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The Trans-Alaska Pipeline Controversy: Technology, Conservation, and the Frontier by Peter A. Coates

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## Book Reviews

CLIMATE—OUR FUTURE? By U. Schotterer and Peter Andermatt. North American Edition. Minneapolis: University of Minnesota Press, 1992. 175 pp. \$39.95. ISBN 0-8166-2130-6

First published by Kümmerly and Frey in 1987 in Switzerland, the volume *Climate—Our Future?* was conceived to raise the awareness of the general public to questions of the role of climate—past, present, and future. This second revised English edition has been expanded and updated using information from the 1990 scientific report to the Intergovernmental Panel on Climate Change (IPCC). Although focused on Switzerland, it quickly becomes clear how every issue discussed has global implications and feedbacks and thus the book's relevance extends beyond Switzerland.

Six chapters present essential background information and a wealth of data from research as recent as 1991:

- (1) “Weather and Climate”: the physical system, the major weather patterns in the Alps, extreme events and their global teleconnections;
- (2) “What We Know about Climate”: causes of climate change and processes, reconstructed from records of past climate;
- (3) “Climate, Humans and Landscapes”: how humans adapted to climate and climate change in the past and how they might cope with future changes;
- (4) “People—Climate”: how uncontrolled population growth affects directly and indirectly climate and the environment, e.g. through increased production of greenhouse gases and overexploitation of resources;
- (5) “Climate Research”: in search of solutions study of all aspects of climate related questions becomes imperative, at scales that go beyond the narrow national frame; and
- (6) “Climate—our Future? A Vision”: prospects of future climate scenarios and how to deal with them by advocating sustainable development and education.

Each chapter ends with a summary of the principal findings and unsolved questions to remind the reader of the open-endedness of the issues. Apart from a mis-identified pollen grain (Fig. 2.46 top is an *Ephedra* grain, not *Artemisia*), the translation and editing was done very professionally.

What makes this book special is its balanced blend of scientific information and artistic presentation: its images tend to remain in one's mind and its messages are haunting and remind us of our personal responsibility for action. For this, the book belongs on every coffee table. At the same time it is a source for data and for thought, useful for students and teachers alike. I recommend its use as a textbook in introductory classes on global change.

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THE TRANS-ALASKA PIPELINE CONTROVERSY: TECHNOLOGY, CONSERVATION, AND THE FRONTIER. Peter A. Coates. Bethlehem, Pa.: Lehigh University Press (Distributed by Associated University Press), 1991. 447 pp. \$57.50. ISBN 0-934223-10-6.

The Trans-Alaska Pipeline was the object of perhaps the most passionately fought conservation battle in the U.S. Although numerous authors documented the pipeline construction during its construction, there is, surprisingly, no previous scholarly treatment of this event written by an historian. Coates is an environmental historian who views the most interesting aspect of the controversy to be “its relationship to earlier engineering projects and technological innovations in Alaska and the debates that accompanied them.” Thus, he describes how the conservationist and environmental ideas arose during numerous earlier major Alaskan projects and controversies, including the Alaska Highway (1938–41), Canol Pipeline (1943–45), exploration of Naval Petroleum Reserve Number Four (Pet 4, 1944–1953), DEWline (1953–57), oil development in the Kenai National Moose Range (1957–58), statehood (1958), the creation of the Arctic Wildlife Refuge (1960), Project Chariot (1958–63), and Rampart Dam (1959–67). The history starts with the acquisition of Alaska in 1867 and finishes about the time of the Valdez oil spill in 1989.

The stories of the early projects such as the Canol Pipeline, Project Chariot, and the Rampart Dam, are particularly interesting. Although they made big headlines in Alaska, they were virtually unknown to the rest of the nation. It was during these booster-vs.-conservationist battles that many environmentalist ideals sprang to life. Coates convincingly states that the history of these Alaskan controversies is central to the philosophy and history of the U.S. environmental movement. For example, Bob Marshall, chief of the U.S. Forest Service's Division of Recreation and Lands, was the earliest uncompromising advocate for Alaska wilderness, based largely on his experiences in the Brooks Range during the 1930s. Marshall wanted to protect the pioneer conditions he found in the Brooks Range, and like John Muir, he sought to redress the “national imbalance between wilderness and civilization.” His views continue to provide inspiration for the policies of many national conservation organizations. Alaska also has been prominent in the evolution of environmental legislation. For example, the debate that arose over Project Chariot, a plan by the Atomic Energy Commission to use nuclear devices to form a deep-water harbor at Cape Thompson, led to the first scientific environmental assessment (Wilimovsky and Wolfe, 1966), which became a model for environmental impact statements that are now mandatory under the National Environmental Policy Act (NEPA, 1969).

Coates traces the history of the Alaska frontier in light of the views of western historians, including Ray Allen Billington, Patricia Nelson Limerick, James C. Malin, Morgan B. Sherwood, Ray Nash Smith, and Frederick Jackson Turner. One of Coates's major themes is that the history of the Alaska pipeline project is interwoven with that of the American frontier and the cultural conflicts that arose between frontier boosters and conservationists:

Many protagonists in the TAPS debate saw Alaska as the final extension of the American frontier, physically and in spirit. A *leitmotif* of Alaskan history has been—and continues to be—a tension between two visions of Alaska based on this shared frontier image. These visions are not necessarily absolute and irreconcilable. However, in their most extreme and ideal forms they do constitute radically divergent perceptions. Conservationists and boosters were united in admiration for

the frontier and in agreement on its importance as an ingredient in American culture and history. However, they differed, often diametrically, in the ways they expressed this affection and how they formulated the best means to ensure the survival of their revered Alaskan frontier. (Coates, 1991, p. 28.)

