

Expertise, Elites, and Resource Management Reform:

Resisting Agricultural Water Conservation in California's Imperial Valley

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Introduction: Lessons of the Recent Drought

Our modern age is distinguished by its ambitious attempts to fabricate man-made environments which are free of earth's more unpredictable and unforgiving forces. Yet our very success in creating comfortable artificial environments has created new and different threats to our security and well-being. The history of water development and use in the arid lands of North America exemplifies this increasingly critical irony. The remaking of the West's natural water courses into a system of plumbing allows productive farms and habitable cities where nature alone would not permit them. But whether one looks at the decline or outright collapse of natural ecosystems dependent upon these remade rivers, the increased salinity levels of their waters, or the socio-economic threat posed by periodic water scarcity, the success in damming rivers and diverting them towards the region's cities and farms is as much a dilemma as an achievement. The increasingly difficult task of stretching the arid West's finite water resources among the unrestricted numbers who are attracted by the warm, dry climate which limits their water supply to begin with, makes the irony of the region's situation even more pointed.

Nowhere is this more true than the border region of the Californias. There, the control and diversion of scores of distant and local water courses refashioned the region's naturally arid ecology. Despite the ability of such efforts to stave off scarcity, the region again confronts a limited available water supply. Central to the problem of increasing water scarcity is the rapid growth of the region's coastal cities. Moreover, fiscal problems facing countries on both sides of the border have made it increasingly difficult to allocate the funds necessary to build or subsidize projects designed to increase the total water supply. In this century, water managers have been predisposed towards alleviating water scarcity by constructing massive water storage, diversion and conveyance structures. They therefore have been slow to adapt to the growing political strength of the environmental movement and its demand that remaining natural water courses be preserved rather than further developed.

As argued herein, the nature of the region's water management regime allowed those who benefitted from the status quo to effectively resist needed reforms. The failure to adapt to the social changes California has experienced widened the gulf between the region's changing water demands and cultural values and the traditional approaches to water management, allocation and consumption. The public's extreme deference to the expertise of water managers regarding policy matters, along with the control exercised over policy agendas by an elite set of interests, meant that it took a crisis to expose the inadequacies of the status quo, undermine the authority of the experts, and mobilize the public to assert their interests. That crisis arrived when a six-year drought struck the

region in the latter half of the 1980s. The drought provided Californians a worrisome example of the water-scarce future likely to result from a continuation of traditional management and consumption practices. With the legitimacy of those practices and the people who devised them in question, the status quo finally surrendered somewhat to a new era of water management.

While the less evident, long-term developments mentioned above greatly contributed to the water scarcity threats experienced by the region in recent years, the dramatic and visible character of the drought ultimately mobilized the forces of reform. Residents of Southern California's cities were particularly surprised and angered after water officials announced in early 1990 that severe delivery cutbacks of up to 50 percent of traditional deliveries were imminent. Distant from their primary water supply sources in terms of space and awareness, and accustomed to an abundant, predictable flow through their pipes, residents were unprepared, if not unwilling, to accept such a circumstance. Moreover, the cutbacks revealed to area residents that they were more liable to nature's whims than officials led them to believe. The status traditionally held by the region's water managers and their ability to exercise their expertise without public challenge thus gave way to controversy and conflict. For a rare moment, then, water became a political issue in Southern California's artificial paradise and water policy entered a period of flux.

For a time the entire region seemed to be on edge, anxiously awaiting either an atmospheric or political storm. Set against a backdrop of an unpredictable natural and political climate, the rhetoric over alternative reforms at times assumed a shrill character. While doomsayers were provided opportunities to frighten unwitting residents with ominous visions of an unmerciful water future, water policy critics lambasted officials for failing to adapt their policies and practices to the changing demands of the state. A search for scapegoats marked particularly dry periods, with formerly faceless bureaucrats on the receiving end of most of the public's anxiety and anger.

The perception of many residents that the drought gravely threatened their pocketbook and way of life was more often than not an exaggeration. Such irrational reactions were in part driven by the media's coverage of the drought. Water, usually taken for granted and ignored, became their lead story as the drought continued. Video from helicopters circling near dry reservoirs and of antagonistic confrontations in surprisingly full water District board rooms made good copy as news reports. Yet most media sources were largely unable or unwilling to convey the more complex and prosaic aspects of water management. In particular, the gulf between traditional water policies and practices and a changing context of supply and demand had widened over many years, and therefore could not be captured on camera. Thus, media sources often responded to public interest in the drought, not by providing adequate background knowledge, but by exaggerating or distorting the actual nature of the scarcity problem.

Despite the severe nature of the drought, supply conditions were not as dire as they were sometimes portrayed in the popular media, and blame for the scarcity problem was not as clear-cut as many editorials assumed. What went unexplained in all but a few well-researched and insightful accounts in the print media was the simple truth that, even with the drought, there was enough water for everyone to get by, but not enough water for everyone to do as they pleased. In fact, water continued to flow even in the drought's worst moments. Yet it could no longer pour forth to predictably meet all of the region's traditional demands given current allocations and consumptive practices. For the vast majority of California's urban residents, the drought would thus mean slightly reduced deliveries, demanding tolerable changes to their life-styles and consumption habits. Even

irrigation farmers in the Central Valley, who suffered severe cutbacks in the delivery of surface supplies, were able to rely upon groundwater to raise a profitable crop.

Beyond these however unwelcome yet largely painless adaptations to the drought, projections of worsening supply shortfalls into the future continue to pose a threat to the region's continued development. Combined with the memory of the recent drought, this long-term threat continues to exert pressure upon water managers to change traditional policies and practices. During recent years, more people have become aware of their dependency on imported water and the importance and political nature of the decisions made by technical experts on federal, state, and local levels. Issues usually decided by water officials with no public scrutiny or input, for a time at least, aroused intense, critical, yet often superficial and misdirected attention among a growing number of water consumers. As a result, more and more bureaucrats, academics and everyday citizens were forced to conclude that a reformation of water management and use was sorely needed.

Presently, it is difficult to say with what speed or to what degree this process of reform will continue. With the recent arrival of rain laden storms, the region's water consumers now have more water to do with as they please, and public rancor has largely disappeared. The interest and participation of the media and general public waned with the end of the drought, and everyday citizens have largely returned to their traditional (non-) role in defining water policy. This may well allow relatively anonymous water management experts and locally influential private interests to again assume a hegemonic control over water policy. In such circumstances, attempts to carry out reforms will confront the same social forces which effectively resisted adapting water policy to the changing character of the region in the years leading up to the drought.

The nature of the force exercised by the experts and elites who characterize the region's water management institutions forms the subject of this paper. As discussed in greater detail below, during typical periods of adequate supply, they appear to be largely removed from public pressure and free to control water policy agendas. During atypical periods, however, or when they fail to bring enough water to consumers' taps, everyday citizens and their public representatives take an active rather than deferential role in water politics. In the case to be discussed, the consequences of the drought enlivened debate on a number of issues to the point where reform was unavoidable. The result has been a policy trend emphasizing the more efficient use of already developed supplies, and the transfer of waters conserved in Southern California's irrigated deserts to its coastal cities.

The exact details of how this will be achieved may well depend upon the context in which reform occurs. Because every series of storms makes water issues less visible and divisive, experts and elites may regain the authority to frame policies which serve their interests above all others. There are good reasons to suspect, however, that at least in some ways water politics can never be the same in Southern California. Too many citizens saw behind the water supply facade, too many public spokespersons questioned the wisdom of the status quo, and too many legislators became committed to new reforms in order to avoid even worse water related problems in the future. And certainly, the recent end to the drought did not end the continuing threat of water scarcity over the long run. Public interest and debate will therefore return once restrictions upon their water-dependent lives return once again.

Water Management Regimes as Elitist Expert Systems

Despite initial appearances to the contrary, the recent criticism of the status quo during the drought was not completely new to California. Rather, a more quiet criticism of the inadequacies of traditional policies and practices had been part of debates within relatively hidden academic and bureaucratic circles as far back as a decade before the drought. What the short-term climatic fluctuation accomplished was to sharpen the terms of the debate, publicize and politicize it, and make water policy reform, or at least public commitment to reform, inescapable. In other words, after a quiet debate among water management experts failed to bring about reform, unresolved issues emerged as evident problems during the drought and the perceived failure of the experts served to undermine their legitimacy.

Why did the quieter debates amongst the experts fail to head off the slowly emerging problems which became sharply evident during the drought? This essay attempts to answer that question. Put another way, it attempts to explain why the policies and practices of resource management regimes sometimes fail to adapt to changing consumer demands and new historical contexts. While other natural resources and the institutions which manage them may differ on specific details, it is hoped that the following discussion of water management will help illuminate one of the general social forces blocking the transition to an environmentally sustainable society.

The conclusions offered in this article were drawn from a more ambitious historical, comparative study of water politics in the Imperial Valley of Southern California and the Mexicali Valley of Baja California Norte. Because the two neighboring valleys are actually part of one extended geologic depression which is split in half by the international border, they form an ideal laboratory for the study of water resource issues. Located on the eastern edge of the Sonoran desert, farmed lands in both valleys are of nearly equivalent acreages (about half a million acres each). In other words, they share a distinct geographic region, and are subject to similar climatic, hydrologic, and agronomic conditions. Comparing their different responses to recent scarcity pressures can demonstrate how different social structures and political systems affect the evolution of water management.

