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Big Dams: The Confluence Of Engineering and Politics

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BIG DAMS

THE CONFLUENCE OF
ENGINEERING AND POLITICS

David Billington and Donald Jackson '75, *Big Dams of the New Era: A Confluence of Engineering and Politics* (University of Oklahoma Press, 2006)

The history, engineering, design, and construction of the big multipurpose dams built west of the Mississippi during the Roosevelt era are described in rich detail in this comprehensive book by Donald Jackson, an associate professor of history at Lafayette College, and David Billington, Gordon Wu Professor of Engineering at Princeton and a National Academy of Engineering fellow. It is Jackson's third book about dams in the United States.

A pioneering study of the nexus of technology, culture, and politics of that era, the book further provides a fascinating look at the interaction between the two principal agencies of the federal government—the Bureau of Reclamation and the Army Corps of Engineers—that were responsible for the design and construction of these massive public works. The roles of the key personalities—politicians, engineers, bureaucrats, and beneficiaries of these projects—are woven into the narrative in a way that will appeal to historians, engineers, and general readers alike.

The two authors have a wealth of experiences that makes them perfectly suited to write about this complex topic. Billington's notable book *The Tower and the Bridge* introduces the concept of the "structural artist—the structural engineer whose work through its function and expression is aesthetically pleasing and meaningful enough to be viewed as a legitimate work of great art." It clarifies the criteria for such distinction by citing notable examples such as the Eiffel Tower, the reinforced concrete bridges of



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In October 1937, President Roosevelt visited the site of the Grand Coulee Dam to witness firsthand the progress in construction. From the east abutment, visitors were able to enjoy a grand view of the upstream face of the dam.

Robert Maillart, the shell structures of Felix Candela and Pierre Nervi, and the skyscrapers of Fazlur Khan.

Jackson, much younger than Billington (and an engineer by training), also has devoted his career to the history of technology and industry, concentrating on the significant developments in that field in the American West. The senior author's influence on Jackson is evident in the latter's 1995 book *Building the Ultimate Dam: John Eastwood and the Control of Water in the West*, in which he views Eastwood as a structural artist, using the criteria posited by Billington but applied to dams.

Following a short introduction in which the authors provide their reasons for writing *Big Dams* as well as its subsequent structure and arrangement, a third of the book's pages are devoted to a fairly exhaustive but concise study of the origins and development of the Bureau of Reclamation and the Army Corps of Engineers into their almost modern form.

Discussing not only the internal politics and the major personalities of these organizations, using a study of earlier dams as a framework, the authors explain the theory behind the engineering design of these dams. In a simple and elegant way (much like their previous explicatory science-based

books), this one presents the mathematical principles of the two types of masonry/concrete dams—the gravity dam and the thin arch dam—"in terms used by the dam designers of the era." Data gleaned from historical engineering records of several actual dams illustrates the development of two traditions in dam design that the authors identify as the Massive Tradition and the Structural Tradition, characterizing the gravity and thin-arch forms, respectively.

In the perennial engineers' argument between solidity with its associated perception of safety and the innovative and structurally minimal—but proven safe mathematically—thin arch-form, perception usually wins. This was the case with the final design choice of these dams. Not until decades after the massive dams were built, such as the Grand Coulee Dam, did the latter form achieve its rightful place in the Glen Canyon Dam.

It is also fascinating to read about how, through a gradual melding of the separate objectives of flood control, navigation, irrigation, and power generation, determined individuals both in and out of these federal agencies succeeded in persuading the federal government to become involved in building power generation plants associated with

some of these dams, thus accelerating the development of the West and Northwest.

In separate chapters, the remainder of the book describes the design, construction, and history of the dams on the Colorado and Columbia rivers; the earth dams on the Missouri River; and two most significant dams of that era in California's Central Valley Project. Filled with many technical details, including the construction sequences and procedures, these chapters might appeal more to the engineering community, although there is enough nontechnical material to appeal to the general reader as well.

Located in remote regions often with a harsh and unforgiving climate, these projects were gargantuan, and the logistics of providing housing and support for the builders were daunting. The authors describe the heroic efforts of the dam builders to overcome these obstacles—some natural, others man-made—using a narrative style that enables the reader to appreciate fully the vast undertaking that each of these projects represented. At the same time, they skillfully depict the interplay and maneuverings among each project's supporters and opponents—and President Franklin Roosevelt's extraordinary political skills for keeping both sides happy while achieving his objectives.

This book, with its successful combination of the engineering and political histories of the big dams, is both instructional and a pleasure to read.