He concludes that "frontier historians as well as environmental historians ignore Alaska at their peril."

The role of science in this history is humbling compared to the loud voices of a string of booster governors, congressmen, and developers pitted against emotional outcries of conservationists. There were, however, several scientists who did make a difference. Sometimes their role was based purely on their contribution of scientific knowledge, as in the case of Dr. Arthur Lachenbruch and Dr. Max Brewer who drew attention to the folly of burying an oil pipeline in permafrost. In other instances, contributions came from the gut emotions of scientists who realized that they were some of the few people who had direct knowledge of environmental stakes in these debates. This is perhaps best illustrated by a group of University of Alaska biologists involved in Project Chariot, who protested the AEC's manipulation of science for political ends. One member of the committee, Dr. Les Viereck, from the Project Chariot Committee on Environmental Studies resigned from the committee, citing the agency's conclusion that spring was the best time for a nuclear blast despite contrary evidence and its denial of the existence of dissent among its researchers.

The events leading up to the pipeline controversy occupy over half of the book contained in six chapters: (1) introduction, (2) the frontier image and environmental reality, 1867–1940, (3) the impact of war, (4) boosters and conservationists in the post-war era, (5) Project Chariot, 1958–1963, and (6) Rampart Dam, 1959–1967. The pipeline itself, the surrounding controversy, and the aftermath of the pipeline are described in the remaining five chapters. It is a thoroughly scholarly treatment with 80 pages of footnotes, a 25-page selected bibliography, 33 pages of photographs, and a good index.

For western historians and followers of the environmental movement, this book will be regarded as a definitive history of the conservationist attitudes in Alaska. For others, like myself, who have closely followed the environmental debate surrounding the pipeline but who have an overriding scientific interest with the North and its ecology, it will be regarded as a standard reference for this singular event that will continue to influence arctic science for many years to come.

### Reference Cited

Wilimovsky, N. J. and Wolfe, J. N. (eds.), 1966: *Environment of the Cape Thompson region, Alaska*. U.S. Atomic Energy Commission. 1250 pp.

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NORTHERN HYDROLOGY: SELECTED PERSPECTIVES. PROCEEDINGS OF THE NORTHERN HYDROLOGY SYMPOSIUM, 10–12 JULY 1990, Saskatoon, Saskatchewan. Edited by T. D. Prowse and C. S. L. Ommaney. NHRI Symposium No. 6. Saskatoon, Saskatchewan:

National Hydrology Research Institute, 1991. x + 532 pp. \$28.00 plus shipping and handling of \$3.00 Can; \$3.00 US; \$4.00 international. ISSN 0838-1984; ISBN 0-662-18742-3.

This book provides a survey of the current trends in northern hydrology. There are 29 case studies, mostly field-based experiments, 6 applied studies comprising models of water flow, water quality, and climate change predictions, 2 papers on human interaction, and 1 theoretical paper on river ice. The book is organized into 3 sections: (1) General—25 papers covering a variety of topics, including water balance and chemical mass balance studies, water movement in frozen ground, snow transport and snowmelt, glacier melt, ice jams, etc. (2) Modelling—5 application papers dealing with river discharge, ice, and evapotranspiration, and (3) Other—10 papers, 7 of which cover northern processes in the former Soviet Union and China. All of the papers in Sections 1 and 2 are refereed. This book follows a more general treatise on northern hydrology in the same series (Prowse and Ommaney, 1990).

The major strength of the book is in the variety of field-based experimental studies, many of which provide additional insight to basin-scale processes in a northern environment. There are 13 papers dealing with hydrological and geochemical processes near the surface, and 5 more on groundwater-related issues. Many of these focus on specific terrain units like wetlands, tundra, or forested areas. There are 8 papers on ice mechanics and chemistry, notably on ice-jamming processes, including theoretical, descriptive, and modelling studies. Another 8 papers deal with glacier mass balance, and especially runoff. Surprisingly, only 3 papers treat snow and snowmelt processes. It is interesting to note that many of the papers in all areas of study make use of chemical signatures to interpret hydrological processes as vectors for chemical transport and transformation. This mix of papers provides a very different focus from other conference proceedings on cold environments, such as various permafrost and snow conferences.

While there is broad coverage of physical processes relating to northern environments, there is very little written about human interaction, or the importance of these processes to human activity. Only one paper, by J. Haas, deals explicitly with climate warming. This is perhaps due to the inadequate level of understanding of northern hydrology, rather than the neglect of this important issue. It does suggest, however, that there is plenty of scope for new research.

In summary, this book represents a unique collection of papers by established and up-and-coming scientists, on a focused topic of academic and practical significance. The variety of topics covered within this volume renders it extremely useful as a source of experimental results and background literature. I have adopted it as a reference text for a course on northern hydrology.

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Prowse, T. D. and Ommaney, C. S. L., (eds.), 1990: *Northern Hydrology: Canadian Perspectives*. NHRI Science Report No. 1. Saskatoon: National Hydrology Research Institute, Environment Canada. 308 pp.

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