] and the creation of game preserves[37] as constituting beneficial uses.

Even though few uses have been declared not to be beneficial, the scope of beneficial use may vary from jurisdiction to jurisdiction.[38] To the extent that all uses are found beneficial, time priority becomes the sole criterion for determination of allocation in times of shortage.[39] Since time priority can be determined in advance of transfer, a purchaser of a right knows exactly what he is purchasing. He is, therefore, able to place an economic value on the right closely approximating its true value. But to the extent that allocation decisions are actually made by a judicial or administrative determination of what is beneficial, the appropriation system suffers from the same defects as the riparian system with its determination of reasonableness.

It can be argued that one should not be permitted to waste water (assuming that waste is the inverse of beneficial use) to the detriment of others.[40] But the "market" answer would be that if a person is the owner of a right, it is his to use as he sees fit with no interference from the state unless his actions unacceptably injure others. If someone else can put the water to a higher economic use than the waster, he is free to offer to buy it at a mutually advantageous price. If the buyer pays more than the right's value to the seller but less than its value to him, both parties will be better off because of the transfer. Surely even water resource users are rational in the economic sense and would prefer more goods as opposed to fewer.

Many jurisdictions have made appropriation rights rigid through constitutional or statutory modifications. These developments may

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34. *See* discussion of preferences *infra*.
35. Drake v. Earhart, 2 Idaho 715, 23 P. 541 (1890).
36. Faden v. Hubbell, 93 Colo. 358, 28 P.2d 247 (1933).
37. Diversion Lake Club v. Heath, 126 Tex. 129, 86 S.W.2d 441 (1935).
38. *See* Trelease, *supra* note 17, *passim*.
39. 2 C. KINNEY, *supra* note 17, § 792.
40. In actual practice, however, the prior appropriation system often provides little incentive for individual water users or transporters to utilize the new [water saving] technology. Sometimes, in fact, if an irrigator or ditch operator installs water saving devices, the right to use the water saved may go to junior appropriators.

    Note, *Towards an Economic Distribution of Water Rights,* 1970 UTAH L. REV. 442, 445.

be divided into two categories: (1) preferences (not based on time priority) which serve to allocate water rights where the supply is insufficient to satisfy all claimants or appropriators[41] and (2) restrictions on transferability, for example, tying appropriations to a particular parcel of land.[42]

III. CONSTITUTIONAL AND STATUTORY MODIFICATIONS

A. Appropriation Permit System

In most appropriation states, water rights are allocated by virtue of a state permit system.[43] Rights are thereby administratively fixed and recorded in terms of priority of date, quantity of water diverted, place of use, and time of use.[44] Even though unappropriated water has, in most instances, been dedicated to the citizens of the state, rights to its use are subject to appropriation by private persons upon application for a permit. Since water rights are granted subject only to a small administrative charge, the market system does not and cannot function to make the initial allocation between competing users.[45]

In lieu of market allocation, competing claims for rights to water

41. The following is a good statement of the policy behind modification of the traditional system:

> When the coincidence between social need and private opportunity ceases to exist, the rule of priority in time can defeat social need if applied inflexibly. The object of the rule is apparently to encourage development of untapped water supplies by assuring the enterprising person that his investment will be protected. Even though it be recognized that rights based on priority in time must give way to socially preferred uses of the water, the reward to the entrepreneur could be preserved in two ways: 1. where there is no clearly preferred user competing for the water, priority in time shall continue to give the better right, and 2. when society demands relinquishment of a right prior in time let the right be taken only through condemnation proceedings which will compensate the deprived owner for his loss.

Larson, *A Local View: The Development of Water Rights and Suggested Improvements in the Water Law of North Dakota,* 38 N.D. L. REV. 243, 269-70 (1962).

42. *See* notes 91-93 and accompanying text *infra.*
43. C. MEYERS & A. TARLOCK, WATER RESOURCES MANAGEMENT 184-85 (1971).
44. Most permit statutes except rights acquired prior to adoption of the statutory system. However, registration may be required to perfect the right.
45. At common law this was not a problem and, in contrast to the present system, there was no preference between classes of uses. A miner, for instance, had no better claim than a farmer. The sole criterion was time of first use. *See* 1 S. WIEL, *supra* note 10, § 307.

are resolved by a state board or commission. Typical statutory schemes vest discretion in state water officials to choose among the different uses, or different projects involving the same use, in granting or denying applications to divert water. This choice among applicants may be rationalized by reference to the "public interest" or by resort to statutory standards, for example, preferential use hierarchies.

Where "public interest" or "public welfare" is the primary criterion, water officials exercise broad discretion in deciding that one use is more beneficial than another. For example, in Oregon the State Engineer "shall approve all applications of water to beneficial use."[46] In Alaska, the commissioner gives preference first to "public water supply and then to the use which alone or in combination with other foreseeable uses will constitute the most beneficial use."[47] Where such broad standards exist, water officials may rely on judicial interpretations of beneficial use as well as on preference schemes not directly related to the permit system.[48] Such regulatory schemes are necessary because the right to use water, which is scarce and in demand by several competing potential users, is being donated to the individual whose proposed use conforms to the adjudicating body's view of what is beneficial.

In several states, the determination of which uses are most beneficial is made by the legislature; the statutes set out expressly what uses—domestic, irrigation, power, recreation, industrial—are to be preferred when considering applications to appropriate water from a source which is insufficient for all.[49] Only coincidentally would such allocation decisions reflect market values. Furthermore, this basis for apportioning rights to water forces the decisions into rigid and perhaps outdated frameworks.

B. Preferences in Times of Scarcity

Constitutional, legislative, judicial, or administrative preference schemes are used in selecting from among competing applicants for appropriative permits. They are also used in rationing supply in

46. ORE. REV. STAT. § 537.160 (1975).
47. ALASKA STAT. § 46.15.090 (1971).
48. For example, the Utah Supreme Court has held that a preference statute according preferred rights to certain users in time of scarcity furnished a guide to the State Engineer in choosing between applications. Tanner v. Bacon, 103 Utah 494, 136 P.2d 957 (1943).
49. In Arizona, for instance, the State Water Commissioner is to give preference to applications in accordance with their relative values to the public: (1) domestic and municipal uses, (2) irrigation and stock

times of scarcity.[50] The effect of these provisions is to give certain appropriations "preferred" status over other appropriations, regardless of which appropriation was initiated first. In other words, the exercise of a preference could convert a junior appropriator into

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watering, (3) power and mining uses and (4) recreation and wildlife, including fish. ARIZ. REV. STAT. ANN. § 45-147 (West Supp. 1975). California's State Water Rights Board is guided by the policy that domestic use is the highest use and irrigation is the next highest use. CAL. WATER CODE § 1254 (West 1971). In addition, California, in a modern twist of riparian watershed restrictions, gives a preference to the county of water origin, as opposed to basin of origin. CAL. WATER CODE § 10505 (West 1971). The Texas statute declares that in the allotment and appropriation of water, preference be given in the following order: (1) domestic and municipal uses, (2) industrial uses—processes designed to convert materials into forms having greater usability and commercial value, including water necessary for development of power by means other than hydro-electric, (3) irrigation, (4) mining and recovery of minerals, (5) hydro electric power, (6) navigation, and (7) recreation and pleasure. TEX. WATER CODE ANN. tit. 2, § 5.024 (Vernon 1972).

In choosing among applicants to purchase or lease waters in Oklahoma Conservancy Districts, the decision may be rendered on the basis of preferences among three classes of uses: (1) domestic and municipal supply, (2) water used in manufacturing, production of steam, refrigeration, cooling and condensing and maintaining sanitary conditions of stream flow, and (3) irrigation, power, recreation, fisheries and other uses. OKLA. STAT. ANN. tit. 82, § 82-577 (West 1970). The Nebraska Director of Water Resources is allowed to use preferences as criteria for determining applications for appropriations by municipalities. NEB. REV. STAT. § 46-639 (Reissue 1974).