The case of the Imperial Valley (Figure 1) is of particular interest for what it suggests about the dilemmas facing resource use and policy reform throughout the Western United States. Before discussing the Imperial Valley, however, it would be useful to characterize resource management in general terms. Two concepts are helpful here: 'resource management regimes' and 'expert systems.' The former suggests that a society's management and use of a natural resource, from the means used to extract a resource like water from the natural environment to the ends towards which its exploitation is directed, is tightly structured under a set of legal statutes, social norms, cultural practices and political institutions. Given the ability of modern technology to control nature, these rules, values, habits, laws, regulations, public policies, authorities and bureaucratic agencies now largely determine our relationship with a natural resource. A water management regime, then, includes the knowledge, organizations and human choices which determine who gets water and when, from where and for what purpose and price, and how it can or should be used. In that water management regimes distribute this vital resource in certain chosen ways, they reflect particular values and interests and can create or maintain social inequalities. In this sense, water management is a political rather than merely technical enterprise, however important the role played by scientific knowledge in the decision-making process. Despite this fact, however, water management regimes typically are not

highly politicized, and water managers emphasize a technical rationale when explaining their choices.

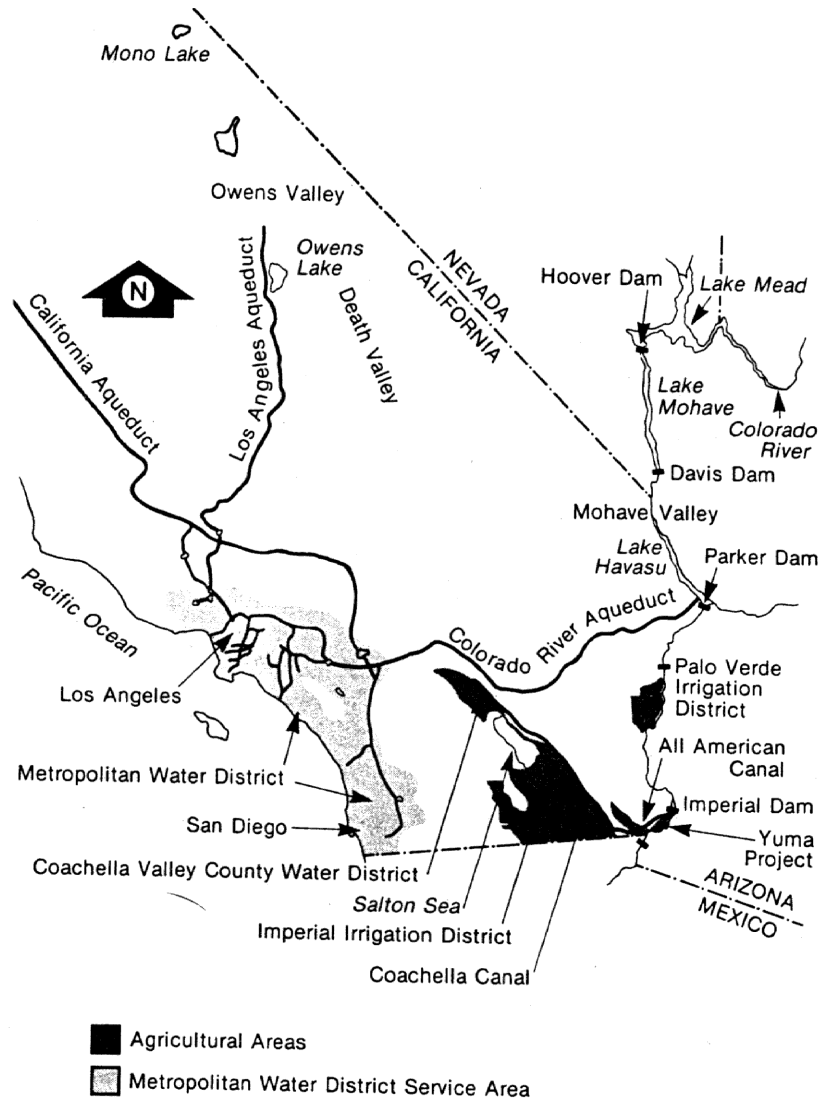


FIGURE 1. Imperial Valley Agricultural Area and Water Supply Systems.
Source: Colorado River Board of California, Annual Report, 1963-64. Los Angeles, CA 1964.

The bureaucratic staff manning the institutions within California's water management regime can be accurately defined as 'technocrats.' They consist of an elite group of professional administrators, hydrologists, engineers, lawyers, and economists, who in combination exercise a great deal of influence over the everyday management of and

policy choices regarding the state's water. In fact, as this article will argue, the technical nature of the enterprise and the heavy reliance on expertise can make for elitist and conservative water management institutions rather than democratic and progressive ones. This potentiality of water management regimes is a consequence of governance by "expert systems." As defined by social theorist Anthony Giddens, expert systems are "systems of technical accomplishment or professional expertise that organize large areas of the material and social environment in which we live today" (1990:26). He argues that the nature of modern society is complex to the degree that lay-persons are unable or unwilling to grasp or keep up with the codes of knowledge underlying many areas of social life, whether it be city planning, waste disposal, or air quality and water management. Thus, these and other technically complex policy areas are dependent on "professionals" holding expert knowledge. According to Giddens, the lay-person's relative ignorance demands they "trust" expert systems in order to carry on with their daily lives; or, as in our case, they must trust water managers to make the proper choices which will allow water to predictably flow through their kitchen faucet or irrigation headgate when they demand it.

Despite the near complete surrender of governmental authority to these professionals, Giddens argues that this does not mean expert systems are inherently elitist or conservative. The trust and thus authority extended to them arises from and is conditional upon the proven effectiveness of technical expertise in modern society. The public, Giddens argues, shares a latent skepticism of expertise that manifests itself whenever the system fails to deliver. Yet the conditional character of experts' vaulted authority assumes the public can recognize such failures, at least before a crisis make them all too obvious. Moreover, the public's ability to do so can be obstructed by the behavior of experts themselves. Giddens observes that expert systems attempt to conceal a good part of what they do in order to cover any errors which might serve to undermine their status (1990). Their authority can be enhanced or maintained by means of restricting access to information under their control, or through public statements which contrast their expert knowledge with the unavoidable ignorance of lay-persons. In other words, while expert systems are not inherently elitist or conservative, the efforts of professionals to retain the public's trust and reaffirm their right to make socially fateful decisions can leave them relatively accountable and unresponsive to the general public.

A number of academic studies of water politics echo Giddens' observations on the role of expertise in modern society. Among them is Donald Worster's *Rivers of Empire: Water, Aridity and the Growth of the American West* (1985), which contains a detailed and forceful argument concerning the inherent elitism of water management regimes. In his historical study, Worster argues that the American West is best described as a modern "hydraulic society," or "a social order based on the large-scale manipulation of water and its products in an arid environment"(1985:7). As a result of both its inherent characteristics and its historical evolution in 19th and 20th Century America, this hydraulic society is "ruled by a power elite based on the ownership of capital and expertise" (1985:7). It emerged during the monumental efforts to irrigate the arid West, Worster continues, owing to the confluence of investment capital and land ownership concentrated in private hands with the technical knowledge and engineering skills concentrated in public bureaucracies. He concludes that the resulting domination of the natural environment and human communities by this "techno-economic order" is highly destructive in both cases while it denies a livable habitat to wildlife as it denies liberty, equality and democracy to individual Americans.

Of particular importance here is the emphasis Worster places upon the technical control of water as a basis for development in the arid Western U.S. The politically dominant role played by those with the technical expertise to manage that water is thus understandable in these circumstances. Given the region's natural water scarcity, those with the expertise to efficiently manage the complex, technical tasks of building, maintaining and operating a system of reservoirs, dams, aqueducts and canals designed to control and distribute water are awarded great authority. In Worster's view, this intense control over available and potential water sources results in an anti-democratic tendency which permeates the arid Western U.S. . While water management experts often operate within public agencies and are therefore formally accountable to the general public, Worster argues that the concentration of technical knowledge in their hands, when in concert with a concentration of capital in few hands, allows them a key role within a "power elite." As Worster put it (1985:192):

Such an agency, emerging as a technical elite, grows more and more influential with each elaboration of water control, making itself ever more indispensable and authoritative. Its rule can be challenged, of course, but it always has a formidable defense in its command of special knowledge and in the people's awe of and dependence on that knowledge.

