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ARTHUR MAASS, WATER LAW AND INSTITUTIONS IN THE WESTERN UNITED STATES: COMPARISONS WITH EARLY DEVELOPMENTS IN CALIFORNIA AND AUSTRALIA, CONTEMPORARY DEVELOPMENTS IN AUSTRALIA, AND RECENT LEGISLATION WORLDWIDE (Natural Res. Law Ctr., Univ. of Colo. Sch. of Law 1990).

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**WATER LAW & INSTITUTIONS IN THE
WESTERN UNITED STATES:
COMPARISON WITH EARLY DEVELOPMENTS
IN CALIFORNIA & AUSTRALIA
AND RECENT LEGISLATION WORLDWIDE**

**Arthur Maass
Harvard University**

**Western Water Policy Project
Discussion Series No. 7**

**NRLC Discussion Paper Series
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PREFACE

In 1988 the Natural Resources Law Center initiated the Western Water Policy Project with the support of a grant by the Ford Foundation. This project includes a broad-ranging review of the laws, policies, and institutions governing the allocation and use of water resources in the western United States. It is aimed at addressing the adequacy of western water policy to respond to the needs of the contemporary West.

A major objective of the Western Water Policy Project is to encourage discussion of water policy issues. To further this objective we are initiating this Discussion Paper series. The papers in this series are written in conjunction with periodic workshops primarily involving a water policy working group. The members of this group are F. Lee Brown, James E. Butcher, Michael Clinton, Harrison C. Dunning, John Echohawk, Kenneth Frederick, David H. Getches, Helen Ingram, Edwin H. Marston, Steve J. Shupe, John E. Thorson, Gilbert White, Charles F. Wilkinson, and Zach Willey.

We welcome comments and responses to these papers.

Larry MacDonnell

**Water Law and Institutions in the Western United States:
Comparisons with Early Developments in California and Australia,
Contemporary Developments in
Australia, and Recent Legislation Worldwide**

Arthur Maass*

**DEVELOPMENT OF WATER LAW AND INSTITUTIONS
IN CALIFORNIA, 1870-1920**

A working hypothesis of the Western Water Policy Project is that water uses and water users have expanded substantially in recent years but that water law and water institutions have not kept pace. There is considerable interest, therefore, in legal and institutional impediments to the transferability of entitlements to use water. In this regard there are a number of interesting lessons to be learned from the rich experiences of California in the fifty-year period, 1870-1920. I shall focus on the Central Valley and, more particularly, on the irrigated area in and around Fresno, which developed from swamp and desert into America's, and possibly the world's richest agricultural area of its size.

DESCRIPTION: CENTRAL VALLEY AND FRESNO

California is traversed lengthwise by two parallel ranges of mountains, the Sierra Nevada on the east and the Coast Range on the west. These converge at Mount Shasta on the north and are joined by the Tehachapi Mountains on the south to enclose the Central Valley basin. The basin includes more than one-third of California. The Sacramento River, which flows southerly, drains the upper one-third of the basin and the San Joaquin River, which flows in a northerly direction, drains the southern two-thirds. These two streams find a common outlet to the ocean through San Francisco Bay. The main valley floor, covering nearly one-third of the basin area, is a gently sloping, practically unbroken alluvial area 400 miles long and averaging 45 miles in width.

The irrigation water supply of the Central Valley is derived chiefly from the runoff of the mountains and foothills of the Sierra Nevada. All of the major streams that catch this runoff have now been controlled by dams.

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The basin is underlain, but not uniformly, by large natural groundwater reservoirs. On the east side of the upper San Joaquin Valley, which is the basin's most productive region and includes Fresno, the greater part of the winter and spring runoff, that which is not diverted for direct storage or direct use, becomes groundwater by percolating into the flat alluvial cones of the major streams. The farmers use this water extensively for irrigation by pumping in the summer and fall months.

There was little irrigation of significance in California when it was admitted to the Union in 1850. The cattle and stock industries dominated the Central Valley. Development of farming awaited the arrival of a railroad which was in 1870. Then, the open range began to close; the stockmen could not compete with farmers. They were pushed back, step by step, until the only grazing lands left to them were those less desirable for cultivation and remote from the railroad. But the valley did not turn then into the garden of fruit, vegetable, and field crops that we see today. The range was followed by wheat. As the Central Pacific pushed its rails down the San Joaquin Valley, more and more land was sowed to that crop until by 1874 the entire valley appeared to be one huge wheat field.

The wheat was grown on bonanza farms. One thousand to 3,000-acre grain fields were not uncommon, and there were farms covering more than 10,000 acres. Only a small part of the crop was irrigated. It was cultivated by relatively few men using huge gangplows, planters, and combine harvesters, many of them developed and manufactured in the valley. With these methods of cultivation, the land yielded 13 to 20 bushels an acre.

Wheat culture reached its zenith in the San Joaquin Valley in 1884. Thereafter the acreage planted to wheat declined steadily, due to the crop's declining price, to reduced yields that resulted from continued use of the cultivation practices of the bonanza farms, and to the instability that resulted from short crops in drought years. But a very important reason for the wane of the bonanza wheat farms was the greater profit that could be made from the land by intensive cultivation of a variety of crops. This required, however, that the land be irrigated and colonized, and these immense tasks were accomplished in many parts of the valley, including Fresno, by developers and colonies.

THE ROLES OF THE DEVELOPER

Developers with considerable capital acquired large blocks of land. They built irrigation canals to provide water to the land. Then they subdivided the land into farms of 20 or 40 acres; built roads and laid out town centers, frequently with community facilities; and finally recruited the farmers, or colonists as they were called, providing them with liberal credit for the purchase of their farms.

The development of Fresno after 1885 was fabulous. In 1879 62,000 acres were irrigated; in 1929, 742,000. As a consequence, in part, of this form of land settle-

ment and water development, the Central Valley's agriculture today is characterized by a great intensity of production and a great variety of crops. Nearly all the almonds, figs, nectarines, olives, pomegranates, prunes, and walnuts produced in the United States are grown in the Central Valley, as are over 95 percent of the apricots, grapes for raisins, and safflower grain; over 50 percent of the peaches, melons, persimmons, and tomatoes; and between 25 and 50 percent of the asparagus, plums and pears—all by means of irrigation.

Another consequence of this rapid growth instigated by capitalist entrepreneurs was the development of numerous healthy, democratic communities, with relatively large numbers of churches, newspapers, and active popularly controlled local governments—in the Fresno region we have the towns of Fresno, Selma, Dinuba, Kingsburg, Reedley, Traver, and others.

The developers actively recruited colonists, broadcasting posters and pamphlets widely and advertising in San Francisco and in eastern papers and especially in foreign language media. The pitch was directed at individuals, but especially at communities and societies desiring to settle in groups. The great bugbear of the typical American pioneer, settled on his homestead of one-quarter section, was lack of neighbors. This was overcome by the colony system of settlement.

When one examines the origins of the colonists of the Fresno region in the years 1880 to 1910 one realizes how successful the developers were in their recruitment efforts—colonies of Swedes, Danes, Finns, German Menonites, Armenians, Syrians, and significant numbers of colonists from the Portuguese Azores, Switzerland, Yugoslavia, China, and by the end of the period, Japan. Nonetheless, native-born colonists outnumbered the foreign born by more than two to one, and certain colonies were almost exclusively old American.