50. Examples of such schemes are found in the constitutions of Colorado and Nebraska and the statutes of Oregon and Utah. *See* COLO. CONST. art. XVI, § 6; NEB. CONST. art. XV, §§ 5-6; ORE. REV. STAT. § 540.140 (1975); UTAH CODE ANN. § 73-3-21 (1961). Each of these provisions elevates domestic uses over all others and places agricultural above industrial uses. Economists are less than convinced of the desirability of preferring agriculture over other uses. One author had this to say: "[I]n the future, the economic growth of the West will be identified less with irrigation and more with the use of available supplies for municipal, industrial, and recreation purposes." Fox, *Water: Supply, Demand and the Law*, 32 ROCKY MTN. L. REV. 452, 455 (1960). Another economist expressed a similar concern:

> Agricultural developments, of themselves, do not generate great economic expansion; the manufacturing facilities that emerge to process agricultural products do not provide large payrolls; development of an area based upon agriculture does not proceed far enough to attract market-oriented industries; and, consequently, economic growth stops short of maturity. If great economic expansion is to occur, therefore, forces other than agriculture must generate it.

Folz, *The Economic Dynamics of River Basin Development*, 22 LAW & CONTEMP. PROB. 205, 215 (1957). Folz goes on to say:

> Agriculture assists in industrialization in several ways: (1) Farm population is stable, in that farmers establish per-

a senior appropriator and vice versa.[51] The rationale of this system is to allow water rights to move to more socially desirable uses when supply is insufficient to meet all needs. To avoid constitutional problems arising when a "taking" of vested property rights occurs, typically the "preferred" appropriator will condemn a lower use which is senior in time and pay just compensation for the acquired right.[52] Traditional limitations on the right of eminent domain will be in force to protect the original "owner."[53]

C. Other Forms of Legislative Preferences

Legislative preferences are also manifested in forms other than a hierarchy of uses. One form is that of stating a preference for existing uses.[54] For example, a Washington statute declares that water rights reasonably necessary for existing irrigation shall not be taken for new irrigation purposes.[55] In Utah, opposition to transmountain diversion has been implemented by denial of eminent domain to acquire water rights for that purpose.[56]

Some legislative preferences focus on users and the acquisition of future rights. The California Water Code provides that the established policy of the state is to protect municipal rights to the fullest extent necessary for existing and future needs.[57] The stat-

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> manent homes and permanent communities. (2) Farming supplies a surplus population which can migrate to nearby urban centers and provide labor for industry. (3) Since agricultural employment is seasonal, it affords an off-seasonal labor supply which encourages industries that offer dovetailing of employment to create off-seasonal demands for labor. (4) Agriculturally supported towns and cities usually provide the early and frequently the most costly stages of community facilities, such as roads, highways, schools, health, and police protection, on which industrialization can build. (5) Finally, a highly concentrated agriculture generates the beginnings of mass markets around which industrialization can swing.

Id. at 217.

Idaho's constitution, though similar, provides that in organized mining districts, mining and milling uses are preferred over manufacturing or agriculture. IDAHO CONST. art. XV, § 3.

51. STATE WATER LAW IN THE DEVELOPMENT OF THE WEST 43 (report to Water Resources Committee, National Resources Planning Board 1943).
52. 1 WATERS AND WATER RIGHTS, *supra* note 6, § 53.5(e).
53. *See generally* Harnsberger, *Eminent Domain and Water*, in 4 WATERS AND WATER RIGHTS, *supra* note 6, at 1.
54. Johnson, *Condemnation of Water Rights*, 46 TEX. L. REV. 1054, 1077 (1968).
55. WASH. REV. CODE ANN. § 90.03.040 (1974).
56. UTAH CODE ANN. § 73-9-13c (1961).
57. CAL. WATER CODE § 106.5 (West 1971).

utes of several jurisdictions allow municipalities to apply for permits to appropriate water for future requirements,[58] and courts in other states have permitted such appropriations in order to satisfy the reasonable needs arising from population expansion.[59]

Another type of statutory preference is evident where riparian rights are subjected to rights of condemnation by appropriators, the primary motive apparently being to facilitate the transition from riparianism to prior appropriation.[60]

D. Some Observations

Constitutional and legislative preferences are generally consistent in according top priority to domestic use. Although the scope of domestic use varies from state to state, most interpretations reflect the common law notion that uses necessary for human survival and basic human needs are domestic. Beyond the domestic use category, the order of precedence varies markedly, and competing classes of users jockey for rank.

Since the development of the West has relied heavily on agriculture, irrigation is high on most preference lists. But in the future, economic growth of the West will be identified less and less with irrigation and increasingly with industrial[61] and recreational uses.[62] Because of the inflexibility inherent in preference systems, and especially those which are established by constitution or statute, these provisions will likely become significant obstacles to the rational use of water. At best these schemes reflect values which are not likely to continue to represent the most beneficial use of water resources under changing conditions.

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58. *See, e.g.*, OKLA. STAT. ANN. tit. 11, § 11-305 (West Supp. 1975); WASH. REV. CODE ANN. § 90.03.260 (1962).
59. Denver v. Sheriff, 105 Colo. 193, 96 P.2d 836 (1939); Beus v. City of Soda Springs, 62 Idaho 1, 107 P.2d 151 (1940).
60. Trelease, *Coordination of Riparian and Appropriative Rights to the Use of Water*, 33 TEX. L. REV. 24 (1954).
61. Industry is a heavy user of water.

    For example, the following amounts of water are required to:

Produce a ton of bromine	5,000,000 gallons
Produce a ton of synthetic rubber	600,000 gallons
Produce a ton of aluminum	320,000 gallons
Produce a ton of viscose rayon	200,000 gallons
Make a ton of steel	65,000 gallons
Test an airplane	50,000 gallons
Produce a ton of coke from coal	3,600 gallons
Refine a barrel of petroleum	770 gallons
Brew a barrel of beer	470 gallons

    O'Connell, *Iowa's New Water Statute*, 47 IOWA L. REV. 549, 555 (1962) (footnotes omitted).
62. Fox, *supra* note 50, at 455.

None of the existing preference systems appears to reflect present or prospective economic reality. On the contrary, the deliberate intent appears to be the sheltering of low value uses from market forces. For example, if irrigation were truly the highest and best use of the water,[63] irrigators should be able to compete in the market for the water they need. Furthermore, if a market for water were operative, those uses within agriculture which yield the highest net return in relation to water used would tend to prevail in the competition. In fact as Dean Trelease has suggested, legal preferences are little more than stumbling blocks to progress and development.[64] Preferences of this type are certainly not essential for economic progress. On the contrary, economic analysis of the impact of existing allocative schemes would likely reveal that substantial losses have been incurred as a result of misallocation of resources.

IV. OPERATIONAL ASPECTS OF PREFERENCES

A. True Preferences

An absolute preference exists when the preferred use may be initiated without regard to the fact that the supply is already fully

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63. In a California study conducted in 1954-55 it was found that (1) manufacturing provides 4.33 times as much personal income per 1,000 gallons of water withdrawn per day as does farming, (2) farming annually uses 816 times as much water per employee as does manufacturing, (3) manufacturing produces 68 times as much product value as farming per 1,000 gallons of water withdrawn per day, and (4) urban land is taxed 8.7 times more than agricultural land per 1,000 gallons of water withdrawn per day. 1 P. McGauhey & H. Erlich, Economic Evaluation of Water 194 (1957). A study of water reallocation in New Mexico unearthed similar results:

> [R]esearch done by Nathanial Wollman and myself in New Mexico demonstrated several years ago that reallocation of water from agricultural to industrial, municipal, and recreational uses is capable of greatly expanding the development potential of water-short regions. [N. Wollman, The Value of Water in Alternative Uses (1st ed. 1962)] Indeed, regional product associated with the use of an acre-foot of water in industry was on the order of $3,000-$4,000, while that in agriculture was only $40-$50. In recreation, regional product turned out to be $200-$300. The possibility of sustaining regional growth in arid areas through reallocation of water emphasizes the great importance which efficient mechanisms for the transfer of water from lower to higher value uses may have in these areas.