Worster's argument, much like Giddens', suggests that the vaulted authority extended to expertise is necessary, but not sufficient, to explain elitist resource management regimes. As argued in the following pages, in order to act as part of a "power elite," there must be a close coincidence between those commanding technical expertise with those commanding economic capital. In the case of water management, such a coincidence can be found in the close, mutually dependent ties formed between the professionals manning public agencies on local, state and national levels and the local private interests who become their most important clients. This has worked against the original intent behind the creation of these agencies. For example, in the case of the United States federal government, it is typically argued that regulatory and resource management agencies were established during the Progressive era early in this century to ensure that the benefits received by private interests from resource development would be contained within legislated boundaries defining the public interest. Yet as Grant McConnell demonstrated in his influential work, *Private Power and American Democracy* (1966), these agencies were often captured by the very constituencies they were designed to regulate. McConnell observes that, like those charged with managing land and timber resources, water managers within the Bureau of Reclamation were required to work closely with the private economic interests they were supposed to oversee. As a result of the mutual efforts of both federal officials and local irrigators to establish reclamation projects, formal and informal networks of influence developed between the agency and local elites. Through these networks there developed a mutual interest in cooperating to preserve or extend the private economic gain of irrigators on the one hand, and the authority and bureaucratic reach of government experts on the other. If these mutually beneficial ties were combined with the removal of this particular fragment of government from public view, water management policies could accommodate the private interests of local elites and largely ignore that of the public.

In combination, the insights of Giddens, Worster and McConnell bring us closer to understanding just how expert systems effectively resist, if not altogether prevent, demands for reforms that are responsive to the changing needs of the wider public. The

adoption or preservation of water policies and practices that largely benefit a private elite is more likely when water managers use their expertise to portray them as technical rather than political decisions. Moreover, the public's willingness to extend trust to expert systems allows water managers to disarm potential opposition and any alternative proposals biased against elite interests. In other words, expertise appears to play a legitimating role in elite-dominated resource management regimes.

To better understand how this legitimating function acts to demobilize public demands for reform, we must understand how the authority of expertise works to convince individual citizens that their acquiescence is more helpful or more responsible in matters of water policy than their participation. In so doing, it is not enough to base a definition of power on what can be directly observed, or on who participates and who benefits from the decision making process. According to political scientists Peter Bachrach and Morton S. Baratz, such a pluralist conception of power ignores its more subtle "second face". In their view, power is of course exercised when the outcome of decision-making favors the interests of an influential participant. But power is also exercised when that participant devotes their energies to creating or reinforcing social values, political habits and institutional practices which help limit the issues publicly considered to those which are relatively innocuous. In this way, an influential participant successfully prevents other actors from raising issues which are potentially detrimental to their interests. (P.Bachrach and M.Baratz 1962:948). According to Bachrach and Baratz, control over the often complex procedures, rules, and information concerning policy making in local political institutions is one means by which elites might protect their political dominance. In addition, the ability of elites to keep potentially damaging issues off public agendas and safeguard the status quo by encouraging unexpressed and unorganized political interests to remain that way rests upon their ability to "mobilize bias." In this case, the willingness or ability of non-elites to challenge elite dominance is undercut or discouraged by the latter's exhortation of the particular traditions, values and myths shared by a community that depict the existing order as unquestionably good, natural, or just. These two aspects of the "second face of power" can make it difficult for citizens to effectively participate in an informed, effective fashion, to know how to get involved to begin with, or to even believe that such effort is more useful or proper than their acquiescence.

According to Bachrach and Baratz then, the exercise of power goes beyond that which is clearly evident in public debates, elections, and policy decisions to include the more subtle means used to persuade the general public to accept outcomes serving elite interests and prevent them from either recognizing or acting upon issues which might benefit their own interests. To expose this "second face" of power, attention must be paid not only to actual policies and issues, but also to those potential yet ignored ones. Moreover, beyond explaining why some citizens participate and what positions they take, the failure of other citizens to participate and rally behind issues that are potentially beneficial to them must also be a subject of analysis. At the same time, one must explain the ability of elites to remove issues from public agendas and discourage open expressions of discontent and potential challenges to the status quo, not only through their control of institutional procedures, but also through their utilization of existing biases within a public or community.

As suggested by academic studies of resource politics mentioned above as well as others which have informed this particular work (M.Crenson 1971; J.Gaventa 1980), one of the most important biases that elites can mobilize is the public's awe and respect of specialized, technical expertise. Their deference to and dependence upon such knowledge

is a readily available bias which elites can use to discourage their participation on some counts and to legitimize elite-oriented policies and practices on others. As the historical experience of Southern California suggests, when water has predictably flowed from their taps, the public has willingly extended their trust to the expert system, even regarding matters which are value-laden, economically distributive, and politically contestable. This owes to the ability of experts and elites to control institutional procedures, mobilize public biases, and turn potentially contentious issues into non-issues.

The increasing unreliability of water deliveries owing to the 1980's drought, however, undermined the public's trust in the expert system. As a result, their former deference gave way to a greater interest and involvement in water policy debates. The ability of elites to mobilize bias and protect the status quo suffered after the legitimacy of expertise was partly stripped away. Given the long-standing resistance of many water managers and local elites to change, such a circumstance was apparently necessary before significant reforms to California's water management regime could be considered. Even so, the experience of the Imperial Valley demonstrates that where influential economic actors and water District officials were able to maintain control over local policy agendas, the conservation and transfer measures they were compelled to adopt were largely designed to benefit this local power elite. Despite the recent episodes of public anger and activism, expert systems continue to play an important role in determining the region's water policies and its future as a whole.

Long-term Developments Pointing Towards Agricultural Water Conservation

The last few decades of water management in Southern California have demonstrated that, despite new and increased resource demands and changing social values, long-standing water management practices and policies which arose under a much different set of supply conditions, consumptive uses, and public perceptions and expectations, were slow to adapt (T.Waller 1993). Important water rights, institutional features and consumptive norms were established in the first half of this century when the region's cities were comparatively small and the contribution of irrigated agriculture to the region's economy was comparatively large. Moreover, by the mid-1980s, the region's water managers found it impossible to implement the traditional solution to alleviating scarcity and allowing for new growth: controlling natural water sources and diverting them towards human ends through the construction of massive hydraulic projects. Larger social changes at work recently within the state, and the economic, political and cultural consequences of those changes, invalidated this long-favored alternative to overcoming the state's natural aridity (R.Gottlieb 1988; R.Gottlieb and M.Fitzsimmons 1991; N.Hundley 1992; S.Postel 1989; M.Reisner 1986 and 1990; Weatherford 1982).

However much the state's water managers resisted recognizing and adapting to these social changes, three key social changes ultimately overwhelmed the status quo and led to a shift in water policies towards using existing supplies more efficiently. Firstly, the new era of water policy was hastened by strapped fiscal budgets. The construction of the structures which tamed, stored and delivered water to both the Imperial Valley and Southern California's coastal cities from as far away as Wyoming, were possible because of the relative abundance of investment capital in the United States at key historical points. Because the best and cheapest sites for new water facilities were taken by the 1980s, water

projects were becoming increasingly expensive to realize even assuming that traditional spending levels could be maintained. In addition, water development has been highly subsidized, leaving taxpayers the burden of paying a substantial portion of the cost of both initial project construction and their continued operation. As concerns about governmental debt increased, the political will to maintain traditional irrigation subsidies decreased in equal measure.

Beyond the economic constraints offered by fiscal austerity, the conservation era was ushered in by political constraints resulting from the environmental movement. By the 1980s, a new vision of humanity's relationship with the natural world, one stressing adaptation and preservation rather than domination and utilization, became pervasive among Californians. Since the late 1950s, or once the Colorado River was largely transformed into a system of plumbing designed for human use, environmental organizations increasingly challenged the prevailing argument of water policy makers that the economic benefits derived from controlling and diverting rivers out-weighed the resulting environmental damage. Gaining political strength from growing membership rolls and increasingly sophisticated tactics, these organizations by the early 1980s assumed a highly influential role in California's water politics. Their public support and tactics became successful to the degree that all water development projects which would significantly impact surrounding wildlife habitats have been cancelled or put on hold over the past decade (R.Gottlieb 1988; N.Hundley 1992; T. Waller 1993).

As to why agricultural water conservation in particular has assumed a central place in water policy in recent years, one only has to contrast the fact that while over 90 percent of the state's population lives in its metropolitan areas, over 80 percent of its water is consumed by irrigated agriculture (State of California 1987). During the last three decades, the region's water shortage increased while there was little expansion of the amount of land under irrigation. Southern California's urban population, however, doubled during the same period. Urban growth created, and continues to create, greater demands for water (see Table 1 for estimates of the available supplies, demands and projected shortfalls for the urban areas along the Southern California coast). At the same time, rapid urban growth in California has allowed cities to assume a higher priority over rural areas in many areas of public policy due to the increased numbers of urban voters and political representatives pressing their interests. In addition, an increased share of the state's economic wealth is now generated by urban-based manufacturing and services rather than agriculture. Thus, the threat water scarcity poses to the region's increasingly vital and powerful cities helped put agricultural water conservation and rural-urban transfers at the top of water management agendas (F.Muir 1991).

If pressures for the adoption of conservation-oriented policies in the state resulted from these long-term social changes, then counter-pressures arising from the nature of its water politics and regional water management institutions effectively precluded or at least hampered their adoption during the years leading up to the drought. While other factors also served as counter-pressures, such as historically-prior water rights held by irrigators, farmers' fears of water transfers, and the reliance of urban water districts upon traditional construction-oriented policies, this study will focus on the important role played by a coincidence of expert authority and elite influence within water management regimes.