The original colonies were settled around a few towns with wide stretches of arid land between them. Further settlement closed the gaps, welded the communities into one solid mass, and obliterated the colony boundaries. Concurrently individual colonies gradually lost their ethnocentricity. But the cosmopolitan nature of the region as a whole has remained, although the later influx of emigrants from Oklahoma, Arkansas, and Texas during the great Depression increased somewhat the percentage of Anglo-American farmers.

Because the new settler would not derive any substantial income from his farm for several years while grapevines matured, the Central Colony developer offered to set out on each 20-acre farm two acres of raisin vines and to cultivate them for two years without cost to the purchaser, who during this period could remain at his old occupation away from Fresno. To help provide for the first few years, the developer of the Washington Colony built a dairy for the manufacture of butter and cheese on the cooperative plan and imported cows that were sold to the settlers on easy terms thereby putting an income within reach of all until such time as a profit could be realized from the trees and vines that had been growing

in the meantime. The developer of the Central Colony established a nursery for vines and varieties of fruit and shade trees. At the outset he had sent an agent to Spain to select the best grapes, and this man had returned with thousands of cuttings of muscatel and several kinds of wine grapes. To stimulate orchard planting, the developer of the Nevada Colony donated a quarter-section with water rights for the erection of a fruit dryer by the colonists.

In addition to improvements related directly to farming, developers invested in community facilities. Roads were laid out—23 miles of them in the Central Colony. The relentless summer sun and the absence of trees on the Fresno plains made for easy cultivation and abundant crops, but they made also for hard home life. Shade trees were therefore an important convenience, and the developer typically planted many miles of them along the principal avenues. The developer of the Central Colony planted 36 miles of trees.

TRANSFERS IN ENTITLEMENT TO WATER

To what degree were these California developments dependent on, or related to transfers in entitlements to water? This is, after all, the subject of our workshop.

First, entitlement to water was transferred from the United States Government and the public domain to private developers. The United States was at the time landlord of a vast domain in California, having gotten it by virtue of clobbering the Mexicans in the War of 1848. By the Treaty of Guadalupe-Hildago, Mexico ceded to the United States the land that became subsequently the states of California, Arizona and New Mexico. I have not the time to discuss the means used by developers to acquire large blocks of irrigable land from this public domain, but they were entirely different from the means used to transfer to the developer control over the water required to irrigate these lands.

The settlers who moved west into California in the middle of the nineteenth century and into Colorado, Utah, and other arid territories concurrently or soon thereafter took with them the common law, which soon came to be confirmed in the organic and constitutional provisions governing their territorial and state governments. In 1850, the year in which California adopted its constitution and was admitted to the Union, its legislature passed an act adopting the common law of England, so far as not repugnant to or inconsistent with the Constitution of the United States or the constitution or laws of the state, as the rule of decision in all state courts.¹

The common law of rivers known to the Anglo-American settlers was the riparian system. Finding this system incompatible with short supplies of water for gold mining on the public lands in California and for irrigating in the valleys of

¹ 1850 Cal Stat. p. 219.

California, Utah, Colorado, and elsewhere, these settlers devised and practiced and declared a different legal system, that of prior appropriation, even though this new system derogated the generally accepted common law with which they were familiar. Water was one of the very few subjects (mining was another) and the most important one on which the eastern common law was so radically abandoned.

The essential differences between the riparian and appropriative systems of water rights were these: *Location*: Under the riparian system the use of stream flow was limited to the owners of land contiguous to the watercourse, whereas place of use was disregarded in the appropriative system. The riparian limitation was not a serious constraint in the humid East where there were many streams and almost all properties were adjacent to one or more; but if it had been followed in the West, the land developers of Fresno, for example, could not have built their canals and transported Kings River water out onto the arid but fertile plains. *Certainty*: Prior appropriation defined a system of exclusive rights; the appropriator had a right to a fixed quantity of water to the extent of his priority and could exclude all others. The riparian system, on the other hand, was one of correlative rights; the rights of landowners bordering upon a stream were relative to each other and no one had a right to a fixed quantity of water. The greater certainty provided by the appropriative system was in many cases necessary to attract the capital investments required for works to store and transport water in the arid lands. It is questionable that the developers would have proceeded in the Central Valley if they had had to operate under riparian rules. *Equality versus priority*: The riparian system recognized no priorities in anyone; all riparian owners had equal rights of use and no one was allowed unreasonably to impair the equal use of another. The appropriative system was based on priority; first in time of use was first in right. *Nonuse*: Actual use was the foundation of right by appropriation; thus nonuse caused a loss of the right. Because in the riparian system the right to water depended on the ownership of bankside land, nonuse, per se, did not void a right. Here again, the appropriation system favored developers. Allocation of limited water supplies on the basis of prior appropriation was practiced, then, in most of the arid West from the time of early settlement.²

Following the California customs of the time, the land developers of Fresno staked out their claims to water of the Kings River. According to these customs the right to appropriate water was initiated by posting a notice at the place proposed for diverting from the stream stating the appropriator's intent to divert a specified quantity through a ditch heading at that location. The right thus claimed was established by actually diverting the water and applying it to the intended use. Once the appropriation was completed in this way the water right was backdated to the time of the initial posting and from that date it had priority over all

² As we shall see below, these basic differences have been modified over the years by principles of "reasonable use," "beneficial use," and the long-standing common law doctrine of prescription.

subsequent appropriations. The one first in time was first in right. The holder of the second priority could not take a drop of water (except for domestic purposes) until the holder of the first priority had satisfied his needs up to his full appropriation.

These local customs were developed and applied without any specific guidance from the legislature of California. Nor from Congress, although most of the appropriated streams originated in, or flowed through, federal lands. Not until 1872 did the state enact legislation on the acquisition of water rights, and the statute then approved was simply a codification of existing customs. The law required more information on the posted notice than had been included by some appropriators in the past, that a copy of the notice be provided to the county recorder, which had not always been done in the past, and that the work necessary to divert the water be commenced within 60 days of posting of the notice and prosecuted diligently and uninterruptedly to completion unless delayed by rain or snow. But the whole purpose of the statute was to make the customary procedure work better by providing clearer evidence of the dates of appropriations so that respective priorities could be determined more easily by the courts where there were conflicts. Furthermore, appropriators were not required to follow the statutory requirements; they could continue to claim under the less precise customary procedure.

As for the federal government, Congress, by legislation enacted in 1866, confirmed the right of individuals to appropriate water on the public lands in accordance with local customs, local laws, and local court decisions. Subsequently the United States Supreme Court held that this legislation involved more than the declaration of a rule for the future; it also constituted "a voluntary recognition of a pre-existing right of possession" and an obligation of the United States government to respect private rights that had developed under the government's tacit consent and approval.³

Where there was sufficient water for all appropriators, enforcement of one's right against another was no problem. When the country began to fill up, however, and there was a drought, early appropriators sought to enjoin others from taking water and to do so quickly before a season's crops were lost. Occasionally they took direct action, knocking down upstream diversion structures of those believed to be junior to them in right. Occasionally they made arrangements to acquire by purchase competitors' water rights. Frequently they entered suits in the county courts, and it was in response to such court proceedings that most appropriators were called on for the first time to establish their rights by producing evidence of posted notices and of completed appropriations. When the droughts abated, the suits frequently were not pursued and works that had been destroyed were rebuilt.