A. Kneese, *Economic and Related Problems in Contemporary Water Resources Management Across the Nation* (1965) (paper presented to Conference of Nebraska Experiment Station Researchers) (on file in library of Loyd K. Fischer).

64. Trelease, *Preferences to the Use of Water*, 27 Rocky Mtn. L. Rev. 133, 158 (1955).

appropriated for other purposes, and when the preferred user may take the water without paying compensation.[65] Most statutory provisions which appear to grant true preferences on their face have been judicially interpreted to give only a privilege to condemn and pay for the nonpreferred rights taken or damaged.[66] As such interpretations suggest, the courts have been reluctant to recognize absolute preferences. Inadequate legislative definitions of preferred uses and constitutional due process "taking" issues, rather than economic reasons, appear to be the dominant reasons for this judicial behavior.

Notwithstanding the general paucity of legislative and judicial recognition of absolute preferences, examples from several jurisdictions can be cited. One such example is based upon the recognition of ancient pueblo rights—rights granted to early agricultural villages of the Southwest to waters flowing to and through the pueblo. California has, in effect, recognized absolute preferences for municipal purposes by cities founded as pueblos.[67] Other ex-

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65. *Id.* at 136.

66. In 1876, the framers of the Colorado Constitution declared that when the waters of a stream are insufficient for all desiring its use, domestic use should have preference over agriculture, and agriculture over manufacturing. COLO. CONST. art. XVI, § 6. Although this sounds like an absolute preference, the Colorado Supreme Court has held that those in the preferred classes were merely given a privilege to condemn and pay for non-preferred rights taken or damaged. Black v. Taylor, 128 Colo. 449, 264 P.2d 502 (1953); Sterling v. Pawnee Ditch Extension Co., 42 Colo. 421, 94 P. 339 (1908). A similar interpretation has been placed on Idaho's constitutional preference provision. Montpelier Milling Co. v. Montpelier, 19 Idaho 212, 113 P. 741 (1911).

In 1895, the Nebraska legislature enacted statutes which conferred first preference on domestic use and preferred agricultural use over manufacturing. NEB. REV. STAT. § 46-204 (Reissue 1974). The Nebraska Supreme Court, in a controversy between junior agricultural appropriators and senior power users, held that the preference given agriculture merely conferred a right of eminent domain; an agricultural user could not interfere with a senior right for power without formal condemnation proceedings. Loup River Pub. Power Dist. v. North Loup River Pub. Power & Irr. Dist., 142 Neb. 141, 5 N.W.2d 240 (1942). However, in a more recent decision by the same court, in which a downstream domestic user sought injunctive relief against the construction of a dam by an upstream appropriator, the court apparently granted an absolute preference to the domestic user to maintain his domestic supply. Brummund v. Vogel, 184 Neb. 415, 168 N.W. 2d 24 (1969). Despite this apparent recognition of an absolute domestic preference, the opinion fails clearly to articulate the basis on which it rests and leaves open the question of absolute preferences.

67. City of San Diego v. Cuyamaca Water Co., 209 Cal. 105, 287 P. 475 (1930); City of Los Angeles v. Hunter, 156 Cal. 603, 105 P. 755 (1909).

amples can be found in the statutes of Kansas,[68] Nebraska,[69] New Mexico,[70] and Texas.[71] Examples are also evident in those jurisdictions which have vestiges of both the riparian and appropriation systems and which recognize the rights of a riparian, whose land had been patented from the government before the appropriator made his diversion, to initiate or expand a use even though it interferes with the appropriator's prior use.[72]

The reason that these "true preferences" do not fall within the due process "taking" prohibition is that they are usually a reserved right.[73] That is, the present holder of the right took it subject to the possibility of future use or expanded use of a specified entity or class of individuals. For example, those acquiring water rights in Texas for irrigation purposes are subject to possible divestment by municipalities. The higher the probablilty of divestment, the less likely owners would be to invest in irrigation works or other facilities which are necessary in order to use the water.

On interstate streams, absolute preferences are manifested in certain interstate compacts. The Colorado River Compact provides that the impounding and use of water for power purposes shall be subordinate to the use and consumption of water for agricultural and domestic purposes and shall never interfere with or prevent the use of water for these dominant "better" purposes.[74] Other interstate compacts contain similar provisions.[75]

68. In Kansas, any person may take water from certain natural streams, ditches, or reservoirs for filling barrels or other vessels for domestic uses. KAN. STAT. § 82a-705 (1977).
69. By statute, Nebraska grants an absolute preference to direct flow irrigators over holders of storage rights by forbidding the impoundment of any water in reservoirs during the time it is required for direct irrigation. NEB. REV. STAT. § 46-241 (Reissue 1974).
70. A New Mexico statute recognizes the right of travelers to the free use of "[a]ll currents and sources of water" for themselves and their animals. N.M. STAT. ANN. § 75-1-4 (1968).
71. In Texas, all appropriations of water, except from the Rio Grande, are granted subject to the right of any city, town or municipality to make further appropriations for domestic and municipal purposes without the necessity of condemnation or compensation. TEX. WATER CODE ANN. § 5.028 (Vernon 1972).
72. Trelease, *supra* note 60.
73. In a federal setting, a doctrine which originated in Winters v. United States, 207 U.S. 564 (1908), and which is still followed today, provides that the United States government has reserved sufficient water to facilitate its utilization of the federally reserved lands. For a discussion of the most recent in a long line of cases discussing this doctrine, see Note, *Expansion of the Reservation of Water Rights Doctrine,* 56 NEB. L. REV. 410 (1977).
74. Boulder Canyon Project Act, ch. 42, § 4(a), 45 Stat. 1059 (1928); COLO. REV. STAT. § 37-87-101 (1973).
75. *See, e.g.,* Snake River Compact, ch. 73, art. IX, 64 Stat. 29 (1950);

Clearly a system of absolute preferences could hamper orderly economic development by freezing use of water into uneconomical patterns. For this reason alone, any such scheme should generally be opposed.[76] On the other hand, a good case can be made for absolute preference for individual domestic uses.[77] In addition to the plea of "essentially for survival," such an absolute preference for domestic water supplies could be rationalized, at least *vis-a-vis* a compensatory scheme, on the grounds that a compensatory preference scheme requires the power of eminent domain, which most individuals do not have. Futhermore, under a market system the individual domestic user—for instance, a small farmer or non-farm rural resident—may not have the financial means to purchase water rights from a senior owner. However, a senior owner, though required to make water available to others for domestic purposes, should be permitted a reasonable fee *for delivery* of the water, especially when this *required* delivery creates additional costs which must be incurred by the senior owner. The charges assessed for

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Belle Fourche River Compact, ch. 64, 58 Stat. 94 (1944). Further examples can be found in the history of interstate streams development:

> A desire to safeguard further development caused the Montana legislature to qualify a grant of permission to flood Montana land by a dam to be built in Idaho, by giving a preference to future irrigation and domestic appropriations over the use of generating power at the dam. When plans were made for the almost complete development of the Missouri River, the upstream states, fearing that the maintenance of a navigation channel in the downstream reaches of the river might some day curtail consumptive uses, forced the insertion of the O'Mahoney-Millikin amendment into the 1944 Flood Control Act that authorized the project. By that amendment only such use of water can be made for navigation as does not conflict with present or future beneficial uses for domestic, municipal, stock water, irrigation, mining or industrial purposes.