—Faruq M. A. Siddiqui,
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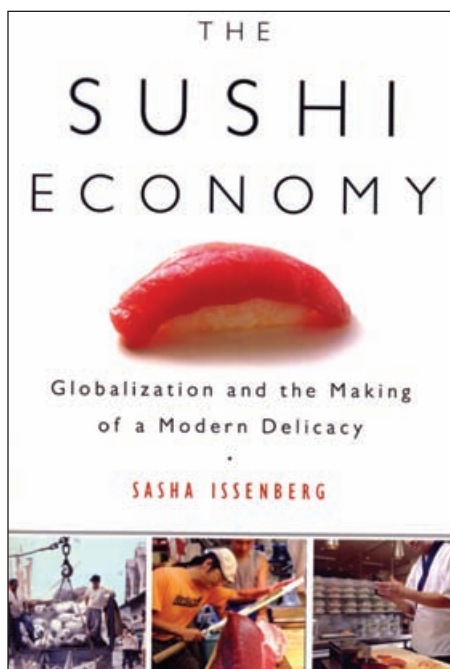
Robin (Smith) Chapman '64, *The Dreamer Who Counted the Dead*, WordTech Editions, 2007. In this collection of poems with titles such as “The Goodyear Blimp Goes By,” “Georgia O’Keeffe, Napping at Ninety-Six,” and “Hiking Out of the Picture near Muir Beach,” the political is intimately personal, and family and national history converge in startling ways.

Robin Chapman '64 and Judith Strasser (editors), *75 Poems on Retirement*, University of Iowa Press, 2007. This collection includes poems by men and women between the ages of 50 and 80 from around the world, shar-

ing their emotions and perspectives on a season of life where time is plentiful, and yet, limited.

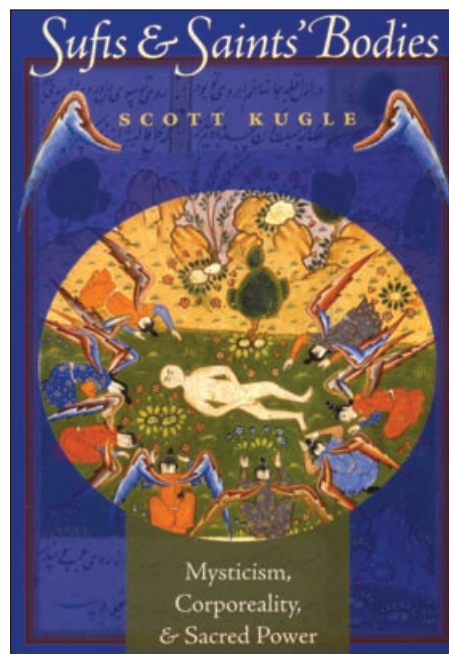
Jessica Fisher '98, *Frail-Craft*, Yale University Press, 2007. This collection of poems won the 2007 Yale Series of Younger Poets competition. Former poet laureate and judge of the competition Louise Glück writes in the Foreword that Fisher's poetry is “haunting, elusive, luminous, its greatest mystery how plain-spoken it is. Sensory impressions, which usually serve as emblems of or connections to emotion, seem suddenly in this work a language of mind, their function neither metonymic nor dramatic.”

Richard Goodkin '75 (editor), *In Memory of Elaine Marks: Life Writing, Writing Death*, The University of Wisconsin Press, 2007. This moving and insightful celebration of the life of Marks, a widely recognized authority on French literature, feminist theory, and Jewish studies, also offers a valuable contribution to multiple academic disciplines. In 11 essays, some of the intellectual domains



Sasha Issenberg '02, *The Sushi Economy: Globalization and the Making of a Modern Delicacy*, Gotham Books, 2007.

Exploring the history and allure of sushi from a global perspective, the author offers an up-close look at the dish that is now enjoyed by more than 30 million Americans.



Scott Kugle '91, *Sufis and Saints' Bodies: Mysticism, Corporeality, and Sacred Power in Islam*, The University of North Carolina Press, 2007. In the first full study of Islamic mysticism as it relates to the human body, the author examines Sufi conceptions of the body in religious writings from the late 15th through the 19th centuries, thereby refuting the assertion that Islam is abstract, ascetic, and disengaged from the human body.

that were central to Mark's work—pedagogy, feminism, lesbianism, women's auto/biography, Jewish identity, community, memory, mourning, isolation, and death—are brought together.

David Jenemann '93, *Adorno in America*, University of Minnesota Press, 2007. In the first in-depth account of 20th-century German social philosopher Theodor Adorno's 15-year exile in America, the author examines Adorno's confrontation with the expanding American “culture industry” and casts new light on his writings about the mass media. Jenemann reveals that, far from being disconnected from America and disdainful of its culture, Adorno was actively engaged in American cultural and intellectual life during his stay in the country.

Joan (Moffitt) Larkin '60, *My Body: New and Selected Poems*, Hanging Loose Press, 2007. This book by a two-time winner of the Lambda Literary Award for poetry comprises