³ Broder v. Water Co., 101 U.S. 274 (1879).

The two most noted irrigation engineers of the time, William Hammond Hall, California's first state engineer, and Elwood Mead, an expert in charge of irrigation investigations for the U.S. Department of Agriculture, proposed that California abandon its procedures for claiming and perfecting water rights. They did not advocate a return to the common law of riparian rights, but rather a third system in which the state under its police power would license all diversions from streams. Hall said to the state legislature:

In my opinion the solution of the irrigation problem is only to be accomplished by a government of the streams and waters on the part of the State, just as there is in every other highly civilized country except the United States. The streams of all European continental countries are in the care of government officers; and no one is permitted to put a permanent structure in the bed, bank or channel of a stream, or divert its waters from their channel without a permit from the proper authorities.⁴

Mead was even more insistent, the need for reform being the principal motif of his Bulletin No. 100:

The system is wrong. It is wrong in principle as well as faulty in procedure. . . . Leaving the ownership of streams to be fought over in the courts and titles to water to be established in ordinary suits at law has never resulted in the creation of satisfactory conditions and never will. As it is now the same issues are tried over and over again. Each decision, instead of being a step toward final settlement, too often creates new issues which in turn have to be litigated. . . . The law affords no means of enforcing a right when once adjudicated except through another law suit. Irrigators cannot live in peace. Litigation and controversy are forced upon them. . . . When the right is insecure and not defined the instinct of self-protection makes an Ishmaelite of every water user. His hand must be against every man, as every man's hand is against him.

. . . There never was a time when doubtful or controverted policies should have been evaded by the lawmakers and thrust on the courts for settlement. There is as great a need for specially qualified officers to determine the amount of water supply and regulate its distribution as there is to survey the public land. . . . There is as great, if not greater, need of a bureau to supervise the establishment of titles to water as there is for land officers to manage the disposal of public land. . .⁵

The California legislature turned a deaf ear to these pleadings. The inconvenience of multiple court cases to the contrary notwithstanding, the representatives were, no doubt, sensitive to the remarkable development of irrigation agriculture taking place in Fresno and elsewhere under cover of the doctrine of appropriative rights. The legislature fired Hall by abolishing his position of state engineer. Mead, as a federal employee, was beyond their reach. Not until 1913 did the legislature establish an administrative agency with authority over water rights—the state water commission. Its powers were more circumscribed than those proposed by Hall and Mead. Furthermore, it was required to recognize all vested rights, and by this late date most of the waters of the San Joaquin Valley were in this category. Conflicts among holders of these vested rights were settled

⁴ Hall, William Hammond, *Report of the State Engineer, 1880*, pt. IV, "Irrigation," (Sacramento: State Printing Office, 1880), p. 6.

⁵ Mead, Elwood, *Report of Irrigation Investigations in California* (Washington, DC: U.S. Dept. of Agriculture, Experiment Sta. Bulletin 100, 1901), pp. 33-34, 54-55, 61-62.

for the most part not by the commission but by voluntary agreements and the courts.

Nor were elected representatives of the arid West in Congress any more favorable to the concept of governmental control over water allocations. In committee hearing after hearing at this time and in debates on the floor of the House and Senate they made clear that they wanted as little interference by government with individual initiative as possible. Development of the land and water resources of the West should be left to "natural conditions and natural enterprise."⁶

So much, then, for what I have called the first major transfer in entitlement to water in Central Valley development—transfer from the public domain to private developers.

In the *second* major water transfer, entitlement to water was transferred from the developer to the farmer. With land and water in hand the developer subdivided his property into farm tracts and built a complete system of laterals and gates to supply irrigation water to each tract. Twenty acres was the most popular size among colonists, but some developers sold larger tracts and in a number of colonies the portion not marketed in small tracts was sold in farms of a quarter-section or larger.

With each tract there was granted a perpetual water right, proportional in amount to the size of the tract. The farmer paid nothing specifically for the right, for this was included in the price of the land; but he/she did have to pay annual operation and maintenance charges to the canal company that was organized to operate and maintain the system.

The water right was tied to the colonist's land and could not be divorced from it. This transfer of water rights to the owners of small tracts was an important factor in making the Fresno colonizing efforts successful. It was a notable departure from the general policy in California of dealing with water rights for land units of no less than one-quarter section, thereby excluding the small farmer.

For the most part the developers, having sold the farms, retired as quickly as they could from any responsibility for operating the irrigation systems. They organized canal companies that were separate from their real estate and development operations for this purpose, in which, to be sure, the developers frequently had an interest. And they tried various means for devolving responsibility upon the farmers, encouraging them to organize lateral and ditch associations. In 1915, after several starts, California authorized farmers to organize public irrigation districts as an alternative to commercial and mutual water companies, for the operation and further development of existing irrigation systems.

⁶ The phrase is used in quotations by Stegner, Wallace, *Beyond the Hundreth Meridian* (Boston: Houghton Mifflin, 1953), p. 336.

The outstanding advantages of the irrigation district were its authority to issue bonds and to levy taxes in order to pay interest on the bonds, amortization charges for retiring the bonds, and to pay costs of operating and maintaining the irrigation systems. At the same time, the irrigation districts were subjected to strict standards relating to farmer participation and control in all decisions having to do with organization, issuance of bonds, tax rates, etc.

The developers and their canal companies in Fresno encouraged the farmers to organize irrigation districts, and then in 1921 they sold the canal systems lock, stock, and barrel, to the districts at bargain basement prices; thus terminating their role in the delivery of water to farms.

Their principal objective had been all along, to make money on the sale of land, which required that the land be supplied with water. They were land speculators. As they saw it, there was not much money to be made in operating irrigation systems, but there were plenty of headaches in doing so—in having to deal with users' complaints about water deliveries, for example. Also, we should note that these developers were not motivated by any desire to use control over water distribution as a means for controlling people's lives or for gaining political power for themselves, as followers of Professor Wittfogel might want us to believe.⁷ They were motivated principally by profits.

The *third* major transfer of entitlement to water in California in this short period was the result of an 1886 decision of the California Supreme Court which had potentially devastating consequences for the Fresno region. Two land speculators who owned large tracts of swampy, downstream, riverbank lands that were used principally for grazing in the lower San Joaquin Valley brought suit in county court against upstream appropriators, arguing that they—the downstream owners—held riparian rights to stream water under the common law and that these rights were senior to any appropriative rights.

The county court followed the prevalent opinion in California, upholding the upstream appropriators against the lower riparian owners on the ground that, although California in 1850 adopted the common law, the legislators intended to exclude those portions of it that were not suitable to California conditions. On appeal the California Supreme Court in a 4-3 decision overruled the lower court and established the riparian doctrine as fundamental in the water law of the state.⁸

The appropriative principle was not rejected entirely; it was limited to appropriations made on the public lands where the federal government had not exercised its underlying riparian rights but instead had acquiesced in diversions of water in accordance with local custom.

⁷ See, e.g., Wittfogel, Karl A., *Oriental Despotism: A Comparative Study of Total Power* (New Haven: Yale University Press, 1957).