Trelease, *The Concept of Reasonable Beneficial Use in the Law of Surface Streams*, 12 WYO. L.J. 1, 17-18 (1957).

76. For all practical purposes, under the Nebraska preference sections as they now stand, domestic and irrigation appropriators of stream water and users of ground water have vested rights. No use is higher on the preference scale than domestic, so no one should be able to disturb a domestic water use. As to agriculture, higher preference is given only to domestic use, which, by definition, may be limited to individual users, as distinguished from municipalities or other groups. And since Nebraska has not granted individuals the power of eminent domain, apparently no one may condemn an agricultural use.

77. Determining what uses are, in fact, domestic becomes a major problem. Although the plea of "essentiality for survival" is made to justify giving domestic use absolute preference over any other purpose, many purposes for which "domestic" water supplies are used cannot be defended on such grounds.

Domestic uses of water, both from underground and water-

similar services by municipalities in the surrounding area may offer a workable standard for this assessment.

B. Power to Condemn—The Compensatory Preference

Preferential rights are often exercised through condemnation and payment of compensation. This mode of operation represents the norm under most preference systems. The exercise of such a preference results in permanently transferring the water right to the new owner, who then succeeds to the right of the former owner.[78] This procedure may be set forth in either the state constitution[79] or statutes.[80]

By requiring that the taking of water rights be only through the exercise of the power of eminent domain and that just compensation be paid, it is possible to mitigate several undesirable features of the absolute preference system. First, a closer correlation between economic value and preference results, since a preference will seldom be asserted unless its economic value exceeds that of the right condemned. Second, constitutional due process issues are largely avoided. Third, social values help shape the ultimate use of water. Finally, a system in which preferences can be exercised only through the use of eminent domain encourages private investment in the development of water resources by assuring in-

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> course sources, are so important to human survival that the legislature should provide injunctive relief for such users against interference by nondomestic users.
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> Domestic use should be defined to include all legitimate modern personal uses, *e.g.*, air conditioning and watering of lawns, flowers and vegetable gardens, in addition to the "survival" requirements and realistic assessments of farm and ranch livestock needs. Commercial herds, however, should be excluded.

Fischer, *supra* note 11, at 367-68 (footnotes omitted).

78. Trelease, *supra* note 17, at 285.
79. For example, the constitutions of Idaho and Nebraska provide for condemnation and compensation as the means of acquiring the water right of a non-preferred senior user for a preferred use when the waters of a stream are insufficient for all competing users. IDAHO CONST. art. XV, § 3; NEB. CONST. art. XV, § 6.
80. In Kansas, a comprehensive statute provides that inferior uses of water may be displaced by condemnation and provides a hierarchy of uses for this purpose: domestic, municipal, irrigation, industrial, recreation and water power uses. KAN. STAT. § 82a-707 (1977). A Wyoming statute authorizes condemnation for preferred uses in the following order:

> First—Water for drinking purposes for both man and beast; Second—Water for municipal purposes; Third—Water for the use of steam engines and for general railway use, water for culinary, laundry, bathing, refrigerating (including the manufacturing of ice), for steam and hot water heating plants, and

vestors that they will not lose their rights without receiving compensation.[81]

The exercise of preferences through an eminent domain procedure is not without its disadvantages. Indeed, the supporters of such a procedure may be misled by its illusory "benefits." For example, preferences for domestic or irrigation use are generally held by individuals. *Even if* private individuals are granted the right of eminent domain,[82] can an individual irrigator or domestic user *afford* to condemn an industrial or other user who is lower on the preference scale?

Procedurally, the power to condemn typically arises in the context of formal condemnation proceedings initiated to adjudicate which of the two or more conflicting uses is most beneficial in light of preference scales,[83] broad standards of "public interest," or the like. Another possibility, termed reverse or inverse condemnation, occurs when the preferred user merely offers a reasonable price to the owner of the vested water right and then appropriates without the owner's consent. This usually forces the holder of the senior right to seek injunctive relief. If a reasonable offer to pay damages has been made, the injunction will be denied and the right thus acquired by the preferred user.[84]

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steam power plants; Fourth—Industrial purposes.

WYO. STAT. § 41-3 (1957). A Texas statute (the Wagstaff Act) provides that domestic and municipal supply shall have priority in condemnation proceedings. TEX. WATER CODE ANN. tit. 2, § 5.033 (Vernon 1972).

81. Bagley, *supra* note 29, at 513.
82. Regarding condemnation of water rights by private individuals, the United States Supreme Court has indicated that the definition of "public" use is largely a matter for state court determination. Clark v. Nash, 198 U.S. 361, 368 (1905). However, the Court has held that under proper circumstances a private individual may exercise eminent domain for the sole purpose of irrigating *his own* land. *Id.* at 370. Although some states have flatly rejected any exercise of the right of eminent domain by the private individual, *e.g.*, Vetter v. Broadhurst, 100 Neb. 356, 160 N.W. 109 (1916), others have, by statute, expressly authorized individuals to exercise this right. *See, e.g.*, NEV. REV. STAT. § 533.050 (1973). Even with the existence of broad statutory definition, the courts could still deny an individual's petition for condemnation by finding that the facts, in a particular controversy, indicate that the proposed condemnation is not in the best interests of the public. *See, e.g.*, Burr v. Maclay Rancho Water Co., 160 Cal. 268, 116 P. 715 (1911); State *ex rel.* Tacoma Industrial Co. v. White River Power Co., 39 Wash. 648, 82 P. 150 (1905).
83. *See, e.g.*, IDAHO CODE § 7-703 (Cum. Supp. 1975).
84. Gross, *Condemnation of Water Rights for Preferred Uses—A Replacement for Prior Appropriation?*, 3 WILLAMETTE L.J. 263, 277 (1965).

A scheme of preferences, even one exercised through the power of eminent domain, is so unwieldy as to make little economic or practical sense. A few examples will illustrate the point. First, assume a jurisdiction which "prefers" irrigation over industry. Even though an industry located in such a jurisdiction can afford to pay for water several times its value to an irrigator, the transfer of rights to the industry will not be permitted. Second, assume that in the same jurisdiction an irrigation district is seeking to condemn the water of a local fertilizer plant. The district intends to sell the water at eight dollars per acre foot to its members, whereas the value of the water to the fertilizer plant is comptued to be 180 dollars per acre foot. Can the district condemn? If not, why have a preference scheme? Third, it makes little sense to permit agriculture to close down a fertilizer plant or a sugar beet or other processing plant, which is technically classified "industry," when such industry directly supports agriculture either by aiding in the production of the crop (fertilizer versus irrigation water) or by providing marketing possibilities.[85]

V. PERMIT SYSTEMS AND MODEL WATER CODES[86]

Under the newer, innovative model water codes, rights to use given quantities of water are granted by the state, free of charge, to competing individuals. Final awards are made on the basis of a relative ranking of proposed uses measured against a list of criteria, which is usually set out as part of the enabling act. The main advantage of these acts over the appropriation system is that they provide added flexibility by restricting the term of years for which the permit may be granted. The term might be as short as five years for one purpose or as long as fifty for another.[87] These limita-

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85. In presenting the advantages of *voluntary* transfers of water among uses and users and even between regions, we have been accused of wishing to dry up irrigation agriculture in the West. This is a completely unwarranted accusation. . . . It is our strong belief that the irrigators could make more profit from selling their valuable water rights than from growing low-valued crops.

Milliman, *Welfare, Economics, and Resource Development*, in READINGS IN RESOURCE MANAGEMENT AND CONSERVATION 286 (I. Burton & R. Kates eds. 1965).

86. *See, e.g.*, FLA. STAT. ANN. §§ 373.082 to .339 (1974); IOWA CODE ANN. § 455A (West 1971); MISS. CODE ANN. §§ 51-3-1 to 53 (1972); MODEL WATER USE ACT (1958); F. MALONEY, R. AUSNESS, & J. MORRIS, A MODEL WATER CODE (1972); *A State Statute to Provide Controls for Equitable Distribution of Water*, 4 HARV. J. LEGIS. 399 (1967).