The Imperial Irrigation District and Its Non-policy of Conservation

Water in California is legally defined as a public good and is managed by publicly accountable officials. The need to manage local supplies and allow local areas to raise capital for water works was met when the California legislature established a regime consisting of local water districts through the Wright Act of 1877. The act created highly autonomous mini-states with the authority to fulfill these duties. In the Imperial Valley, water users elected in 1911 to unite under the aegis of the Imperial Irrigation District (IID). The District is the largest irrigation district in the U.S. and the largest single user of Colorado River water. With nearly 1,000 employees, including both field workers and bureaucratic staff, the District is also the valley's largest employer (Imperial Irrigation District 1989).

As the valley's water manager, the IID has historically come to act with a bias towards a local elite made up of the owners and operators of large-scale farms (B.Barclay et al. 1980; E.Leonard 1972; P.Taylor 1973). From the 1940s once the valley's lifeline to the Colorado River, the All-American Canal, and other water control structures along the Colorado guaranteed a constant, predictable supply of water, local farmland rapidly increased in value. Because of this and the competitive, mechanized, and recession prone nature of California's agricultural economy, highly capitalized agri-business operations bought out smaller family farmers over time concentrating land ownership into fewer hands and increasing the disparities of wealth among valley residents. By 1987, half of the valley's 804 farming operations controlled 90 percent of the district's over half a million irrigated acres (United States 1987; Imperial Irrigation District 1990a). While a local elite of farmers and landowners emerged, the District's policy orientation coalesced as well. Cognizant of the trends towards larger farms occurring in agriculture both statewide and locally, the District recognized that its own financial solvency was dependent on catering to the most powerful economic bloc in the valley (E.Leonard 1972).

This elite bias included policies, or better stated, non-policies, that might increase the irrigation system's overall efficiency. Directly and indirectly influenced by a land-owning/farming elite who desired to keep water prices as low as possible in order that profits remained high, and subject to its own institutional needs to keep water sales and thus budgetary revenues constant, the District sought to avoid conflicts with irrigators and costly investments in infrastructural efficiency. Water conservation thus was normally a District non-policy, and when it was undertaken, minimal investments were made only to ensure predictable deliveries to valley farmers. Water savings were neither motivated by nor directed towards increasing the supply available to the region's other, lower priority users. Moreover, the measures undertaken avoided increasing water prices or otherwise antagonizing local farmers, such as demanding more on-farm labor.

Except for system repairs which incidentally improved irrigation efficiency, the only water conservation measures the District chose to undertake during the first few decades of its existence were a 1922 regulation and a 1933 resolution. Both essentially stated that anyone who intentionally or carelessly wasted water would be denied water service. In 1954, the District initiated a program of lining delivery canals and laterals with concrete to prevent seepage; this program was voluntary, however, and required landowners to commit a quarter of the financial resources needed to pay for lining the canals bordering their fields. By 1984, the program had lined nearly 60 percent of the lateral, or smaller

delivery canals, and nearly 6 percent of the district's main conveyance canals (Imperial Irrigation District, 1985). Like the 1954 program, which was adopted after a low year on the river to ensure farmers would always receive adequate supplies, later investments in conservation were also designed to ensure a regular supply of cheap water. In fact, the District's most ambitious voluntary conservation program to date was adopted in the early 1980s to prevent water from flowing unused into the Salton Sea, which serves as the valley's drainage basin. At the time, the District was subject to both a lawsuit filed by angry seafront property owners inundated by a rising sea as well as an investigation by state officials into the District's water use. While the District would lose on both accounts, and was held liable for tens of millions of dollars to seafront property owners as well as found by state investigators to be unlawfully wasting water, the District hoped that the investments in conservation would lessen the budgetary allocations needed to cover legal damages as well as improve its image statewide (Colorado River Board of California 1990).

That the IID has typically treated conservation as a non-policy is evident given the comparisons offered by their northern neighbor, the Coachella Valley Water District (CVWD). The adjoining desert valley the CVWD service uses, according to 1992-3 figures, approximately 320,000 acre-feet (an acre-foot is roughly enough water to annually supply two urban households) of Colorado River water and groundwater to supply 78,553 irrigated acres of farmland (Coachella Valley Water District 1993a). This compares to IID's annual use of 2.77 million acre-feet (on average from 1981-1990) of Colorado River water to irrigate about 500,000 acres (Imperial Irrigation District 1989). Along with the Coachella Valley's farmland, CVWD also supplies a number of rapidly growing resort and retirement communities. Comparing water use efficiency between the two regions is difficult given differing cropping patterns, soil types, and the role of groundwater use in Coachella. Given that one might employ different assumptions and methods to study irrigation efficiency, expert analysts hired by the two districts tend to draw conclusions in favor of their respective clients (Coachella Valley Water District 1993b).

There is clear evidence that CVWD officials have invested greater money and effort into conservation, however. Recognizing nearly a half century ago that the area's potential for development would push their available supplies to the limit, the engineers and managers of CVWD devised and built a highly efficient water delivery system. When the irrigation system went into operation in the 1940s, farmers received their water, not through earthen or even concrete lined canals as in the Imperial Valley, but through a system of underground pipelines which eliminated losses due to both evaporation and seepage. Moreover, unlike IID's reliance on estimated flow, water deliveries in CVWD were measured through meters installed on every farm. Investments in irrigation efficiency have continued over the years, and the system now boasts of water deliveries allocated by central computer, drip irrigation on 37 percent of irrigated acreage, and wastewater reclamation for urban irrigation. These accomplishments allow CVWD officials to convincingly claim their irrigation infrastructure is among the most advanced in the world (Coachella Valley Water District, 1988-1990 and Undated).

When an anonymous CVWD official was asked about the varying amounts of effort and money put into water conservation by his district and IID, he stated that, "we have always had to conserve, without trying to conserve the last dollar. Other districts are more worried to recoup a fair profit" (Coachella Valley Water District 1990b). While CVWD officials may be prejudiced against IID's water management given that their lower priority

rights to Colorado River water makes them dependent upon IID's practices and policies, there appears to be some truth in this statement. Beyond cropping patterns, soil types, and water sources, the two districts' positions on conservation can also be explained by their differing patterns of land ownership. Land in the Coachella Valley is more evenly distributed among farmers (U.S. Census Bureau 1987). Unlike the Imperial Valley which escaped acreage limitations on lands receiving federal water, and averages 675 acres per farm, the Coachella Valley is legally bound to 160-acre individual plots under the 1902 Reclamation Act. The 1902 Act also requires farmers to live on or near the property, while in the Imperial Valley the rate of ownership by absentees or outside investors was estimated in the 1970s at 50 to 70 percent (E.Leonard 1972).

As far as conservation is concerned, absentee owners, because they are oriented towards short-term financial gain, are less likely to be inclined to support investments in irrigation efficiency, which bring benefits over the long-term (C.Finnell 1991). If an agri-businessman's or landowner's main concern is to keep water prices and on-farm labor costs low to provide greater economic returns in the short run, they will be less willing to undertake conservation measures on their own. Moreover, if these farmowners and operators are few enough in number to make up an influential, unified elite, a condition which exists in the Imperial Valley to a much greater degree than Coachella, they will be able to dominate an irrigation district's policy making process. The district itself has an interest in catering to this politically powerful group given they are their main water consumers. Pleasing these few hundred farmers and keeping water sales up for the sake of budgetary revenues appears to prevent IID's water management experts from proposing, implementing, and in some cases even studying measures designed to increase irrigation efficiency. Finally, acting at the behest of this influential elite, these experts have the authority to mobilize bias within the community to preclude other local groups, including farm workers, construction firms, and irrigation supply businesses, from demanding the adoption of those labor- and technology-intensive conservation measures which would increase local demand for their services and products.

The Imperial Irrigation District as an Expert System and the Issue of Lay Competence

The preceding section has outlined how conservation has typically been an IID non-policy owing to the economic interests and political power of a landowning and farming elite. It remains to be explained, however, exactly how this inaction is lent legitimacy by the expertise of district officials. The following section examines how this combination of knowledge and power came to define the local debates and conservation policies during recent years when it became impossible to ignore the outside forces demanding that the District use water more efficiently. Yet first, how does the IID fit the definition of an expert system, and how does it operate to allow this powerful correspondence between experts and elites?

The IID is governed by a five-person board of directors popularly elected on a one-person one-vote basis. Directors tend to be successful local businessmen. Most are farmers, though real estate brokers and operators of food processing plants are also common (E.Leonard 1972; T.Waller 1993). The power to define local water policies and consumption practices (and those regarding energy given that IID is a power utility as well) is concentrated in these five directors. They are accountable to local water and power users during regular elections, biweekly public meetings, and periodic assemblies

addressing particularly pressing issues. While open to all registered voters, participation in elections for directors tend to be quite low. In addition, the regular biweekly meetings are sparsely attended, with perhaps ten to fifteen local residents joining the district directors and staff members. Periodic assemblies, meanwhile, tend to attract twice that number. In other words, opportunities for any and all local citizens to influence the board's decisions are made available, though it is rare for anyone but local farmers who are often known personally by the directors to actually speak during these meetings. Thus, on most issues, the range of opinions which are publicly considered is usually quite narrow and is largely limited to those introduced by the directors themselves. In fact, these meetings often serve as a forum in which the IID can justify the positions taken on certain issues and then formally vote on policies (Imperial Irrigation District 1990-1992).