⁸ *Lux v. Haggin*, 69 Cal. 225, 4 P. 919 (1884).

Immediately riparian owners throughout the valley brought suits in local courts, and by 1887 the development of irrigation around Fresno had come to a stop. There was a great public clamor. Appropriation forces doubly damned the riparian doctrine. The main attack centered on the rule's alleged inapplicability to California conditions. A second thrust impugned the very nature and origin of the doctrine. It was, the appropriators maintained, antiquarian, full of legal technicalities, monarchical, and socialistic (the latter because of the idea of a "common right" in water).

Antiriparian organizations were formed all over the state. The articles of association of one of these included the following preambulatory paragraph, which gives a sense of the urgency felt by the state's farmers:

Whereas, attempts are now being made to resurrect the English common law doctrine of riparian rights from the grave to which the will of the people long since consigned it, and to impress it upon the jurisprudence of the State; and,

Whereas, such attempts if successful, mean the desolation of thousands of homes; means the desert shall invade vineyard, orchard and field; that the grape shall parch upon the vine, the fruit wither on the tree, and the meadow be cursed with drought; means that silence shall fall upon our busy colonies, and their people shall flee from the thirsty and unwatered lands; means that the cities built upon commerce irrigation created, shall decay, and that in all this region the pillars of civilization shall fall, and the unprofitable flocks and herds shall graze the scant herbage where once there was a land of corn and wine, flowing with milk and honey. . .⁹

Governor Stoneman called a special session of the state legislature in 1886 to consider remedial action. There were proposals to reorganize the California Supreme Court, to overrule its opinion by legislation or by constitutional amendment, and to authorize irrigators to purchase riparian rights, with compensation to be determined by a public agency on the basis of actual loss or damage to the riparian owner. But, as it turned out, a simple solution was not at hand.

If the legislators had believed that a statute could have nullified the court's opinion they would have passed it. But once the supreme court had validated riparian rights, it was too late to reject them by statute. Under the California and United States constitutions, property can be taken only by "due process of law"; and there was little confidence that the proposals before the legislature could meet this test in the court; Chief Justice Shaw represented the view of the California court when he said subsequently that once riparian rights became vested, "the much more important public policy of protecting the right of private property became paramount and controlling. This policy is declared in our constitutions, has been adhered to throughout our national history, and it is through it that the remarkable progress and development of the country has been made possible."¹⁰

⁹ Quoted in Harding, S. T., *Water in California* (Palo Alto: N-P Publications, 1960), p. 39.

¹⁰ Quoted in Hutchins, Wells A., *The California Law of Water Rights* (Sacramento: State Printing Office, 1956), pp. 53-54.

There was much debate in the special legislative session and much resolving, but no significant results. An immense transfer of water rights now seemed inevitable!

Failing to reduce the influence of the riparian doctrine by legislative means, the California irrigators were forced back into the courts. Although the local courts on the whole obeyed their State Supreme Court in confirming the *principle* of riparian rights, they found ways to mitigate the potential damages of this principle to irrigated agriculture in their regions. No judge in the Fresno area, for example, nor elsewhere was prepared to dry up the country.

In Fresno several stratagems were used:

First and most importantly, the courts gave broad sanction to the acquisition by appropriators of prescriptive rights to water that they had been using and that riparian owners now claimed. Prescription is a common law doctrine that allows a person to acquire a property that he does not own without paying for it if he has used it continuously over a certain period of time, and used it without objection from the rightful owner. The elements necessary to establish a prescriptive right were fairly well developed in the law, and in the circumstances the California judges applied these elements liberally to favor farmers who had appropriated water and used it on nonriparian lands.

The first element of a prescriptive right was that it was hostile and adverse to the right of the owner against whom it was claimed—in this case the downstream riparian owner. Under the riparian doctrine of the California Supreme Court, every diversion of water to nonriparian lands upstream from the lands of riparian owners was considered an invasion of downstream riparian rights. Under such "circumstances" the local courts held that the slightest use of water on nonriparian lands by upstream diverters was notice to all lower riparian owners that a hostile right had been asserted and that in consequence a prescriptive right had been initiated against the riparians.

Another element of a prescriptive right was long-term continuous use. Although prescription was a common law doctrine, the time period of continuous use required to establish the right had come to be set by statute in many jurisdictions. In England originally the adverse use had to have continued from "beyond the time whereof the memory of man runneth not to the contrary." By the end of the eighteenth century the English courts were interpreting this to mean twenty years, and in 1832 this period was approved by the Statute of Westminster. The early American states followed the English standard of 20 years for the most part, although Connecticut and Vermont adopted a term of fifteen years. Many of the newer states between the Allegheny Mountains and the Mississippi River adopted a fifteen year term, and some west of the river, a period as short as ten years. The California legislature, however, departed radically from the then common law tradition when in 1850, the same year in which it adopted

the common law of England, it passed a five-year statute of limitations; and it was this remarkably short period that made prescription an effective antidote to riparian rights in California.

A principal reason for this short period is the highly unsettled situation in California at the time with regard to land titles—involving settlers' impatience with the slow pace of federal activity in settling Mexican grants and disposing of the public domain and the activism of squatters who had organized and rioted in Sacramento and other places. To get conflicting land claims settled quickly was perhaps of paramount importance to the legislators.

Also there was in California at the time a general interest in favoring entrepreneurs who were willing to commit labor and capital to the productive use of land. A short period for adverse possession supported this interest. In addition we must view the five year statute in light of a parallel trend to reduce the time in which creditors can exercise their rights to collect debt. An 1855 statute, for example, limited to two years the period from the date of accrual of an action until the commencement of a lawsuit; that is, if a creditor failed to bring suit within two years, he could not thereafter collect through the courts. Also, the California civil code barred attachment unless the underlying debt was incurred in California. California quickly became a refuge for debtors. The golden state was truly a land of opportunity for debtors, allowing them to begin again with a clean slate.¹¹

Whatever the reasons for adopting the five-year period in 1850, it became a great help to the irrigators of California in 1884, after *Lux v. Haggin*. They had only to show that they had been using stream water on their lands for five years in order to acquire a right to continue to do so that was superior to any riparian right.

Although the courts paved the way for successful claims to prescriptive rights, titles to such rights in each case were determined only by judicial decrees. Thus after 1886 irrigation organizations were forever in the courts and a significant part of their operating expenses went for lawyers' fees.

The *second* way the courts mitigated the impact of the riparian doctrine on irrigators was to give broad sanction to appropriators to purchase water rights from the owners of riparian land and then to transfer the water to wherever they wanted to use it within the watershed—upstream, downstream, or far away from the river bed. Severance of the riparian water right from riparian land was contrary to the spirit and the basic characteristics of the riparian doctrine. Yet the courts sanctioned it so that irrigation could continue, albeit at a cost to the irrigators.

¹¹ On these matters see Bakken, Gordon, *Development of Law in Frontier California* (1985), and his forthcoming book on lawyers' practices in California, 1850-1870.

Third, the riparian doctrine on water courses did not apply to groundwater; indeed it was scarcely relevant in this context. The California courts had elaborated a doctrine of correlative rights for groundwater which imposed no special disability on appropriators.