87. *E.g.*, IOWA CODE ANN. § 455A.20 (West Supp. 1977) (agricultural—10 year maximum); MODEL WATER USE ACT § 406 (1958) (50 year maximum); F. MALONEY, R. AUSNESS, & J. MORRIS, *supra* note 86, § 2.06

tions are intended to prevent the perpetual misallocation to a lower economic use which is prevalent in appropriation jurisdictions. Also, some of the problems of riparianism are avoided in that development is not discouraged since the water user is given time to amortize investments in machinery, diversion works, and the like, and in that "code" rights are more clearly defined than riparian rights.

These points reflect the inadequacy of the common law system but by no means justify such close governmental supervision of the allocation and use of water. Granted, the state has not only a right but a duty to impose certain limitations on private action in the public interest. Protection of the public interest in natural resources, however, does not normally require day-to-day management and control by administrative agencies. For example, even though use of land is often regulated by public action, within permissible bounds individuals are permitted to act in their own best interest. Should not this same principle apply to water?

VI. OTHER RESTRICTIONS ON TRANSFER AND USE[88]

In many jurisdictions water rights are institutionalized to the extent that they cannot be voluntarily transferred even though neither third parties nor the public interest would be injured by a transfer.[89] Riparian rights are usually not transferable apart from the land to which they are tied, but a riparian owner can always refrain from using all or a portion of the water.[90] Thus, one who had access to a stream could "bribe" the riparians thereon in order to eliminate complainants. To this limited extent, riparian proprietors can transfer rights apart from the land but the rights are so uncertain and ill-defined that they could not become the basis of an active market system.[91]

Even in many states which have adopted the appropriation doctrine, water rights are tied to particular tracts of land. For example, in Nebraska the following provision has been in force since

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(private—20 year maximum; governmental—50 year maximum); *A State Statute to Provide Controls for Equitable Distribution of Water*, *supra* note 86, at 399 (10 year maximum).

88. *See generally* Fischer, *supra* note 11, at 370-73.

89. *See* Yeutter, *A Legal-Economic Critique of Nebraska Watercourse Law*, 44 NEB. L. REV. 11, 12 (1965).

90. *See* Farnham, *The Permissible Extent of Riparian Land*, 7 LAND & WATER L. REV. 31, 33 n.5 (1972).

91. *See generally* C. MEYERS, MARKET TRANSFERS OF WATER RIGHTS 15-17 (National Water Commission 1971); 1 WATERS AND WATER RIGHTS, *supra* note 6, § 53.4.

1895: "[A]ll water distributed for irrigation purposes shall attach to and follow the tract of land to which it is applied."[92] Other state statutes achieve the same purpose by requiring each application for a permit to appropriate water to include a description of the lands on which the water is to be used.[93] In several of these jurisdictions, however, statutes

> provide that if it becomes impracticable to beneficially or economically use the water on the land to which it is attached, then the right may be transferred to .other land without loss of priority. Changes must not be detrimental to others and approval of the state water authorities is needed.[94]

A further restriction on use can be found in several regulatory schemes whereby limitations are placed on the amount of water which may be diverted per irrigated acre.[95] This seems to be a tacit recognition that if owners are not allowed to sell that portion of their appropriation which is not currently needed, uneconomical use (waste) of the water will occur.

VII. AN ALTERNATIVE MODEL

A number of authorities have proposed that allocation of water should reflect the workings of market forces rather than be dictated by the prescriptions of constitutions, legislatures, courts, or administrators. However, many of these writers would dilute the market concept by relying to a large degree on governmental regulation,[96] making broad exceptions, becoming concerned with the physical problems,[97] or creating a system of "flexible" preferences.[98] In general, their proposals would not replace the present systems of allocation with a market system but would merely reorder allocative priorities.

Throughout the foregoing discussion, references have been made to the desirability of a water market. Given clearly defined and freely transferable rights and the presence of competitive markets

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92. NEB. REV. STAT. § 46-122 (Reissue 1974).
93. *Id.* §§ 46-233, -242; NEV. REV. STAT. §§ 553.040, .325 (1973); OKLA. STAT. ANN. tit. 82, § 34 (West 1970); S.D. COMPILED LAWS ANN. § 46-5-34 (1967).
94. Fischer, *supra* note 11, at 370.
95. *See, e.g.*, NEB. REV. STAT. § 46-231 (Reissue 1974) (for irrigation, a rate of diversion of one cubic foot for each 70 acres of land for which appropriation was made).
96. *See, e.g.*, Johnson, *supra* note 2.
97. *See, e.g.*, Note, *supra* note 40, at 446-53.
98. *See* Trelease, *Policies for Water Law: Property Rights, Economic Forces, & Public Regulation*, 5 NAT. RESOURCES J. 1 (1965).

composed of willing buyers and sellers, the apportionment of rights to water would, over time, reflect the pressures of supply and demand. Water, as a scarce commodity, produces utility or economic benefit, which in turn generates demand. The price which a potential user is willing to pay for a water right represents its value to him and serves as the standard for allocation. For example, certain rights to water may be more valuable to *A* than to their original owner *B*. In order to acquire these rights, *A* can afford to pay a price equal to their value to him. *B* would in turn profit by the sale to the extent that the payment received exceeded the value of the water rights to him. In this manner, rights would tend to move from lower to higher economic uses.

The foregoing description of a functioning market is, of course, idealized. In actual operation, markets are notoriously imperfect. Typically, the market for rights to water, like other markets, would possess few of the attributes necessary to assure allocative efficiency and distributive justice. Rarely would there be the large number of prospective buyers and sellers for a given water right which characterizes the atomistic market. However, the market imperfections which are of most concern relate to the dissociation of benefits and costs. Implicit in the competitive model is the assumption that decision makers, including the parties to exchanges of property rights, are in a position not only to capture all of the benefits but also to *bear all of the costs* associated with the exercise of the rights being transferred. But with water, rarely are the impacts of development and utilization confined to the decision-makers. Water is oftentimes a "fugitive" or transient resource with a limited capacity for perpetual replacement or regeneration. Furthermore, use of water often diminishes the water qualitatively as well as quantitatively. Consequently a property right in water does not usually represent ownership of some definite quantity of water which may be physically dissipated at the will of the holder. On the contrary, the holder of the property right in water is normally permitted to exercise the rights he possesses by engaging in activities which in some manner diminish the capacity of the "flow" of water to yield benefits through some alternative use or to some other user. Thus, third party effects tend to be the rule rather than the exception.

To accommodate these third party effects, any viable system for market transfers must acknowledge that water is "consumed" economically by any use to the extent that such use reduces the capacity of the water to yield net benefits in some alternative use. In this sense diversion of water from a flowing stream for irrigation constitutes consumption of water. But so does the discharge of pol-

lutants into a stream, even though this action augments the flow, if downstream users find the water degraded to a quality level below their needs. Somewhat more subtly, preventing the use of a stream for waste disposal in order to preserve aesthetic values or to protect the habitat for wildlife also consumes the stream in an economic sense in that those whose use would modify the natural setting must be constrained in order to protect its characteristics.

Although water is tangible, what is apportioned administratively or transferred by sale is not water itself, but the right to make use of water. Furthermore, the transient value of water makes the "right" of one property holder subject to the actions of others who have physical access to the common source. One person can retain a property right only if others who have physical access are legally restrained.

