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lvda@library.berkeley.edu
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EVOLVING ATTITUDES ABOUT CALIFORNIA'S WATER

by T.N. Narasimhan

California is endowed with an impressive diversity and an abundance of water resources: rivers, lakes, wetlands, groundwater, natural springs, and geothermal energy. For over a century and a half, Californians have mobilized their creative energies to manipulate water to great economic advantage. California leads the nation in agriculture, and California's hydraulic structures are of world renown. The early pioneers who settled California cherished their personal freedom and gave themselves laws and policies that would forever sustain economic growth through the exploitation of their natural resources, especially water. In the quest for limitless prosperity, water became a commodity and a means to wealth. A mind-set became established among some that they had irrevocable rights to water with practically no responsibilities.

For over a century, however, Californians have been receiving nature's signals that the state's natural resources, although vast, are in fact limited and that overzealous exploitation will lead to unacceptable and hazardous consequences. In a roughly chronological order, these cautionary signals include: choking of northern California rivers by hydraulic mining debris, water logging and soil salinization in the San Joaquin and Imperial Valleys, land subsidence, habitat destruction of anadromous fish, soil erosion due to forest logging, pesticide contamination, heavy metal toxicity, and so on. There is abundant evidence that California's streams and groundwater bodies are seriously threatened as California's industries, especially agriculture, seek to assert their rights to water, with the premise that technology will continue to overcome impediments to productivity. Despite serious concerns that California's future generations may be left with substantially impaired water bodies, water exploitation continues unabated.

As far back as 1878, thoughtful Californians foresaw the ills of uncontrolled commercialization of water. Accordingly, the Constitutional Convention of that year declared that the state owned all the water in its bounds and that water shall be used only for beneficial purposes, with permission granted by the state for each specific use. Fifty years later, in 1928 Californians made this declaration an integral part of the state's Constitution. This tenet, that the people of California hold a paramount interest in the state's water resources, is popularly referred to as the doctrine of public trust. Inspired by Greek philosophy, Roman jurists of the sixth century A. D. fundamentally distinguished between immutable laws of nature, and changing laws

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of states and nations. Law of nature deemed that clean air, flowing water, and the sea were vital for human survival and that no human being shall be prevented from having access to these resources. These are the philosophical roots of public trust.

The upshot of the public trust doctrine is that the state holds a fiduciary interest in its water resources. That is, the state holds its water resources in trust for its citizens. With specifically granted permits, citizens may put water to beneficial use in an usufructuary sense, meaning that they have temporary use of another's property which may not be unduly damaged or impaired by the process of beneficial use. In principle, public trust encourages use of water for the survival and benefit of citizens. However, it prohibits unacceptable rates of change of the natural attributes of the resource. In this sense, the state has an active responsibility to assure that the benefits of water resources are available for the present generation as well as future generations.

In an atmosphere of economic prosperity, technological innovation, and urban growth, the public trust doctrine lay essentially dormant until the 1970s. Following the nationwide environmental movement of the 1960s, public trust was invoked in a major way in California and in 1983 to protect the fragile and rare ecosystem of Mono Lake. Balancing domestic water supply benefits to an urban population in southern California and the potential demise of the Mono Lake ecosystem, the state Supreme Court ruled that the latter took precedence and that the state had a trust obligation to protect the ecosystem.

At the beginning of the twenty-first century, major hidden costs of California's economic prosperity are beginning to surface. These include: habitat destruction and damage to biodiversity in upland watersheds, threats to the ecosystem of the Bay-Delta, salinization of soils and aquifers in the San Joaquin Valley, and increasing salinity of the Salton Sea, to cite a few. Litigation and law suits are commonplace.

At present, California is witnessing a gradual shift from a mind-set of resource discovery and exploitation to one of learning to live with what exists and to preserve resource integrity for the future. Confrontation, litigation, and bargaining were compatible with a frontier-less world.