The process of devising policies before their formal approval is most often carried out by the directors in cooperation with a few dozen permanent staff members. On occasion, local farmers may themselves be formally or informally asked to help formulate policies. Given the complexity of the management duties they oversee, those within the water department are largely highly trained professionals in specialized fields such as hydrology, engineering, economics, law and administration. Beyond making day-to-day operating decisions, these experts conduct research to examine and support policies and programs being considered by the board. When the District feels an issue is sensitive to the point where their own staff might not be authoritative, money will be allocated to hire outside "independent" experts to carry out studies on conservation (Imperial Irrigation District 1990b). Unlike the board, these experts are not accountable to the general public. Rather, they are largely responsive to the expressed wishes of the board and the district's general manager. Largely removed from public view, their work is both insulated and routinized. This helps both them and the public maintain the perception that their work is the product of a benign expertise rather than a political exercise involving value choices (E.Leonard 1972).

As the reactive arm of the IID's bureaucracy, it is expected that the District's permanent staff is to employ its technical expertise to investigate and then carry out the regulations, policies, and requests laid down by the IID board. For example, if the board is interested in knowing the economic costs and water savings of a particular conservation program, assuming experts outside the district are not hired to do the study, the staff will focus its energies in that particular direction. At the same time, the proactive elected board members, the policy making arm of the district, often justify their own policy choices in reference to the technical data and studies drawn up by the district experts. In this way, expertise is employed by the directors to mobilize support for policies they politically favor. Given this nearly closed circle of political assertion and technical expertise, the public is left to assume the district explores all policy options, and based upon scientific study, adopts the most rational among them. While all internal documents relevant to these decisions are available for public review, the district disseminates through the local media only that information which tends to support the position they adopted. Moreover, the effort required to obtain further information, much less analyze it, is beyond the interest and ability of most laypersons. Finally, the authoritative nature of the district's public statements on an issue leaves the public deferent if not wholly acquiescent to the District's wishes. Without knowledge of alternative policies and the expertise to analyze and critique district studies or arguments, those groups and individuals who might have an interest in challenging the board's choices can do so only with great difficulty, and ultimately, ineffectually (R.Gottlieb and M.Fitzsimmons 1991; H.Ingram 1976). In this way the

expertise employed by IID limits popular participation, heads off possible opposition, and mobilizes bias in the community in favor of policies largely favorable to local elites.

Removed from popular demands and responsive to an elite of landowning farmers, the District has a hardy ability to continue traditional practices and policies and maintain the status quo. As long as district officials live up to the level of expertise they claim for themselves and is expected by at least the local public there is little requiring them to adopt policies and practices to meet changing social conditions or the wider interests of the general public. While IID is largely autonomous in its ability to control local water supplies, they are still subject to the overarching authority of the State Water Resources Control Board (SWRCB), the state agency which monitors and enforces the state's water code. It was the SWRCB, in response to the water waste suggested by a rising Salton Sea and projected shortfalls in Southern California's urban areas, which required IID to undertake the water conservation and transfers it has achieved thus far. Still, in all but the most extreme circumstances, the SWRCB has been hesitant to challenge the legally defined autonomy of local districts like IID (N.Hundley 1992). Thus, one can safely conclude that unless a precipitating crisis undermines the trust extended to expert systems, the nature of such systems and the presence of a local elite can act as a serious hinderance to progressive resource management and environmental reform.

In recognition of Giddens' argument that expertise is not directly translatable into political power, there remains the need to further clarify how and why water managers sometimes actively defend their authoritative position by restricting information or publicly representing their work in biased ways. As demonstrated below, water managers often believe and sometimes promote the notion that non-experts are unqualified to participate in both far-reaching policy choices and everyday resource management. While their elitist attitudes may arise from their professional training and knowledge alone, they are also borne out of the frustrations and obstacles resulting from the misinformed perceptions and unrealistic expectations held by the general public.

Elitism among water management experts is not unique to the Imperial Irrigation District, and can run through all types and levels of resource management institutions. Gordon Van Vleck, the former Secretary of the California Resources Agency, which oversees the Department of Water Resources and the SWRCB, can be cited as an example. During his turn as public guardian of the state's water resources, he questioned the wisdom of allowing significant reforms to the state water management regime to be decided by a public referendum during the 1982 state-wide elections. The reforms, dubbed the Water Resources Initiative by the coalition of environmental and public interest groups which put it on the ballot, would have increased the powers of the SWRCB relative to local water districts. Specifically, it would have required districts to submit water conservation plans for the state board's approval, preventing them from importing more water until a review of their current water practices found no alternative means to meet local demands. The initiative also would have empowered the SWRCB to force districts to raise water prices in order to reduce water subsidies and provide economic incentives for conservation. Finally, the 1982 initiative would have raised the status of in-stream uses within the state's water code, thereby allowing the SWRCB to deny or reduce traditional diversions from lakes, rivers and streams to preserve fish and wildlife and protect related recreational, commercial, or aesthetic uses.

While some of these proposed changes were ultimately adopted nearly a decade later during the state-wide drought, the 1982 initiative was voted down after its opponents, the water managers and influential elites who dominated the status quo of both urban and rural

locales, led a well-financed and organized campaign against it. Though the initiative was designed by environmentalists and consumer groups to reflect their interests, it is believed that a majority of Californians rejected the reforms because they were confused over the issues involved, a confusion heightened by the opposition's campaign (R.Sudman 1983). When asked after the vote whether the public understood the initiative, Secretary Van Vleck observed that putting these "very complex" reforms before the public, "forced the people to become involved in an issue that normally they might not be involved in." In reference to their general knowledge of water policy matters, he insisted (R.Sudman 1983:6):

...they don't understand. And I think it is unreasonable to expect that they would or should understand. I think they need to understand basically what's trying to be accomplished. I think they should need to know the general approach and how much it's going to cost. And to get involved in all of those details of the projects--I don't think they want to be--they're not interested in those details, that's why they have elected and appointed officials to handle these for them

Similar elitist attitudes are expressed by IID officials, though, they argue, not without good reason. Director Don Cox, for example, has accumulated a great deal of expertise in agronomy, hydrology, and the political economy of the valley's water given his education and experience as a local landowning farmer and public official. During what was perhaps the most controversial period of water policy reform in valley history, he publicly lamented the difficulties posed to local water managers by public participation. Attempting to respond to the SWRCB's order that IID annually conserve at least 100,000 acre-feet by 1994, Cox and the other directors faced the vehement objections of many valley residents to a proposed water conservation and transfer deal between IID and the Metropolitan Water District (MWD), the main water supplier of Southern California's 15 million urban residents. The IID directors had already scuttled one set of negotiations in 1985, owing to the largely ill-founded fear of local residents that they would suffer from the deal. The public's response at the time led directors to require that the approval of future deals be put to a popular vote. Another round of difficult and lengthy negotiations between IID and MWD finally resulted in a second proposal in 1987. Not only were some residents still fearful enough to actively object to any deal whatsoever, but from the point of view of some influential local farmers, the monetary terms of the proposed deal was far from the bonanza they hoped to receive (J.Menvielle 1991).

Aware of the possibility of popular rejection, Cox convinced the IID board to rescind the veto power they previously granted the valley's electorate. According to Cox, the proposed deal itself and the dangers of rejecting it and failing to meet the SWRCB's conservation order were not understood by the public. Its approval, therefore, could not be left in their hands. As Cox explained in the local paper after the board's action, a public vote would have undermined the "system of representative government by putting the decision in the hands of people who do not have the time or interest to study the issues completely" (R.Gottlieb 1991:87). Years later, Cox elaborated in more general terms why water management can be difficult in a fully democratic context (D.Cox 1991):

Everyone is worried about their own little deal. That's the problem with a democracy, nobody looks at the big picture...It's pretty hard for somebody, the board or groups of farmers to come and do something that is painful to your district or your community unless you have to. This is kind of what the [SWRCB] is all about I guess, they make you do things. I try to get ahead of the power curve a little bit, and boy it's tough, you

get all kinds of flak. But the big problem is that maybe a basically fairly intelligent person might have to spend 20 or 30 hours of research and study to bring himself up to speed to make an intelligent decision on this problem. How many citizens out there are willing to put in 20 or 30 hours?...And have you ever tried to get comprehensive information out of newspaper articles? Most of them are slanted and biased... It's hard for them to give the underlying laws and politics of the situation and where your strengths and weaknesses are...