From a legal and administrative standpoint, the simplest system of obtaining rights in a fugitive resource is the "law of capture." Under this system, anyone with physical access to a commonly held resource has the right to "capture" and make use of it. In fact only by capture can a right to the resource be acquired. Although such a right may be absolute in a legal sense, in actuality the right lacks the most fundamental characteristic of property, exclusivity of ownership. Only under conditions of superabundance, a situation which is rare in the modern world and one to which economic concepts have no relevance, will a captured right provide the necessary certainty to the holder. The consequence of an institutional framework such as the law of capture is "the Tragedy of the Commons" as popularized by Garrett Hardin[99]—that which is free to all is valued by none. Overexploitation and economic exhaustion are almost certain to occur, since users have no incentives to economize.[100]

Yet all of these qualifications and reservations do not validate the market concept. A totally "free" market is no market at all, but simply a vying of power, privilege, and circumstance. Therefore, markets must operate within frameworks established and enforced by government. Should markets for water be different?

However, water does possess unusual characteristics; among its peculiarities is the fact that some minimum amount is necessary for sustaining life as we know it. All animals, including human beings, will perish much more quickly when deprived of water than

99. Hardin, *The Tragedy of the Commons*, 162 SCI. 1243 (1968).
100. For an economic analysis of the common pool problems, see Friedman, *The Economics of the Common Pool: Property Rights in Exhaustible Resources*, 18 U.C.L.A. L. REV. 855 (1971).

when deprived of food. Consequently, in no culture is one individual given the legal right to exclude others from access to the minimum amount of water necessary for survival. Furthermore, the essential nature of this substance is reflected in the fact that people will do or pay whatever is necessary to gain access to the water required to satisfy their basic needs. However, water is ubiquitous and often overabundant. Even subhumid or arid regions are on occasion afflicted with floods. This paradox of utter essentiality on the one hand, and availability in large quantities at low cost on the other, has led to curious institutional arrangements. People have come to view this precious substance as a non-economic good; they have often felt no obligation to economize in its use even in regions of little rainfall. The standard reaction to any actual or anticipated shortage of supply has been to call upon the government to invest vast sums of money in order to discover and develop new and expanded sources. Nor have those to whom the water is delivered felt obliged to pay the cost of such development.

It is in the face of this mentality that an institutional framework must be devised within which rights to water will be apportioned among uses and users so as to encourage efficiency in use and equity in the distribution of benefits. The establishment of an appropriate framework within which those rights to water which reside in the private sector can be transferred at will among individuals should contribute to the goals of both efficiency and equity. Those to whom water rights are initially apportioned will be constrained in their exercise of these rights by the realization that the rights have a market value which is often substantial. When others are in a position to use the water more beneficially, the holders will have the opportunity to sell part or all of their rights at a price which will benefit both sellers and buyers. The public role with respect to the workings of the market will be primarily that of protecting the interests of those who are not directly involved in the transaction. As in any business transaction, government will also proscribe misrepresentation and fraud.

The initial apportionment of rights to water would, of course, be an important aspect of any new system of water rights. With respect to rights to surface water, and particularly those which are quantitative, the task should not be difficult, for these rights can be relatively well-quantified, identified, and defined. Rights to groundwater and certain rights to surface water, the exercise of which degrade water quality, are much more difficult to delineate. In some cases, the state may need to "purchase," by condemnation

or otherwise, outstanding rights and reallocate them on the basis of demand generated prices.[101]

A. The Water Market and Conservation

Some people fear that permitting rights to water to be bought and sold would lead to overexploitation and rapid economic exhaustion of water resources, since people would be guided only by pecuniary motives. However, a strong argument could be made for the opposite position. As indicated above, allocation of rights to water by a market system rather than by governmental edict would give them a realistic market value and thus provide an incentive for efficiency in use. For the most part, once a market for water is recognized and adequately defined, conservation of water would be encouraged.[102] Those who receive and retain rights to water by virtue of fortuitous circumstances or prescriptions[103] unrelated to use values, and who are not even permitted to transfer these rights to others, are not likely to be highly motivated to exercise their rights in ways which will conserve the resource and maximize its benefits. As the price of rights to water increases, incentives to improve efficiency of use become greater. But to achieve both conservation and efficiency, the market for water must encompass not only quantitative but also qualitative aspects of water consumption.

B. Implementation

The implementation of a water market would entail numerous

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101. This feature is the essence of the proposal set forth by Professor Johnson for allocation of all water rights. *See* Johnson, *supra* note 2, at 363-73.

102. As water becomes scarcer and thus a more valuable resource, additional measures will be instituted to conserve water. Presently, in the absence of such incentives, losses of 70% and more of the appropriation during transportation through evaporation, transpiration, seepage, etc., are not uncommon and when challenged under the present systems of "beneficial use" or "reasonableness," have been upheld. *See generally* J. SAX, *supra* note 31, at 271-80 and cases cited therein; 1 WATERS AND WATER RIGHTS, *supra* note 6, § 19.5. Likewise, special statutes which empower state officials to prevent waste would become unnecessary and useless. *See, e.g.*, UTAH CODE ANN. § 73-2-1 (1961).

But see NATIONAL WATER COMMISSION, *supra* note 1:

> The States in water-short regions should enforce existing laws to limit water use to beneficial need, and thus prevent wasteful application of water and unreasonable transmission losses.
>
> The appropriation States should quantify "beneficial need" and "reasonable efficiency" for particular areas in order to reduce water waste.

Id. at 305.

103. *See generally* Harnsberger, *Prescriptive Water Rights in Wisconsin,*

technical and philosophical problems. First, for a market to be workable, the right which is to be transferred must be delineated and defined. To many, this has been a stumbling block because of the tie to well-known forms of rights in water. Discussions have been bounded by such questions as how to sell riparian rights, how to transfer appropriations or whether a permit for a term of years is transferable without government permission. What is relatively clear is that a market would not be workable if superimposed upon one of the existing systems without a substantial shift in the underlying philosophies and doctrine.

The problems of devising an effective market for rights to water would be much simpler if the resource were solely stock, that is, consisting of a set inventory to be used up over some time period. However, both surface and groundwater have components which are capable of natural regeneration, presumably in perpetuity. It is this "flow" characteristic which vastly complicates the creation and operation of a market system. The same physical characteristics which make water a flow resource also make it "fugitive," that is, tending to move from one geographic area, ownership tract, or jurisdiction to another. Consequently, in most cases two or more persons usually have access to the resource.

Unlike most resources which are subject to private property rights, water has properties which are useful to, and capable of being consumed by, a multitude of types of users. Furthermore, the same unit of water may serve several uses or users. To date, most authorities and regulatory schemes have conceptualized appropriation and regulation of the allocation of water as applying merely to very narrow definitions of "consumptive uses,"[104]—uses

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1961 WIS. L. REV. 47.

104. *But see* Fox, *supra* note 50, at 462-63. The following is one of Fox's suggestions as to what would be necessary to achieve a viable market system in water:

> *The definition of a water right in terms of an effect upon the hydrologic cycle. . . .* [I]t would seem desirable to try to get away from a definition in terms of quantity diverted, point of diversion, time of diversion and type of usage. Instead it would seem preferable to move toward a definition in terms of the effect upon either minimum flows, water yield, or a combination thereof and the effect upon water quality including chemical content, organic content, and temperature. Unless such a definition is practicable, it will be difficult for market forces to function effectively.