On the Kings River there were probably more appropriations, more riparian suits, and as many if not more purchases of rights than on any other river in the state. Hall, who was, you will recall, State Engineer, reported on the Kings in 1880, focusing on overlapping appropriation claims, and Mead in 1900, on overlapping court decrees.¹² Each expert tells a horror story, as he sees it; and although there was ample reason for concern about the status of Kings River water rights, one needs to read their interpretations with a grain of salt, for both men used the Kings River story to support their reform proposals—for a state administered system of water licensing.

The records of Fresno and Tulare counties that Hall examined showed that 83 claims for water from the Kings River had been filed up to December 1879. Approximately half of these were so imprecise in the amount of water that was claimed—several of them called for all the water in the river—that Hall was unable to calculate the extent of their demand on the river's supply. The remaining claims were stated in a form that was generally used and had been prescribed in the 1872 law, namely, inches of water measured under a 4-inch head. Taking the amount of water discharged through an inch-square opening under a 4-inch pressure as .02 cfs, Hall calculated that the sum of these claims was about 20,000 cfs; and he compared this to the 1879 flow of the Kings River, which had a mean discharge of 1731 cfs. Hall's data were from the posted claims, however (that is, from the initial stage of the appropriation process). Most of these claims had not been made good by actual diversion and use of the water. They would have fallen if they had been challenged in court, and they would have been challenged if they had been a threat to users who had rightfully completed their appropriations.

Mead, in addition to updating Hall's survey of appropriation claims (he counted 350 claims in 1900), made an effort to compile and analyze court decrees relating to water rights on the Kings River. He had no more luck than Hall in arriving at precise results. Seeking to study only the principal cases in which the rights of ditches to divert water from the river had been brought into question, Mead and his associate, C.E. Grunsky, found 42 cases in the courts of Fresno County, 42 in Tulare County, and 19 in Kings County. From these data Mead concluded that even if there were no rights other than those that had been adjudicated in the courts, it would be exceedingly difficult if not impossible for a hypothetical watermaster to divide the river. "He would have no adequate guide for his action. . . .No ordinary mind would be equal to the strain."

¹² Hall, *Report of the State Engineer*, pp. 117-61; Mead, *Report of Irrigation Investigations in California*, pp. 53-59, 276-82. See Pisani, Donald J., *From the Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850-1931* (Berkeley, CA: University of California Press, 1984), Ch. 11.

Mead compared the situation on the Kings River unfavorably to the settlement of water rights in Wyoming where, under an 1890 law, the state engineer surveyed rivers and subsequently a board, presided over by the state engineer, passed on the claims of appropriators. The comparison rang hollow, however; for Mead was so enthusiastic an advocate of the system in Wyoming, where he had been the first state engineer, that he failed to appreciate that the factor most responsible for the confusion of water rights on the Kings River was not present in Wyoming, namely riparian rights. One of Mead's colleagues subsequently abstracted 137 Kings River cases and found that over two-thirds of them were suits setting up riparian claims.¹³ Even if Wyoming's administrative procedures had been superior to California's court procedures for the settlement of conflicting appropriation claims, which is doubtful on several counts, Wyoming's legislation was inadequate for the California situation that Mead observed in 1900.

Nonriparian users were learning to live, uneasily to be sure, with a riparian doctrine that was modified by prescription, the right to purchase riparian rights, and by the doctrine of correlative rights for groundwater when the California Supreme Court in 1926, possibly concerned about the erosion of the riparian doctrine that they had previously sanctioned, struck another blow for property rights to surface water as they are defined in the common law, in *Herminghaus v. Southern California Edison Company*.¹⁴

The decision aroused as much public clamor as had *Lux v. Haggin*, perhaps more. But this time the governor and the legislature were able to devise a constitutional amendment that limited riparian rights but was phrased to discourage the courts from construing it as an attempt to confiscate private property. The amendment limited the riparian right (and appropriative rights as well) to reasonable and beneficial uses of water. All water surplus to such reasonable riparian uses was to be subject to legal appropriation.

This amendment declared "that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use. . .of water be prevented."¹⁵ The state in the exercise of its police power had authority to subject all forms of property to reasonable regulation, and the amendment purported only to regulate the use and enjoyment of property rights in water for the public benefit. The proposal was passed by the 1927 legislature and approved at the general election in 1928. Thus California, unlike the other arid western states, which did not recognize riparian rights, continued to recognize both riparian and appropriative rights to surface water, but the conditions under which both could be exercised and the dividing line between the two were now defined, however broadly, in the state constitution.

¹³ Barnes, Harry, *Use of Water from Kings River, California* (Sacramento: California Dept. of Engineering, Bulletin 7, 1918), p. 112.

¹⁴ 200 Cal. 81, 252 P. 607 (1926).

¹⁵ Calif. Const., art. XIV, § 3.

DEVELOPMENT OF WATER LAW AND INSTITUTIONS IN AUSTRALIA, 1870-1920

To celebrate its one-hundredth anniversary in 1952, the American Society of Civil Engineers published a special Centennial volume of *Transactions*, which included an essay on the parallel development of irrigation in the United States and Australia.¹⁶ "There is," said the chairman of Victoria's water supply commission, "a remarkable parallelism between irrigation progress in the State of Victoria, Australia, and the Western part of the United States." It is worthwhile, then, to compare development of water law and administration in Victoria during the same period that we have examined these in California.

Today Victoria, and all of the other states of Australia, are actively drafting revised laws and regulations to govern the allocation of water resources among uses and users. Again, there is parallelism with the United States to the extent that Australians and Americans (under the leadership of the Centre for Water Policy Research, University of New England, and the Institute of Behavioral Science, University of Colorado) have recently held a major comparative seminar and workshop on the subject. But one cannot understand today's activities in Australia without knowing what happened there in the earlier period when there was also an active exchange of ideas between Victoria and the United States.

In 1884 Alfred Deakin, Attorney General of Victoria, was appointed to chair a Royal Commission on Water Supply (Victoria). He promptly left on a four-month study tour of the United States, especially California, and on his return, he presented a report entitled *Irrigation in Western America*. "California is like Victoria," he said, "a new country, settled by the pick of the Anglo-Saxon race, attracted in the first instance by gold discoveries, and remaining after that excitement passed away to build up a new nation under the freest institutions and most favorable conditions of life. California is almost exactly the same age as our Colony, and, in soil also, the two countries are not unlike."

The Victoria Irrigation Act of 1886 implemented most of Deakin's recommendations, which were derived largely from his opinions of the strengths and weaknesses of California's irrigation systems.

As we shall see, Deakin favored for Australia a radically more aggressive state (i.e. bureaucratic) involvement than he found in California. At the same time, he was interested in results achieved in California by private developers and mutual water companies. Thus, he arranged for the Chaffey brothers, George and Ben, who had developed a successful irrigation scheme near Los Angeles, which he

¹⁶ See East, Lewis R., "Parallel Irrigation Development—United States and Australia," in Am. Soc. of Civil Engineers, *Centennial Transactions* (New York: The Society, 1953) and Powell, J. M., *Watering the Garden State: Water, Land and Community in Victoria, 1834-1988* (Sydney, Allen Unwin, 1989), Ch. 4.

had observed, to come to Australia to install a similar system at Mildura. The Australians gave the Chaffeys a very bumpy ride, and in December 1895 the brothers filed for bankruptcy. George returned to California; Ben remained in Mildura and later played a leading role in the cooperative marketing of dried fruits.