Whether the water management expert is a highly placed state official or local district director, their belief that the complexity of the issues involved necessarily limits public involvement in water policy making appears to be widely shared. The ultimate effect, if not intent, of public statements reflecting this belief, is to increase their control over the state's water management regime. Yet however arrogantly elitist Cox and other water officials appear given both their beliefs and actions, they bravely assert an often accurate observation. The public does not understand and is not interested in these issues to a degree which would warrant extending fully democratic responsibilities to them. Yet this may result from the way expert systems have traditionally operated rather than be inherent within the requirements for technical expertise to begin with. Overcoming the problem posed by lay incompetence is not therefore necessarily addressed, much less solved, by an even greater reliance on experts. As discussed in greater detail in the conclusion, the public's inability to constructively contribute to matters of water policy is in many ways a consequence of, rather than solved by, the continued dominance of experts over resource management and policy. Such domination, by selectively disseminating information and restricting public debate and participation, can serve to reinforce public incompetence and prevent people from developing the basic knowledge and political experience and maturity required. As political theorists have long recognized, the best political education is often obtained through involvement in the process of decision making in the first place.

Directing Reforms towards Elite Demands

As the previous pages demonstrate, if water managers restrict participation in water policy issues owing to their frustration with the lay public, then there is no guarantee their decisions will account for the largely unexpressed interests of the public. From the managers' point of view, if they are freed from the ill-informed expectations and unrealistic demands of everyday citizens, they will have a greater opportunity to objectively exercise their expertise and better balance the needs of all competing water users. Yet if they remain unaccountable, policies may be biased towards maintaining their vaulted authority within the decision making process. Hesitant to adopt reforms which might significantly change the status quo of which they are a part, they may act too conservatively and fail to account for the changing water demands and cultural values of users. As is demonstrated by the case of the IID, their cautious conservatism may become an ardent resistance if they fall under the influence of an elite group of clients or customers. In other words, those private actors who have more knowledge, interest, time and access than everyday citizens can bias the policies of expert systems all the more. This alliance may be mutually beneficial in that experts may need the support of powerful local actors to expand or defend their current bureaucratic realm. Private elites, meanwhile, need experts given their ability to legitimize policies and practices that serve their interests. Thus, an alliance between these two sets of elites, one rich in knowledge or cultural capital and the other in wealth or economic capital, forms a regime able to

mobilize support for or compel acquiesce to political outcomes which benefit elites, as

TABLE 1.

Actual and Projected Water Supply Sources, Demands and Shortfalls of the South Coast Basin of California (in million acre-feet)

Actual	1980 ^a	1985 ^b	1990 ^c
<i>Total Supply</i>	3.5	3.761	3.45
Colorado River	0.847	1.135	1.212
State Water Project	0.63	0.785	0.88
Owens Valley	0.473	0.485	0.238
Local	1.55	1.356	1.120
(reclamation)		(0.093)	
(surface)			
(groundwater)		(1.084)	
<i>Total Demand</i>	3.5	3.761	3.7
<i>Shortfall</i>	0.0	0.0	0.25
Projected^d	2010 ^e	2010 ^f	2010 ^g
<i>Total Supply</i>	3.45	4.129	4.366
Colorado River		0.771	0.558
State Water Project		1.506	1.1
Owens Valley		0.485	0.37
Local		1.367	1.942
(reclamation)		(0.225)	(0.30)
(surface)		(0.179)	(0.179)
(groundwater)		(0.963)	(0.963)
(conservation)			(0.50)
Transfers/Agriculture			0.404
<i>Total Demand</i>	4.65	4.365	4.5
<i>Shortfall</i>	1.2	0.236	0.134

a. Environmental Defense Fund, and Robert Stavins, principal author, Trading Conservation Investments for Water. Berkeley: Environmental Defense Fund, March 1983 p.5.

b. State of California, Department of Water Resources, California Water: Looking to the Future. Statistical Appendix, (Sacramento: State of California, November 1981). p. 11.

- c. Various sources derived from Metropolitan Water District of Southern California, Los Angeles Department of Water and Power, and the San Diego County Water Authority.
- d. Estimates based on years of normal rainfall and run-off.
- e. United States, Dept. of the Interior, Bureau of Reclamation, and the Imperial Irrigation District, All-American Lining Project. Environmental Impact Report, (Washington, D.C.: U.S. G.P.O., 1491), p. 1-2.
- f. same sources as note b.
- g. same sources as note c.

well as convert potential political disputes into non-issues.

In the case of water resources, elite-expert alliances are often established and maintained through the process of cooperatively gathering information and formulating plans for the construction and operation of water control and delivery systems. In the Imperial Valley, an alliance of interests and a mutually beneficial relationship between local elites, IID officials, and federal water managers of the Bureau of Reclamation emerged from efforts to control and develop the waters of the Colorado River and to protect the valley's exclusion from the 160-acre limitation (N.Hundley 1975; E.Leonard 1972; P.Taylor 1973). For most of the 20th Century, the IID, MWD, the Bureau of Reclamation, and state-level water management agencies shared the belief that water was best "created" through the technical mastery of the natural environment and then directed towards private economic gain (M.Reisner 1986; D.Worster 1985). Their alliance precluded other alternative visions from consideration until the early to mid-1980s when water scarcity threats and other social changes began pulling water managers in different directions (R.Gottlieb and M.Fitzsimmons 1991; N.Hundley 1992). It was at this point that the state, with the projected water shortages within the MWD in mind, ordered IID to conserve 3.7 percent of its annual water use and transfer it to needy users (Table 1). By the end of the decade, the drought made it clear to nearly everyone that the state would have to consider finding new ways to do more with less water. This, along with the perception that water managers had failed to live up to the claims of their expertise, encouraged water users, 90 percent of which lived in the state's parched cities, to abandon their typical deference and more actively press their interests in the process of reform. Once urban-based state legislators began proposing significant reforms the state's water management regime, those like IID officials who had resisted reform for much of the previous decade were forced to formulate and lobby for their own reforms to ensure that any new policies were to their benefit (D.Cox 1991).

Despite the periodic waves of dire water supply forecasts and calls for forced agricultural conservation which the drought stirred up, heavy rain periodically arrived at critical junctures before sustained heavy rains finally put an end to the drought and calmed the political seas in early 1993. Throughout the six-year drought the irrigators and officials within the IID walked a fine line between resistance to and cooperation with demands that they conserve and transfer more of their water. Moreover, when their efforts were designed to be cooperative, local elites were able to direct district expertise to steer conservation measures towards their particular interests. In other words, despite the opportunities for radical reforms offered by the drought's particularly dry episodes and the

increased interest and involvement of local residents and state and federal officials in local water policy, local elites and district experts largely retained control over IID's policy agenda.

Even before the drought inspired attacks on valley water use by urban-based representatives and mass media, water managers statewide subjected IID to critical attention owing to the SWRCB's Decision 1600, a 1984 ruling that the district was wasting as much as 438,000 acre-feet of water per year (State of California 1984)(see Table 2). The slow progress towards addressing this criticism tarnished the legitimacy of district

TABLE 2.

Expected Annual Water Savings in the IID Available for Transfer to MWD and Total Estimate of Possible Water Savings (in acre-feet).

Annual Average total inflow to IID, 1981-1990	2,766,000
<i>Total Savings Expected</i>	
Infrastructural and managerial improvements (expected by 1994)	106,110
Temporary trial of land idling program (running during 1993-94)	100,000
Lining the All-American Canal (completion estimated around 1998)	68,000
Total	274,110
<i>Total Savings Estimated Possible (not including land idling programs)^a</i>	
District Controlled	
Lining the All-American Canal	70,000
Lining main canals and laterals	110,000
Seepage recovery lines	30,000
Preventing canal spills	50,000
Farmer Controlled	
Conserving leach water and tailwater	178,000
Total	438,000
	(350,000) ^b

a. According to the California Department of Water Resources in Investigation Under California Water Code Section 275 of Use of Water by Imperial Irrigation District, December 1981.

b. Estimated total possible savings according to a 1984 Bureau of Reclamation study.

officials. In attempting to regain their stature and better control the process of reform to their benefit, district officials drastically increased their public relations and political lobbying efforts (R.Gottlieb and M.Fitzsimmons 1991; P.Rice 1991). In doing so, they were able to rely upon powerful allies on the federal level. Up until the last few years at least, the relationship between the Bureau of Reclamation, the District and local growers

has remained one of mutual dependence and cooperation since the federal government financed and helped build the All-American Canal (D.Cox 1991; E.Leonard 1972). Helping the District avoid paying interest on its construction loan, escape acreage limitations clauses in the 1902 Reclamation Act, or investments in irrigation efficiency, allied the Bureau of Reclamation with local constituents and helped expand its own bureaucratic domain and protect the agency from its critics. For example, after IID was identified by California authorities as a water waster, the Bureau of Reclamation conducted a study which concluded that "water conservation opportunities" were 20 percent fewer and more difficult to realize than stated in the SWRCB's conclusions (Imperial Irrigation District 1985). Beyond this, Bureau of Reclamation officials actively defended IID's water practices and supported the conservative steps they had made towards conservation. The Bureau of Reclamation demonstrated they remained a valued ally by awarding IID a "Commissioner's Water Conservation Award" for completing the first conservation and transfer deal with MWD (Imperial Irrigation District 1989). The award was given despite the fact that the conservation was undertaken only to fulfill a SWRCB order that District lawyers were still fighting in the courts at the time.