Id. at 463. *See generally* Tolley, *Future Economics Research on Western Water Resources—With Particular Reference to California,* 5 NAT. RESOURCES J. 259, 264 (1965):

> The attempt to specify "demand for water" should be an attempt to understand influences on a vector containing four

such as irrigation, drinking, or manufacturing. Other uses which leave the quantity undiminished, such as waste disposal, hydroelectric power generation, cooling, barge transportation, and recreation are not viewed as consumptive even though such uses can reduce the capacity of water to serve alternative purposes as surely as does irrigation. Uses of water which do not physically or permanently divert the substance from its normal movement, such as use as a coolant or as a vehicle for waste disposal, usually are not treated as being part of the allocation system, but rather are controlled through complex public regulation.[105]

In order for a market system, as applied to the allocation of water resources, to be truly workable, all of the various qualities or properties of water which make it useful must be subject to valuation and sale. In the same unit of water, rights could exist for swimming, heat dissipation, waste disposal, irrigation use, or raising the level of a stream so that it would provide a head for power or sufficient depth for water travel.[106]

For example, under an allocation system for any or all uses of water, an industry could be permitted to buy a right to pollute, if all of the other owners of competing rights to that water could agree to a price and if it were shown that third persons not in privity to the transfer would not be significantly harmed thereby. If this was a free and open market transaction, all parties involved would benefit. Similarly, if the prior owners at a later date found the pollution inconsistent with their uses or tastes, they could, if they could afford it, repurchase this "quality" right and thus prevent further pollution.

> types of magnitudes. Each user takes a quantity of water of some quality and may return a different quantity of changed quality. The ratio of quantity taken to quantity returned is often but not always, fixed, so there can be significant variation in all four magnitudes: quantity taken, quality taken, quantity returned, quality returned.

105. At common law, the riparian system handled pollution by a riparian with the reasonableness test—"whether the pollution is carried to an unreasonable or excessive degree." But

> [w]here the pollution interferes with drinking or other domestic use . . . little latitude is allowed . . . because domestic or "natural uses" are preferred uses at common law. Likewise, no question of reasonableness can arise at common law where one party is a *nonriparian* owner [because nonriparians have no rights in the stream].

1 S. WIEL, *supra* note 10, § 523. *See* note 112 and authorities cited therein *infra*.

106. To a limited extent, land is subject to the same type of separation and delineation of rights; easements for overhead or underground utilities, sale of mineral rights, and sale or lease of the fee could all occur with regard to the same parcel of land.

Situations in which all the holders of rights would be willing to sell to a polluter and in which third persons would not be detrimentally affected could well be rare, especially if the interrelationship between ground and surface waters is considered. But realistic examples in which such a system could be used would include the raising of the water temperature by an industry using the resource as a coolant and nitrate contamination from irrigated crops.

The natural conclusion from the foregoing analysis is that uses of water which degrade its quality, as well as uses which diminish its quantity, "consume" portions of the useful properties of water.[107] When viewed in this light, the distinction between quality and quantity which is prevalent in modern thinking and practice[108] becomes meaningless in an economic sense.

C. Governmental Control and the Market Model[109]

Certain classes of uses may not fare well under a pure market system. One example is the "amenities" which include not only water sports but general environmental beauty and protection of wildlife. In statutory schemes, these interests are currently protected by a variety of methods: regulations concerning water purity,[110] reserved land or rights,[111] whitewater statutes,[112] or

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107. A countervailing argument is that "the water is still available for further use, so how can it be said that it is consumed?" The answer to this is that to take this argument to its logical conclusion would mean that water is not consumed by any conventional use, since the water molecule remains intact.

108. *See, e.g.*, Bagley, *supra* note 29, at 504 (consumptive and nonconsumptive uses); Johnson, *supra* note 2 (Johnson separates the demands for water into a consumption demand and a pollution demand).

109. *See generally*, Johnson, *supra* note 2, at 372.

110. Unwilling to recognize any individual ownership rights in all of the various properties of water, most states, in enacting laws to control pollution of state waters, base their enforcement upon the exercise of the "police power" in order to protect the health and welfare of the public. *See, e.g.*, FLA. STAT. ANN. § 403-021(5) (West 1975):

> It is hereby declared that the prevention, abatement and control of the pollution of the air and water of this state are affected with a public interest, and the provisions of this act are enacted in the exercise of the police powers of this state for the purpose of protecting the health, peace, and safety, and general welfare of the people of this state.

See also NEB. REV. STAT. § 81-1501 (Reissue 1976); CAL. WATER CODE § 13000 (West 1971). This is also true of the federal government in enacting pollution control for navigable waters. 33 U.S.C. § 1151 (1970).

111. *See, e.g.*, Comment, *Water Recreation—Public Use of "Private" Waters*, 52 CALIF. L. REV. 171 (1964). *See also* Reis, *Policy and Planning for Recreational Use of Inland Waters*, 40 TEMP. L.Q. 155 (1967).

112. Faced with the possibility that economic considerations do not give

ranking in the state's preference statute.[113]

As an adjunct to a market system, the government would have to intervene in the market to insure the preservation of natural beauty and the availability and protection of recreation facilities.[114] The problems inherent in using the market system for the allocation of water to the amenities does not mean that these uses have a low value. The principal reason people are unwilling to pay for water amenity rights is simply that currently even those who do not pay can still enjoy such amenities. However, if methods are devised to exclude nonpayers, then a use fee could be charged.[115] In fact,

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proper weight to the scenic and aesthetic values of the waters of a state, and concerned with the fast-diminishing number of "wild rivers," many states have enacted "scenic and wild river acts" designed to protect and preserve certain designated rivers for the enjoyment of present and future generations. *See, e.g.*, CAL. PUB. RES. CODE § 5093.30 (West Supp. 1977); GA. CODE ANN. § 17-901 (1971); IND. CODE ANN. § 13-2-26-1 (Burns 1973); IOWA CODE ANN. § 108.A (West Supp. 1977); MICH. COMP. LAWS ANN., § 322.751 (Supp. 1975); MINN. STAT. ANN., § 104.31 (West Supp. 1977); N.Y. ENVIR. CONSER. LAW § 15-2701 (McKinney Supp. 1977); OHIO REV. CODE ANN. § 1501.16 (Page Supp. 1974); OR. REV. STAT. § 390.805 (1974); S.C. CODE § 70.45 (Supp. 1975); VA. CODE § 10-167 (1973). *See also* 16 U.S.C. § 1273 (1976) (National Wild and Scenic Rivers System).

113. Most preference statutes, however, rank recreation near the bottom of the list. *See, e.g.*, ARIZ. REV. STAT. ANN. §§ 45-141C, 45-147B (West Supp. 1977-1978). The relative values of uses set forth are (1) domestic, (2) irrigation and stock watering, (3) power and mining, and (4) recreation and wildlife.

114. Where possible, water should be reserved for recreation and aesthetic purposes; if the water is not currently needed for such purposes it can be *temporarily* appropriated by other users.

The following quote is preceded by a discussion of the increased interest and organization of protectionists as opposed to hunters and sportsmen:

> In the controversy, I see a possible change in the adoption of new yardsticks to measure wildlife values. I believe we are at last realizing that the universal use of economic criteria to define values cannot, in truth, fix the long-term priorities of today's society. The ultimate test is what people enjoy the most. This is a valid yardstick with which we must measure many of our wildlife resources. This is the yardstick that lends itself so admirably to the strength of diverse groups having a common concern for wild things.

Barbee, NEBRASKALAND, May 1972, at 5.

115. With regard to federal projects, the following recommendation has been made:

> Recreation admission and user fees should be charged at all Federal reservoirs where revenues can be expected to exceed the costs of collection. In addition to implementing the criteria already enacted into law with respect to admission and recreation use fees, charges should be related to fees charged for nearby comparable private facilities and to that portion

in those instances where users can be charged directly through admission fees, the amenities will often compete handily with other uses. People place no small value on such amenities, as anyone can testify who has attempted to purchase a waterfront lot for a residence or recreational cottage.

Where a watercourse is "threatened" by the appropriators thereon, the state should have the power to reclaim various water rights through eminent domain proceedings. If the rights condemned are such that insufficient revenue will be derived from use charges, the cost of reclamation and management may need to be distributed by special taxation of those who benefit. Only if the benefits are widely dispersed or their incidence not readily determined should the funds necessary for reclamation and management be taken from general public revenue.