The Act of 1886 was amended by the Water Act of 1905 which, among other things, created a single, powerful agency responsible for irrigation and water supply, and controlled by a commission of experts. Elwood Mead, who was considered the leading United States expert on irrigation institutions, was appointed chairman of this commission in 1907 and remained in Victoria until 1915, where he had a great influence, one that was, however, antithetical in important respects to contemporary developments in California.

THE PRINCIPLES OF 1886

The principles that were adopted in Victoria in 1886, reinforced by additional legislation in 1905, aggressively applied by Mead, and that have continued to control water development since then are these:

1. All natural sources of water supply and all rights to use water have been nationalized. Water is public property and rights to use it are subject to numerous and elaborate state controls. Riparian rights have been abolished (except for domestic and stock uses); and state ownership was extended to beds and banks of watercourses.

Deakin, on returning from California in 1884, said: "It is essential that the State should exercise the supreme control of ownership over all . . . sources of water supply . . ." This principle, which was incorporated in the 1886 Act, was, of course, entirely contrary to what Deakin had observed in California. It was revolutionary. Although the Victoria law was preceded by the Spanish Water Law of 1866, it was the first statute of a purely common law jurisdiction to declare state ownership of water use rights in order to assert state management.¹⁷ Furthermore, previously recognized riparian rights were abolished by simple statute.

2. State ownership of water rights permitted comprehensive state control, including the direction of water distribution. Thus, the state can impose virtually any conditions it sees fit in granting licenses for the use of water, which is public property.

In his 1885 report *Irrigation in Western America* Deakin recommended that: "The State should dispose of the water to irrigators, and should be guided in doing so by its own qualified personnel." Under this principle, which was also contrary to what Deakin had observed in California, governmental employees in

¹⁷ Powell, *Watering the Garden State*, p. 113.

Victoria acquired broad discretion to grant licenses or not; grant them for short or long periods; specify quantities, locations, and uses of water; suspend, revoke, or modify licenses, especially when water is in short supply; specify conditions regarding efficient use of water and drainage networks; charge fees.

The regulatory system, as it developed, required that farmers in irrigation areas or districts apply to the state water commission (now the Victoria Office of Water Resources, or WATER VICTORIA) for licenses, known as water rights. Each year the commission assigned a volumetric value to these water rights, based on the relationship between the volume of water available in the system and the water requirements of the farmers' predominant crops. A farmer's water right established his relative share of water in a normal year, and also in the event of a shortage of supply. It also established his relative entitlement to purchase any surplus water, known as annual water sales.

Before World War II many irrigators chose not to take up full entitlements under their water rights, thereby avoiding heavy annual charges, and relied on the availability of water sales to support their irrigation each season. In the severe drought of 1939-44, however, only rights could be supplied in some periods, and many farmers who had relied on the availability of large volumes of water sales suffered losses. As a result of this experience, farmers' attitudes towards water rights changed significantly and there developed a widespread demand for drought security by allocation of high volumes of water to water rights.¹⁸

Water rights were tied to specific parcels of land and could not be transferred apart from the land, a provision supported strongly by Deakin as a means for preventing speculation and monopolization in water rights. Deakin believed, also, that the licensing system would help ensure that Victoria irrigators did not indulge in the excessive applications of water that he had found to be common in California.

3. The state builds and owns all major irrigation facilities. Having observed that "all the irrigation works of Western America, with certain minor exceptions, have been constructed and maintained wholly and solely by private persons," Deakin proposed a different solution for Victoria, namely, state construction and state ownership of major facilities, which were then called "national works," combined with local operation of distribution networks. Local authorities, however, have been greatly constrained by the state's regulatory system and its ownership of water and water rights. For Deakin and his successors "it was crystal clear" that large-scale private development of irrigation would be found wanting in Australia, and they were ever alert to warding off any attempts by private owners to subvert "our great national rights."¹⁹

¹⁸ Langford, K. J., and Foley, B. E., "Transferable Water Entitlements—Victorian Perspective," pp. 2-3, in *Transferability of Water Entitlements: Papers for Presentation* (Armidale, Australia: Center for Water Policy Research, July 1990).

¹⁹ Powell, p. 150.

4. The state encouraged close settlement of irrigated lands—i.e. in compact blocks of small irrigated properties, and for this purpose, supported the recruitment of colonies of farmers. Deakin liked the concept of colonies which he observed in California, but in Victoria they were to be promoted and organized by the state, by "state socialism," not by land speculators and capitalism. Thus the myriad tasks performed by developers in California became the responsibility of the state water commission and the department of lands in Victoria. In 1910 Mead led a group of Victorians to Europe and the American West for the purpose of recruiting colonists. His speeches in America are filled with passionate support for Australia's state socialism and with condemnation of the selfishness that characterized parallel American developments under capitalism.²⁰

VICTORIA AND CALIFORNIA COMPARED

Although there are similarities in their physical environments and social structures, there are marked differences in the development between 1870 and 1920 of Fresno and Victoria in terms of agricultural production and rural communities. Fresno, as we have seen, developed from desert and swamps into the most productive agricultural region in the United States. The development of agriculture and of democratic rural life in the principal irrigated areas of Victoria was not nearly so robust. A question that I have pondered for many years is to what degree the differences can be attributed to the political and economic processes chosen to promote development. In Fresno the political environment encouraged land speculation for profit—i.e., profits from the sale of land which, without the developers' highly speculative investments, was virtually worthless. In Australia the political environment encouraged rational, socialist planning by agricultural experts.

The prevailing mood in Australia was definitely hostile to capitalistic accumulation. The mood was favorable to it in California. In Australia large scale private development of irrigation was discountenanced. It was favored in California.

The Australians declared a kinship with Henry George and his single tax movement, which led them to oppose many aspects of capitalism and all forms of land speculation. Henry George, of course, was from California. For a brief period his thought, in association with radical agrarian politics, may have appeared "to bend the stubborn trend of American institutions," as one of his admirers has claimed, but George's economics and politics never had a significant influence on water law and institutions nor on the development of irrigated agriculture in California or elsewhere in the United States.²¹

Conflicts over rights to use water were solved by bureaucratic means in Victoria; and by the courts in California. In the bureaucratic mode, non-elected

²⁰ See Powell, pp. 155-62.

²¹ Stegner, *Beyond the Hundredth Meridian*, pp. 219, 296.

civil servants were given great discretionary powers. The Victoria legislation contains virtually no standards and criteria to guide them.

In the court-activated solution, as in California, decisions on how to dispose of the water to irrigators were made by popularly elected county judges who were limited in their discretion by the nature of legal proceedings, such as adversary hearings, the role of precedent, and appeals to higher courts. At the same time the judges were continuously informed by data and advice provided to them by state experts, especially by the state engineer.