But, these approaches are ill-suited for a world in which vital resources have to be shared in a civilized way. Philosophically, the enduring notion of public trust, seemingly simple and self-evident, reminds us that when the law of nature and law of humans come into conflict, civilized living should reasonably require that the law of nature prevails. On a practical level, the public trust doctrine does constitute a tool that can be used by the state to assure that water is judiciously put to the most beneficial use.

In an ideal society, people will conduct themselves with discipline in such a way that the public trust will not have to be invoked formally. Laws, policies, and regulations will inherently be compatible with public trust. Although much litigation and confrontation goes on among different segments of water users in California, there are indications that Californians are moving in the direction of coming together to make a collective judgment. The existence of CALFED, a state-federal institution, is evidence. State-federal cooperation was formalized in June 1994 with the signing of a Framework Agreement by California and federal agencies with management and regulatory responsibility in the Bay-Delta Estuary.

For over a century, economic prosperity was facilitated in the United States and elsewhere by specialization and concerted attack on focused technological problems. But, we are now persuaded that technology by itself cannot hope to solve the large-scale problems of wise and just use of natural resources. Nor can such problems be exclusively solved by law and social sciences. What is needed is a coming together of the sciences and the humanities as an organic whole. Hopefully this will happen if we train a new generation of students who are able combine breadth and context with specialization. Perhaps they will supplant a confrontational mind-set with a conciliatory mind-set in decision-making.

It is indeed remarkable that the insights of the Greek philosophers and Roman jurists are as relevant today as they were nearly two thousand years ago.

T.N. Narasimhan is a hydrogeologist and teaches at UC Berkeley. His research and teaching interests are in the science and human aspects of water.

BOOK REVIEW

Reviewed by Charles Kovach

The World's Water 2000-2001: The Biennial Report on Freshwater Resources by Peter H. Gleick. Island Press, 2000.

Current events focus our attention on specific regions of the world, and media coverage directs our thoughts to particular issues, places, and ways of thinking about them. In light of recent events, the three-year drought in Afghanistan, and some of its repercussions on the regions population, becomes front-page international news. For those of us who follow water issues on a daily basis, on the local level at least, the shifting focus of international attention and general media coverage makes for a patchwork of vignettes regarding the world water picture. Reading *World's Water 2000-2001* helps to bring some of this into focus on a global scale, and may redirect some of our activities on the local scale.

The World's Water 2000-2001 is the second biennial report, complimentary to the previous volume, *The World's Water 1998-1999*. This edition notes the lack of ability to be comprehensive, and warns the reader not to expect detailed discussion of all water-related topics, mentioning water and ecosystems, and privatization in particular as topics omitted. Given the overall balanced approach in describing the topics it does address, one can hope that these will be among the topics covered in the next edition (2002-2003).

The review provided here is broken down into the topics as they are covered in the book. In general, the book is a useful compendium of issues and data, including a discussion of data sources and limitations, as well as points of contact for further information such as web site addresses for numerous organizations.

Water as a Human Right

The discussion of water as a human right was stimulated in part by the fiftieth anniversary of the Universal Declaration of Human Rights. Although water is rarely implicitly identified as a basic human right (neither is air), the intent to do so appears obvious. Discussion revolves around the issues of physical and economic access. The chapter concludes that the inability to meet the basic water requirements of billions of people is one of the greatest failings of the twentieth century.

Water Stocks and Flows

New information updates this topic from the previous volume, and information is provided regarding the imprecision of data used for such assessments and the need for better data definitions, collection, and dissemination. Issues addressed include the ramifications to water stocks and flows by religion, ideology, geopolitics, and economic competition. This chapter suggests the likelihood of water disputes increasing, and the need for legal, economic, political, and technical responses to minimize these problems.