Where the government has reserved rights in water, such as the navigation servitude held by the federal government, all persons may use the water subject to this governmental right. In certain circumstances, such as the building and operation of power plants and bridges, the government permits interference with or use of its rights by granting licenses for a modest administrative fee. In these and other cases in which rights held by the general public are conveyed to individuals for a special purpose, a fee or charge reflecting market values, should be assessed. Among the beneficial consequences of realistic pricing will be an avoidance of commitments of water to uneconomic uses. This principle may be even more important where substantial public expenditures are proposed for water development projects which provide benefits to readily identifiable individuals. Perhaps the classic example of the violation of this principle is the massive commitment of water and other public resources for the maintenance of a navigation channel on the Missouri river. The cost of this service per ton of freight is several times that of rail charges, yet privately owned barges operate on the river free of any use charges.[116]

> of operation and maintenance costs attributable to the specialized facility for which a user fee is assessed with the objective of having the amount collected from fees equal the O & M cost for that particular facility.

NATIONAL WATER COMMISSION, *supra* note 1, at 199.

116. To alleviate these problems and to work toward the institution of a "rational national transportation policy," the National Water Commission made the following recommendation:

> Legislation should be enacted to require non-Federal interests to bear an appropriate share of the cost of Federal inland waterway projects. Such legislation should require: (a) that carriers and pleasure craft using inland waterways be required to pay user charges such that the total collections on

A further example of possible governmental entry into the market is in the area of flood control. Individuals would not likely be able to modify water courses and construct other projects necessary for the preservation of life and property, even if they were willing and able to pay for such changes. On the other hand, those persons benefited should bear the costs of such construction.[117] Hopefully, a direct assessment of costs would further encourage the adoption of alternatives to massive flood control projects. The most apparent alternative would be to construct, or reconstruct, dwellings and commercial structures somewhere other than the flood plain.

D. Transitional Period and Method

In the transition to a market economy, the values of present "rights" will necessarily be altered. Some, such as appropriative rights that are tied to the land, will likely increase in value as a result of such rights being made transferable. There should be no constitutional due process problems with regard to such rights since the current holders will retain what they now possess. On the other hand, riparian rights, especially those which are not currently being exercised, may present such problems. Under the riparian doctrine a holder may defer using water without a diminution of his right. When use is initiated or expanded all other users must adjust their share accordingly.

One modification would be to limit the riparian, who is currently exercising his right, to current uses. Granting a defined right in the amount currently being used is probably a valid *quid pro quo*

> all Federal waterways would be sufficient to cover Federal expenditures for operation and maintenance of the entire system; (b) that within the bounds of administrative practicability the user charges should consist of a uniform tax on all fuels used by vessels operating on the inland waterways, plus lockage charges at rates sufficient to repay the cost of operating and maintaining the locks within integral segments of the total waterway system; (c) that charges be imposed gradually over a 10-year period and increased progressively so that by the end of that period they will be sufficient to recover annually the entire cost of operating and maintaining the Federal inland waterway system; and (d) that as a condition for Federal construction of future inland waterway projects responsible federally chartered or non-Federal entities be required to enter into agreements to repay the construction costs, including interest, over a specified period of years unless the Congress determines that a particular waterway will result in national defense benefits sufficient to justify assumption of a part of the cost by the Federal Government.

Id. at 120-21.

117. All future proposals for channelization projects should be required to

which could not be attacked as a "taking." But this solution is not applicable to those who are not currently using, but are merely planning for the future. The only solution would seem to be the granting of a "grace period" during which a riparian would have the right to claim and initiate a use. At the end of the period, the riparian's "right" would be cut off.

> The question (referring to the enactment of a permit system in riparian states) arises whether the proposal is so radical a departure from present law that it is politically infeasible or constitutionally abhorrent. The Commission believes the answer is "No." Permit systems have been adopted in 11 Midwestern and Eastern States that formerly applied riparian law: Florida, Indiana, Iowa, Kansas, Maryland, Minnesota, Mississippi, Nebraska, New Jersey, South Dakota, and Wisconsin. In addition, three Pacific Coast States now have permit systems, although their prior law had in it strong elements of riparianism.[118]

Additional difficulties arise in establishing the extent of proposed rights. In a jurisdiction in which the use of water has been relatively unrestricted by quantity and quality considerations, the existing privately held water rights would encompass all of the water's properties, subject only to governmental regulations or to restraints against creation of a nuisance. For example, a pond unconnected to groundwater or a stream can normally be used by its owner for any purpose. He can swim or fish in it, pump it out, or pollute it, or he can sell part or all of his rights to it without interference. But what if the jurisdiction, at the time the market proposal is adopted, has already enacted a statute prohibiting, for example, thermal pollution? The rights to this pond of water have been owned subject to the statutory limitation, but when the capacity of water to absorb heat becomes a valuable property right, who then will own it? To give the pond owner this additional right would be to grant a windfall. Perhaps the interests of the public would be best served if this right were in the public domain. Then, if the rights which are held but not exercised by the state are in demand, mechanisms should be provided by which those rights could be sold or leased to individuals. However, as indicated above, such rights should be "awarded" to an individual by "license" or

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indicate that part of the cost that is properly allocable to increasing the value of lands in private ownership, and no such project should be approved unless and until an appropriate non-federal entity has agreed to assume that part of the project cost. *Id.* at 37.

118. *Id.* at 281-82. *See* Fischer, *supra* note 11, at 366 ("If a statute [setting up appropriate time tables] is properly drafted . . . then the constitionality should be upheld on the basis of experience in Kansas, South Dakota, North Dakota, California, Oregon, and Washington.").

"permit" only upon the payment of fees which reflect the market value of that right.

E. Administrative Feasibility

The establishment of a market system for the allocation of rights to water should result in substantial savings in administrative costs; only a small staff would be needed in any particular jurisdiction to administer the system. This regulatory agency would be mainly concerned with protection of the public interest and the interests of third persons who may be adversely affected by transfers of rights. In addition, in order to define and protect the water rights and give them the certainty and transferability desired, a system of public recordation would have to be devised. But this record-keeping function should not prove difficult to implement given careful planning. If proper techniques and computerization are used, the system should be less complicated than the present systems for the recording of certain real estate and personal property transactions.

To simplify the administration of the system and to improve its reliability, no individual should be accorded a prescriptive right to water.[119] If rights could be gained other than by purchase, the stability of the rights held would be greatly reduced. If, in order to obtain full economic usage of water, it is desirable for rights that are abandoned or unused for a period of years to be put back into use by another, these rights should escheat to the state to be allocated and resold. Likewise, a right for which there is no owner of record should belong to the state.

VIII. CONCLUSION

Most of the current restrictions on water rights, as well as the various use preferences, impede the movement of rights to water toward their highest and best uses. If the current uses are the highest possible economic uses, legal restrictions are not needed. If, on the other hand, the water is not being put to its highest possible use, what is the rationale for preventing the present user from choosing between using the resource or selling it? Presumably the exchange would take place at a price somewhere in the margin between what the continuing use would be worth to the present user and the higher value the water would have when put to the alternative use. As defenders of a market economy would contend, both parties would likely benefit from such an exchange. *Assuming that*

119. For a discussion of prescriptive water rights, see Harnsberger, *supra* note 103.

the interests of those not involved in the transaction are adequately protected, the net effect of the shift in use would be an enhancement of the general welfare.

Lastly, as suggested by Professor Milliman, if a market system for the transfer of water rights were adopted,

> the courts would [be free to] function as they do for other real property, to adjudicate disputes as to the ownership and extent of the property right and to hear pleas relating to breach of contract in transfers or from parties who consider themselves injured by the actions of the owners of the water rights. The judicial system would be freed of its present inappropriate administrative-economic function of issuing and revising rights to use water based upon fuzzy criteria as "reasonable" or "beneficial" use.[120]

120. Milliman, *supra* note 85, at 288.