On the one hand, Deakin, having observed the California system, said that Australia should avoid California's messy confrontations over water rights. On the other hand, the California legislature, having listened to Hall's and Mead's arguments for a bureaucratic solution, rejected it. Among the legislature's reasons for doing so was their concern over the likely competence and integrity of the bureaucracy, and a concern that corruption in a bureaucracy with such great discretionary power would exceed that in a court system. To this argument, Mead replied: "It is not believed that this fear is well founded. It would take remarkably corrupt officials to create evils equal to those now existing. The notion that we must have human nature reformed and all the State machinery perfected before anything is done toward the regulation of streams is certainly erroneous."²² Also, the California legislature appears to have believed that county courts would likely be more sensitive to the interests of water users than would be a bureaucracy. They had seen how actively and effectively the county courts worked to mitigate the potentially disastrous consequences of the state's supreme court opinion on riparian rights during the crucial 30-year period when the legislature was unable to provide a statutory solution to the problem. The judges just would not dry up their counties.

AUSTRALIA TODAY

All of the states of Australia are in motion today, revising their laws and regulations relating to water resources. We shall focus on Victoria whose parliament passed a major Water Act in December 1989, following four years of drafting by the executive. The 1989 act is intended to codify and update the 1886 act and its amending statutes. It is a complete rewrite of the law and authorities in Victoria. It is intended also to give emphasis to changing objectives. As the Minister said to the Legislative Assembly in his Second Reading speech: "Until the 1940s, virtually all water legislation passed by the Victorian Parliament was intended to remove common law obstacles to *State development*. Since then our focus has gradually changed. More recent legislation aims for conservation and environment protection as well as economic development." (emphasis added).

²² Mead, *Report of Irrigation Investigations in California*, pp. 61-62.

The period from 1870 to 1940 in Victoria has been called the development phase, and that from 1975 to date the post-development phase. The latter term, although it seems scarcely appropriate in a nation with an average population density of five inhabitants per square mile, is somewhat more relevant to the State of Victoria. In any case, it was one conception that occupied the minds of the authors of the 1989 act.

As for conservation, by which is meant not wasting water, but conserving it, the act recognizes "the unity of the natural water cycle" which means that all sources of water—surface and groundwater—are to be administered together. At the time, there were different statutes for surface water, ground water, and other aspects of water resources.

As introduced, the bill provided authority for the state to designate water supply protection areas where over-commitment of a catchment may threaten the continued availability of water and its equitable distribution. Special management plans are to be enforced in such areas, including restrictions or prohibitions on the issue of licenses and subjecting licenses that have been issued to any appropriate restrictions and conditions. The management plans are to be drafted and administered by local authorities—e.g., irrigation and water supply districts, but they must be approved by the state's water agency (formally, the Minister), and the local authorities are under close supervision of the state bureaucracy.

Parliament amended the Government's bill, restricting authority to proclaim water supply protection areas to those supplied by groundwater alone.

Environmental interests in water are formally recognized for the first time in Victorian legislation. A key provision protects drainage systems. The state water agency and all local authorities empowered to license development are required to impose conditions that will protect the water resource from degradation.

Also, an "environmental custodian" (generally the Minister for Conservation, Forests and Lands) is authorized to apply for an environmental allocation of water on the same basis that irrigation and water supply authorities apply for bulk entitlements, and such an allocation can be specified in terms that protect the downstream flow of a river, or the inflow to lakes, wetlands, or estuaries.

While providing for conservation and environmental protection, the 1989 act, at the same time, reaffirms and consolidates provisions relating to the public ownership of water. All vestiges of private property rights in surface and ground water are abolished (except for rainwater that falls on land occupied by persons who wish to use it). The Crown (government) has the right to the use, flow, and control of all water, and all private rights are derived from the Crown. At the same time, the act has no retrospective effect, so that existing private rights, though they are derived from the Crown, are not confiscated. However, these are,

as we have seen, very few—principally the right to use water free of charge for domestic, stock, and household garden purposes.

The act reaffirms and in some respects expands the broad discretionary authority of the state water agency to allocate water by licenses and bulk entitlements and to attach to these licenses and entitlements virtually any conditions that the agency deems to be appropriate.

As the allocation schemes matured, they became less flexible. The water rights were tied to the land so that a rights holder could not transfer his water to an alternative property or use for which he might receive a higher return, or transfer it to another user who could obtain a higher economic return (or some desired noneconomic benefit) from the water. There could be no permanent transfers and none for even a single crop season. To be sure, water licenses had to be renewed periodically and at time of renewal the state water agency could increase or decrease the entitlement. But as a general rule the licenses were renewed for the same volumes as before, so that, for example, farmers were not likely to be encouraged to modify their traditional irrigation practices towards higher value commodities. Individual initiative was discouraged.

In the middle 1980s all of the Australian states began to examine the desirability of allowing water users to transfer their entitlements. Victoria, in 1987, adopted a very tentative scheme authorizing transfers of water rights for irrigation for a period no longer than one crop season, provided the two parties were within the same supply system and the transfer did not significantly affect delivery and drainage channel capacities or salinity. Technically such transfers did not affect the attachment of water rights to property, but only the point of delivery of the water. Each proposed transfer (called a TWE) required approval by the state water agency which could attach many types of conditions. The price was negotiated between buyer and seller.

As proposed by the government, this regulatory scheme for temporary transfers of water entitlements was included in the 1989 act. The Parliament, however, added authorization for a system of permanent transfers in which water rights are detached from the holding of the transferor and attached to the holding of the farmer who receives the water. Existing water right allocations were fixed at the proclamation date of the act and permanent TWE was then to become the principal means for introducing flexibility among rights holders. In the future an irrigator will be able to increase his water right by purchase from another irrigator under TWE conditions, the amount of his capital cost being determined by "market forces," according to Victorian officials.²³

But other Australian experts, including a group at the Center for Water Policy Research (University of New England), raise questions about the viability of a

²³ Langford and Foley.

market-based system of transferable water entitlements under the laws and institutions of Australia today.²⁴ There are, they say, three prerequisites for such a system, and none of them is present in Victoria. First, water must be owned independently of land so that it is freely tradeable. Secondly the volume of water that an individual has available for transfer and any special conditions on its use must be clearly specified in law to ensure that both buyer and seller know these unequivocally. The third, and probably most important, requirement is security of tenure of water so that a legal right exists to transfer it at a privately negotiated price "as if it was a privately owned good."

Water resources officials of Victoria are, it seems to me, uneasy about permanent transferable rights. Market-based transferability contradicts the basic concept of state monopoly in the ownership of water, and reliance on the market for allocation decisions reduces the discretion of the bureaucracy.

The Water Act of 1989 as presented to Parliament by the Government did not include authority for permanent transfers. The Minister said in this regard that a proposal for permanent transfers was canvassed but was opposed by half the submissions received. Instead longer temporary transfers were proposed—for up to five years with renewable options negotiable between the parties. The Parliament, instead, adopted permanent transfers. (*Note: I have no knowledge of the negotiations on this decision.*) The water authorities have decided that provisions for permanent TWE will not go into effect at the same time as other parts of the law. "The administrative process applicable to permanent TWE is yet to be finalized. Permanent TWE is expected to commence for the 1991/92 irrigation season."²⁵

In an address at the conclusion of the Australian conference Dr. Raymond Anderson of Colorado State University commented on the extraordinary amount of "hand wringing" by Australian water officials over the question of permanent transfers, and he compared this to the straight-forward methods by which these are accomplished in Colorado. Indeed, trying to graft capitalism onto state socialism will frequently be dicey. Water officers are coming to view transfers as an important "management tool" that allows market forces to influence water sharing. They, of course, are the managers.