By the early 1990s, however, the two long-standing allies found themselves increasingly at odds. Because the Bureau of Reclamation's beneficiaries include competing users for scarce supplies like MWD (Metropolitan Water District) and IID, the drought forced the Bureau to demand IID change its traditional water management practices. In 1990, as the storage levels in the Colorado River's reservoirs significantly fell after allocations along the river greatly exceeded annual runoff, the Bureau ordered the District officials to sit down with those of other nearby irrigation districts to define precisely the diversions from the river, that since the 1930s had become, typically overdrawn, flexible allocations. Because these groups were unable to resolve the matter among themselves, the Bureau of Reclamation is now considering imposing limits it alone establishes on the annual water use of each of the irrigation districts in the California desert. To IID's further dismay, imminent water shortages faced by MWD in 1991 brought Bureau Commissioner Dennis Underwood to the valley with a unprecedented request that the district conserve 7 percent of its average annual allocation and transfer it to coastal cities. Implying that an uncooperative attitude would have negative political consequences for the District, Underwood argued that abiding by his request would demonstrate the valley's willingness to do its part during the state's difficult times. Though some irrigators cried foul, the District did draw up plans to conserve about half of what Underwood requested, if only to "keep the [urban] wolves at bay." Ultimately, however, the valley was spared forced conservation this time as Arizona and Nevada failed to divert their full share of the Colorado, and heavy rains in California increased Southern California's water allocation from Northern California (P.Rice 1990a, b, c; and Bureau of Reclamation 1991).

Among the more important factors allowing the District to maintain the pace and character of reforms, as well as preventing other local issues, such as the grievous inequalities resulting from local water uses, from becoming bound up in water conservation policies was the unanimity of valley farmers. Unanimity is possible in part because the farmland is consolidated into a few hundred farm owners and operators and in part because only about 100 of these agri-businessmen take an active role in District politics (C.Finnell 1991; F.Robinson 1991). Given their small number and similar economic circumstances, when water conservation reforms confronted the valley, the

political differences among these elite irrigators were minimal and the long-standing consensus between them was maintained. Their ability to avoid sustained public disagreements helped maintain the popular perception of district decisions as scientific and technical rather than politically contestable. In other words, district officials and valley elites consensually identified the issues that may well define the valley's future without attracting undue interest among valley residents. With this unanimity serving to dampen debate of possible alternatives, the District was able to orient conservation policies towards elite interests.

One issue did split local irrigators and district officials into opposing camps, however: whether or not the District should attempt to orient its policies towards marketing its conserved water to the highest bidder. Within both private circles and IID board meetings, profound differences were expressed over whether the district should risk resisting conservation until a cash-driven, free water market developed, or whether they should play it safe and bow to pressure to devise transfer deals with the MWD whereby they finance conservation in exchange for the water saved. While the benefits of a potential water market are tempting, in terms of both monetary rewards and the retention of local control over conservation measures, the political dangers in resisting conservation at the time might have led state legislators or the SWRCB to impose a conservation and transfer arrangement on their own and not IID's terms. During the mid-1980s, a number of prominent valley farmers came to support the idea of a free water market, and formed an organization called the Imperial Valley Water Users, Inc. to further their cause. They managed to elect a candidate of their choice to the District's board of directors and used the influence of their elite landowning supporters to bring two other directors closer to their thinking (C.Finnell 1991). If this division had been sharper and sustained over a longer period of time, public interest in the details of water marketing exchanges, especially regarding how money derived from water sales would be locally distributed, was likely to have brought other local interest groups into the debate. As it was, the district and local elites found a middle ground, agreeing to pursue a strategy of "brinkmanship" (D.Cox 1991). In other words, they would employ various tactics to delay cooperative deals with MWD so long as the political pressures to conserve remained manageable, and in hope that legislative momentum towards water marketing would soon allow them to pursue a more profitable course.

Despite their continued, yet carefully measured resistance, the IID has begun implementing or at least planning a few conservation projects (see Table 2 for a summary of IID's actual conservation measures and additional savings believed possible by outside experts). After five years of negotiations, a 1989 water conservation and transfer agreement with MWD, whereby MWD will fund largely infrastructural improvements such as lining delivery canals with concrete, will soon satisfy the SWRCB's Decision 1600 by conserving 106,000 acre-feet per year. The transfer of another 68,000 acre-feet to MWD is expected from a project to prevent current seepage from the All-American Canal. Negotiations with MWD over the project began in 1988, and after another set of lengthy delays and bitter recriminations between the two districts, culminated in a 1993 agreement which may allow the saved water to be transferred to the coast by the end of the century. At that point, conflict may arise between Mexico and the United States given that a few thousand Mexican farmers irrigate their fields just south of the border with the groundwater aquifer which is recharged in part by the canal's seepage (see T.Waller 1992 for more details on the project and its binational implications).

Since March 1991, MWD and IID have discussed a third conservation deal. Before striking a third deal, however, IID argues that the effect of further conservation upon the Salton Sea must be resolved. The sea and the fish and wildlife dependent on it, which already have been in ecological decline over the last few decades, are likely to suffer all the more if the fresh water flows from excess irrigation runoff are more intensely conserved. For this reason, the IID has used the ecological state of the Salton Sea as a way to delay any further deals with MWD. The District's strategy was outlined by Director Don Cox, who also serves on the regional State Water Quality Control Board, at a local Farm Bureau meeting in November 1990. The district, he asserted, "might be able to protect what were doing here by hiding under environmentalists' skirts. Some environmentalists want to sacrifice the sea [for the sake of water conservation]. Others want to run river water into it. The State Water Quality Control Board, and I know all these guys, may open up Decision 1600 because they can see saving the Sea and denying MWD the water that can be conserved out here" (D.Cox, 1990).

Despite this strategy of delay and resistance, the District came close to making an "emergency" conservation deal with MWD while on the "brink" during the summer before the drought officially ended in early 1993. Under the terms of the deal, MWD agreed to a two-year trial period in which they would make monetary payments to valley farmers to idle a portion of their land and transfer the water saved to their urban water users. Originally planned to allow the transfer of another 100,000 acre-feet during both 1993 and 1994, MWD dropped the plans after drought-ending rains arrived in early 1993.

Above all other conservation deals, it is this proposed yet unrealized third conservation and transfer deal with MWD which demonstrates to what degree valley's elites continue to mobilize bias towards policies which serve their interest and preclude those which do not. Though it was ultimately not adopted, it remains on "injured reserve" until circumstances inevitably fail to meet MWD's ever increasing demand for water. The measure is highly favored by local irrigators because it would rapidly satisfy political demands that the district conserve more water and would encourage movement towards water marketing. In fact, it does appear that the kinds of water marketing arrangements which were discussed during the drought may be the future of water policy in California. Under the fully elaborated yet unrealized MWD-IID "fallowing program," farmers could voluntarily choose to idle up to 4 percent of their farmland. In compensation for the average value of crops usually grown in the valley, agri-businesses and individual farmers would receive \$138 per acre-foot saved by the idling (P.Rice 1992a, b). Given that an irrigated acre receives an average of about 6 acre-feet of water per-year and the average farm size is about 675 acres in the valley, the plan would provide over \$22,000 a year to the average landowner who chose to participate in the program. For those few dozen local irrigators and firms that farm 3,000 acres or more, MWD would compensate them for doing nothing with a generous sum of about \$100,000.

More than the other two deals already adopted, the benefits from this proposed market exchange are more heavily weighted towards the local farming/landowning elite. Other programs, such as concrete-lining canals, benefit them as well. They relieve political pressure, preserve the valley's water rights, and do not require an increase in the price charged for irrigation water. Such infrastructural improvements also create construction jobs and thereby benefit the local economy. On the other hand, other conservation measures, such as labor and technology-intensive on-farm conservation practices (like drip irrigation, pumpback, and sprinkler systems), would be of even wider benefit within the valley. The

demand for farm labor and irrigation equipment sold by local businesses would markedly increase. With the Imperial County suffering the highest percentage of state residents living below the poverty line, an average annual household income of under \$10,000, nearly half the statewide average (United States 1988), and an unemployment rate hovering over 30 percent, conservation measures that would increase the demand for labor and local commerce would benefit the valley as a whole.

From the farmer's point of view, however, even if MWD paid for the installation and maintenance of such on-farm conservation systems, such a deal would demand that the farmer invest an increased amount of time and effort for the same return. Moreover, increasing the demand for labor runs the risk of reducing the surplus army of farm laborers, increasing their wage levels and empowering farmworker's unions all over again. Thus, even though bankrolling by the MWD would mean that water prices would remain stable while efficiency improvements were made on-farm, both the farm operator and the absentee owner might invest more work or worry for little return. Evidently, these farmers are businessmen who are either unable or unwilling to put moral responsibility to the local community before their own self-interest; the valley's landed elite would prefer to be paid for doing nothing.