Water and Food

This chapter describes the connections between food availability and water including the issues of location, timing, quality and reliability of sources into the future. The disparity between "needs" as they relate to food production versus other human and ecosystem needs for water, dietary factors such as vegetable- versus meat-based diets, and soil quality and quantity changes are reviewed. Figures on water usage related to each factor are compiled and presented. Other issues addressed include use-efficiency measures, cropping effects, pricing, population growth and distribution, and the possibility of genetic manipulation of food stock.

Desalination

This section provides a discussion of large- and small-scale desalination as a less conventional water supply approach. It notes that while the costs remain high, recent advances reducing production costs coupled with increasing costs for conventional water sources, render this option more attractive. The description of the Tampa, Florida project (with which I am familiar) was thorough and accurate, a boost to lending credibility to the balance and accuracy of the rest of the report.

International Watersheds

Described as the first new analysis of international river basins in 20 years, this chapter again touches on data handling with appropriate cautions in interpretation of numbers compiled from various sources using differing definitions and focuses. It describes the future importance of international and national agreements regarding riparian rights issues, as well as constructs for dealing with allocation issues across boundaries, both geographical and geopolitical.

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CALIFORNIA COLLOQUIM ON WATER

The Water Resources Center Archives gratefully acknowledges the support of the Metropolitan Water District of Southern California for generously co-sponsoring the Fall 2001 and Spring 2002 California Colloquim on Water.

This lecture series is co-sponsored by the UC Berkeley Center for California Studies, College of Engineering, Divisions of Biological Sciences and Social Sciences, College of Letters & Sciences, College of Natural Resources, Bren Fund, Boalt School of Law and the UC Water Resources Center Archives.

NOVEMBER 13 THE CALFED BAY-DELTA PROGRAM AND THE FUTURE OF CALIFORNIA WATER POLICY

Patrick Wright

Director

CALFED Bay-Delta Program

DECEMBER 11 THE ROLE OF WATER RECLAMATION AND REUSE IN WATER RESOURCES MANAGEMENT

Takashi Asano

*Professor of Civil and Environmental Engineering
University of California, Davis*

A reception is held at the Water Resources Center Archives, 410 O'Brien Hall from 4:15 - 5:00pm, prior to each lecture.

Each lecture is videotaped and available for loan at the Water Resources Center Archives. For more information about attending or viewing previous lectures, please contact, Linda Vida at (510) 642-2666 or lvida@library.berkeley.edu.

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Water Recycling

Water reclamation and reuse are integral parts of future water supply delivery and planning. The chapter discusses appropriate treatment levels for various uses, and the evolving view of reclaimed water as a resource rather than a liability. Examples highlight the current emphasis on non-potable reuse options such as irrigation, cooling, and commercial applications.

Dam Removals

The first volume reviewed the state of the world's dams; this one focuses on the recent trend to remove dams. It explores the varied interests that are now bearing on this issue, and gives some detailed case examples (primarily in the US). Issues include minimum flows and levels for streams, lakes, wetlands, and groundwater, and their tie-in with many other aspects of water supply, delivery, quality, and user rights.

Water Events

This section covers three topical subjects: arsenic in groundwater in Bangladesh and India, fog collection as a water supply source in distinct geographical areas, and security issues. The last item is described as the focus of an ongoing effort by the Pacific Institute which will prove timely, with potentially important ramifications for security issues related to water supply and distribution. The chapter contains an extensive database of military, political, and terrorist involvement with world water sources.

The World's Water is suitable for a wide audience as a reference work that proves to be very stimulating reading. The issues that are addressed globally are also faced locally. It plants seeds for future thought and dialogue, and compiles useful tables of data that can help give fresh perspectives. A book like this improves our ability to learn from experiences elsewhere both to solve current problems and to prevent future ones.

Charles Kovach is an Environmental Manager with the Florida Department of Environmental Protection. He received his B.S. in Marine Science/Biology from the University of Miami, Miami and his M.S. in Botany from the University of South Florida, Tampa. In addition to his 6 years with FDEP, Charles has worked as a private consultant and as a Peace Corps volunteer in the West Indies.

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