Another objective of water planners in Australia today is to reduce the dependency of the water industry on subsidies from general taxation revenues. This is accomplished by increasing user charges and in other ways that are authorized in the 1989 Victoria act.

²⁴ Delforce, Robert J., Pigram, John J., Musgrave, Warren F., Anderson, Raymond L., "Impediments to Free Market Water Transfers in Australia," in *Transferability of Water Entitlements: Papers for Presentation* (Armidale, Australia: Center for Water Policy Research, July 1990).

²⁵ Langford and Foley.

Finally, it was an objective, stated by the Minister in his Second Reading speech, to reduce uncontrolled executive discretion and make governmental bodies and the Minister properly accountable. This, by drafting the new code "in plain, clear language," by defining the Minister's executive powers clearly where present acts do not, and by providing avenues for due process, when private interests are at stake, where, for the most part, none previously existed. The act is full of procedural provisions to these effects. At the same time, it contains relatively few directives to the bureaucracy on matters of substance—in other words, there are few standards and criteria to control bureaucratic discretion such as those found typically in United States statutes.

A SURVEY OF WORLDWIDE DEVELOPMENTS IN WATER RESOURCES LEGISLATION AND ADMINISTRATION, 1975 TO DATE

At the Third World Conference on Water Law and Administration, held in Alicante, Spain, December 1989, Stefano Burchi of the Legislative Branch of the United Nation's Food and Agriculture Organization (FAO) summarized worldwide developments in water resources legislation and administration during the previous 13 years.²⁶ He found certain recurrent themes. Two of them were, he believed, original when compared to earlier legislation, but most of them "tread on well-known paths."

WATER RESOURCES PLANNING

The principal original theme relates to water resources planning which is "increasingly and consistently finding formal recognition in legislation as perhaps the single most significant mechanism for sound decisionmaking in the management of water resources in the long run." Burchi cites recently enacted legislation and regulations in Spain, Federal Republic of Germany, Netherlands, Norway, Sweden, China, Algeria, Indonesia, France. At the same time, and contrary to the record in these countries, Burchi cites the United States, where federal involvement in water resources planning has considerably abated, resulting in the disbanding of the river basin planning commissions authorized by the Water Resources Planning Act of 1965 and in the act itself "falling into disuetude;" and the even more recent experience of England and Wales which are pursuing privatization of water resources development under their 1989 Water Act.

Thus, the importance and durability of this theme—institutionalizing the water resources planning process and formalizing the resulting water resources plans—remains to be seen.

Of greater interest to participants in this conference, and quite possibly of greater long term significance, are three recurrent themes that, in Burchi's classification, are not new, but travel along well-worn paths.

²⁶ Burchi, Stefano, (Main Speaker, Theme I), "Current Development and Trends in Water Resources Legislation and Administration," *Proceedings of III World Conference on Water Law and Administration*, Dec. 1989 (in publication).

DECLINE OF VESTED WATER RIGHTS

The first of these is "the fading role of private waters and of vested water rights." "These are indications," says Burchi, that "notions of water being the property of any one individual are on the decline," and he includes in this category not only water actually owned privately, but also water held under riparian or appropriative rights of enjoyment and use.

Nations that practice the common law are, according to Burchi, abolishing riparian rights (except for limited rights to take and use water for domestic and stock purposes) and conferring superior rights to water on the state. His examples, however, are limited to the Australian state of Victoria and legislation proposed by FAO in a number of eastern Caribbean Island countries.

For civil law countries, Burchi cites two complementary trends. First is the inclusion of water sources, both surface and ground waters, in the public domain of the state, giving virtually all water sources "the status of public property." Recent examples of incorporating ground waters in the public domain, where surface waters were already so considered, include Spain, Colombia, Chile, Peru, Ecuador, and the provinces of Cordoba, Mendoza, and Corrientes in Argentina.

EXPIRY OF PERMITS AND CONCESSIONS

A second trend is to subject rights to water that have been granted by administrative permits or concessions to a definite term of expiry. Here the principal example is the Spanish law of 1985.

As for the United States, Burchi cites our generally contrary experience where water rights held under administrative permits or court judgments are "tantamount to private property rights." But he believes that this traditional notion has been dealt a severe blow by the 1983 Mono Lake decision of the California Supreme Court which expounds a modern-day version of the public trust doctrine to protect nonmaterial values in water development.²⁷

A second familiar theme relates to the "cautious mobility" of water entitlements from less to more efficient uses of water, with transfers occurring through the agency of government or through a market where water rights can be sold or bought. The limited testimony that Burchi finds to support this theme, however, leads him to use the modifier "cautious" and to conclude that there is conflicting evidence on this point. There has been legislation in Chile, the province of Corrientes in Argentina, the state of Oregon, and in Victoria, Australia, but in all

²⁷ National Audubon Society v. Superior Court of Alpine County, 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983). See Ingram, Helen M., and Oggins, Cy R., "The Trust Doctrine and Community Values in Water," *Proceedings of III World Conference on Water Law and Administration*, Dec. 1989 (in publication); see also 1979 opinion of Quirico, J., Mass. Supreme Court Judicial Court, Boston Waterfront Development Corp. v. Commonwealth, 378 Mass. 629, 393 N.E.2d 356 (1979).

cases it is strictly limited and carefully prescribed. Also, during the same period other nations—Senegal, Mauritania, Spain—have restricted the transferability of water rights.

CONTROLLING POLLUTION

A third familiar theme is the recourse to regulatory and financial mechanisms for the purpose of preventing and controlling water pollution. With respect to point-source pollution, licensing of waste discharges into water sources has been central to the control of water pollution, although in a few significant cases licensing requirements have been complemented by fee systems that penalize polluting waste disposal practices. The principal examples are Spain, Italy, Britain.

Legislation that limits the uses of land in the vicinity of water sources, mainly by zoning, has been the principal control of non-point pollution. Examples cited are the German Democratic Republic, Switzerland, Mauritania, Algeria, Senegal, island countries in the eastern Caribbean, Jordan, Australia (Murray-Darling Basin Commission), Italy.

The impact of water withdrawals on the quality of instream water "is finding its way into legislation," particularly in areas with salinity problems. California and Montana are the examples given.

POPULAR PARTICIPATION AND DECENTRALIZATION IN IRRIGATION

There is an additional development in recent water resources law and administration that is, on a worldwide basis, more important than any of those discussed above, namely, the transfer of authority and responsibility for the maintenance and operation of irrigation systems, including the allocation of water supplies, and in some cases responsibility for the design and construction of such systems, from large national and provincial bureaucracies to associations and communities of irrigation farmers. This involves putting into practice the objectives of popular participation, decentralization, and, in some cases, privatization.

Legal and institutional changes for this purpose are considered to be so important as a means for improving the lives of poverty-stricken farmers, alleviating environmental problems related to poor irrigation management, improving the performance and sustainability of irrigation systems, and providing food and fiber in the third world that agencies like the World Bank, USAID, and the Ford Foundation have allocated millions of dollars to promoting it. Programs are underway in a large number of nations in Asia and Africa, and are beginning in Latin America. FAO did not record this trend.