While neglecting to adopt the proposed land fallowing conservation program would mean missed opportunities to mitigate local economic problems, a few local critics of the plan have also argued that idling farmland may further hurt the valley economy. Their concerns are not without basis. In 1987, after federal subsidy programs, pest infestations, and farmworker union activity led farmers to idle 15 percent of the valley's lands, the local economy suffered a severe recession (R.Gottlieb 1992). Even non-farm related businesses went under due to the weakened circulation of personal income. Along with a whitefly infestation which has cost the local economy hundreds of millions of dollars over the last few years, paying farmers to idle another 4 percent might further reduce the need for farm labor, agricultural inputs, and local food processing plants.

Given that the proposed fallowing program might harm these third parties in the valley whereas other alternatives would be to their benefit, it is surprising that local opposition was not more widespread and intense. During a special IID hearing in early April 1992, the public's first opportunity to respond to the plan, only one resident spoke out against the proposal. Non-farming local activist Cliff Hurley (or "troublemaker" as some see him) accused the district of lining farmers' pockets and warned that the "gravy train" the farmers were getting on would be difficult to stop once people became used to easy money. He therefore asked district officials to adopt a plan that would benefit more people within IID boundaries (P.Rice 1992c). Confronting no further public opposition, however, the district board approved the plan in late April. While MWD and the other users of the Colorado River considered whether to approve the fallowing program, the IID attempted to sell it to the public. The local media was used to publicize a study drawn up by IID experts that downplayed the fallowing program's possibly negative effect upon third parties. In fact, the study concluded that the program would inject \$11 million into the local economy by putting money directly into farmers' hands. Farmers could then pay their outstanding bills on seeds, equipment, etc., and thereby boost rather than harm the valley economy during what was admittedly a bad time. While careful to point out that the current program was merely a short-term trial program, IID experts also indicated that selling water in this fashion could be considered a new "alternative crop" for growers (P.Rice 1992d).

If the IID failed to sell the plan to the general public, farmers themselves were at least enthusiastic. By mid-June 1992, 229 of the valley's growers, holding 310,000 acres, had signed up to participate, ensuring at that point that at least 2.5 percent of the valley's total farmland would be idled (P.Rice 1992e). Soon after, however, the Imperial County Board of Supervisors entered the debate on behalf of non-farming residents. They voted against concurring with the District's declaration that the fallowing program would have no significant environmental impact. According to Supervisor James Bucher, an environmental impact statement prepared by the District should include an accounting of the program's impact on the local economy. Finally, the supervisors agreed that any money received from water transfers should be used to help farm workers and merchants who would be affected by a reduction in the crops being raised (D.Edwards 1992).

Even though county supervisors took the unusual step of interfering in IID's policy making, they failed to block the District's plans because the non-farming public failed to be aroused into action. While the sympathies of local residents appeared to side with the supervisors, only a few came forward to actively support their actions. Moreover, despite the publicity generated by the supervisors objections, few residents attended further District meetings on the matter. Finally, in a clear indication of their financial dependence upon and thus fear of crossing the local growers who patronize their shops, small business owners opposed to the land fallowing program asked to remain anonymous when offering their objections in the local newspaper (P.Rice 1992f). Farmworkers, on the other hand, were not sought out for comment by local journalists. Since they tend to either speak Spanish or be less informed than business owners, and because their union has drastically reduced its presence in the valley, their point of view remains unheard. Thus, after a District public hearing on the issue in late July where all six people who attended remained silent, there was little standing in the way of formal approval by District directors.

It remains to be seen whether this or a similar land fallowing program will be adopted as the next conservation measure, and to what degree the valley economy might be harmed as a result. It appears that local irrigators favor such marketing arrangements, and that little stands in their way of adopting them. While IID and its irrigators have been forced to undertake conservation measures, to date they have effectively dominated the process of shaping how that will be done. This is due to the ability of the IID experts to legitimize policies which favor an influential farming elite, who in turn have come to provide the District's financial and political stability. This same alliance effectively kept water conservation off District agendas despite the increasingly evident inadequacy of traditional water management practices during the rapid urban growth and environmental degradation of preceding decades. Yet as long as water predictably flowed from urban faucets or rural headgates, the experts' authority remained unquestioned. Unlike state-wide water policy issues, where experts representing competing urban, rural and environmental interest groups have increasingly engaged in semi-public debates, IID has a monopoly over expertise in the valley and is therefore rarely challenged. As long as elites shared a unanimity to the point where potentially divisive issues failed to attract the attention and involvement of the general public, any managerial inadequacies and worsening projections of water shortfalls remained unaddressed. The resulting crisis came sooner rather than later during the recent severe drought. In politicizing California's water policy and partly undermining public deference to expertise, urban interests pressured IID to conserve to the point that continued resistance was politically risky. While the issues raised by initial negotiations over conservation and transfer policies brought local

residents into water policy debates, the characteristics of Imperial Valley's water management regime ultimately allowed District experts and elites to retain control over what has largely been a hesitant, piecemeal process of reform. For this reason, despite irreparable breaks in the status quo, the actions taken to date to correct Southern California's water scarcity problem have not significantly changed the very regime which allowed the recent crisis to begin with.

Conclusion

The preceding analysis suggests that without a crisis bringing critical attention to traditional resource management policies and the experts which carry them out, an alliance of expertise and elites within resource management regimes may hinder needed policy reforms. A conclusion that only crisis can mobilize everyday citizens to challenge the status quo is troubling given the significant reforms needed to address existing environmental problems. This is especially disturbing given that some of these problems, like global warming, involve a built-in time lag between the resource management changes designed to address them and actual improvements in alleviating their consequences. We cannot rely upon imminent crisis to demonstrate the inadequacies of current unsustainable practices and policies or to stimulate the adoption of reforms which have already been recognized as necessary.

Avoiding such crisis management requires that we recognize the sometimes conservative and elitist orientation of expert systems and reform resource management regimes to eliminate these biases while preserving the ability of responsible resource management experts to exercise the specialized, technical knowledge our society increasingly relies upon. This may well be achieved by encouraging rather than discouraging the participation of a greater segment of the public in federal, state and local policy debates and resource management decisions. The position that important policy decisions should be left in the hands of water management experts due to their complexity suggests why public participation is often ineffective or detrimental to begin with is unimportant. Often prevented from or unaccustomed to accessing and interpreting the information used by resource managers to make decisions, exposed to media accounts which merely reaffirm the decisions reached by such managers, and unaccustomed to public debates over resource-related issues during non-drought years, it is not surprising that the public's indifference to water policy turns into a politics of misperception and irresponsible rhetoric whenever experts confront an issue they can not quietly manage. It is only by allowing everyday citizens to develop at least a working knowledge of the infrastructure, institutions, resource supplies and demands, and all possible alternative policies and practices, that they can become constructive and effective actors in the decision making process. Encouraged to increase their knowledge and sustain their participation during typical periods of resource management, citizens might better define when it is necessary to defer to the experts, and where their interests lie and how to pursue them to make water policy more beneficial to a greater number of people. If, however, they are encouraged by resource managers and elites after a controversy or crisis fades to again leave matters to the experts, then not only will policy agendas and resource uses not respond to changing public needs and values, but each resulting crisis can be expected to find resource management institutions inadequately prepared to forge far-sighted reforms in a context of political controversy.

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Abstract

An explanation of why the management of natural resources sometimes benefits an elite few, how the exercise of expertise contributes to this, and how traditional and inefficient resource use can continue. Water scarcity in Southern California forces the nation's largest irrigation district to conserve and transfer water to urban areas. Elites resist reform with expert help, and when overcome by events, use the authority of expertise to legitimize reforms which benefit their interests.

Keywords: Water politics, scarcity and conservation; Expertise and power; Resource management/ reform; Irrigation - Social Aspects

Resumé

Une tentative d'explication des raisons pour lesquelles la gestion des ressources naturelles tend à profiter à une élite restreinte et comment le travail des experts maintient cette tendance à l'utilisation éhontée de ces ressources. La rareté de l'eau en Californie du Sud pousse le plus grand district d'irrigation des Etats-Unis à emmagasiner d'importantes quantités d'eau pour les besoins des centres urbains. Grâce à l'aide des experts, les élites résistent à tout effort de réforme de cette politique. Quand les élites sont acculées par les événements, elles utilisent l'autorité des experts pour orienter les réformes dans le sens de leurs intérêts.

Mots-clef: politique de l'eau, sécheresse, préservation de l'eau, pouvoir et expertise gestion et réforme des ressources naturelles; irrigation; aspects sociaux

Resumen

Este artículo presenta una explicación del por qué la administración de los recursos naturales a menudo beneficia a una pequeña élite, de cómo se utiliza el trabajo de los expertos para contribuir a tal fin y de cómo tal patrón de aprovechamiento tradicional e ineficiente de los recursos puede continuar. La escasez de agua en el Sur de California obliga al mayor distrito nacional de irrigación a conservar el agua, para luego transferirla a las áreas urbanas. Las élites resisten, con la ayuda de los expertos, los intentos de reforma. Cuando los acontecimientos las rebasan, entonces las élites utilizan la autoridad de los expertos para legitimar aquellas reformas que benefician sus intereses.

Palabras Clave: Agua y política; escasez y conservación; expertos y poder; manejo de recursos y reformas; irrigación y aspectos sociales.