

macrocosm orientation ‘semplate’ (i.e., semantic template) that corresponds to “prefabricated cultural systems that cut across a number of the semantic and linguistic domains” (p. 113)—notably, in this case, the movement between the interior of the house and the external geographical domain. In that sense, the concept of the semplate also provides an instrument for research in linguistics and other disciplines.

For example, archaeologists of the North Pacific Rim may be able to test their findings against Fortescue’s linguistic evidence and his hypothesis of inland-coastal movement and migration. However, Fortescue’s work ought to be significant beyond that, for anthropologists, historians, and geographers concerned with issues relating to cognition, mobility, and inter- and intra-ethnic contact and change.

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THE CRYOSPHERE. By SHAWN J. MARSHALL. Princeton, New Jersey: Princeton University Press, 2012. ISBN 978-0-691-14526-6 (pbk). Princeton Primers in Climate. 288 p., maps, b&w illus., glossary, notes, annotated bib., index. Softbound. US\$24.95.

Author Shawn J. Marshall, educated in engineering physics (BSc, Toronto) and geophysics (PhD, British Columbia), holds the Canada Research Chair, Climate Change, in the Department of Geography at the University of Calgary. His research as glaciologist and climatologist has focused on ice field dynamics at the regional scale and their sensitivity to climate change.

Marshall states in the preface that this brief introduction to the physics and character of the cryosphere is intended to “inspire others to further exploration of the cryosphere’s role in Earth’s climate” (p. viii). The introductory chapter lays the foundation for the rest of the book by exploring the global geography of snow and ice in their many forms, and their intrinsic link to earth’s climate.

The remainder of the book is structured in an agreeable way, beginning with a discussion of the material properties and thermodynamics of snow and ice.

As readers delve into the first few chapters, they may notice a slant toward snow and terrestrial forms of ice, which is only natural, given the author’s background. They may also begin to notice the author’s proclivity (which persists throughout the book) for expressing ideas mathematically when the chance arises. Some illustrative graphs might have greatly enhanced readers’ understanding of the ideas behind the formulae. Chapter two discusses many of the salient physical and chemical properties of water, ice, and water vapour, with an emphasis on their intrinsic energetics, providing a useful framing of the physical uniqueness of water and its integral role in earth’s climate system.

Chapter three introduces the surface energy balance at a generalized cryospheric surface and discusses flux components with a view to their place in regional and global energy balances. Many central ideas are discussed using equations, though a few well-thought-out analogies that readers will be observationally familiar with are also used. Marshall concludes the chapter with an example surface energy balance of a snow-covered glacier during its transition from melting snow to melting ice over one month in summer. He effectively interrelates these data and the thermodynamic concepts treated previously and provides a tabular summary of the surface energy balance components that helps to indicate their relative importance. This broadly applicable case study also serves as a nice link between the first three chapters of nearly universal cryospheric theory and the following four overview chapters dedicated to seasonal snow and freshwater ice, sea ice, glaciers and ice sheets, and finally, permafrost.

These chapters on specific parts of the cryosphere are interconnected, which means that they should not necessarily stand individually. These chapters also illustrate the enormity of the task at hand; the author has done well to prioritize the material presented, making the text informative and readable to the casual student, while providing further depth for the more curious reader in the annotated bibliography.

Further evidence of the author’s expertise shines through in these chapters. The chapters on snow and freshwater ice and glaciers and ice sheets are comparatively detailed and informative, having double the length of the sea ice and permafrost chapters. The section on seasonal snow is particularly good; it is a salient summary of the myriad properties and processes of this unique material present in many earth systems with a variety of causes and effects. In the chapter

on seasonal snow and freshwater ice, the author also puts to work much of the thermodynamics discussed in earlier chapters in modeling examples of ice growth and decay, which are elaborated in the sea ice chapter. However, there is little mention of observational methods in these chapters. This may leave the reader unconnected to the “how” of cryospheric science, which is often the inspiration for cryospheric exploration.

The concluding chapters are devoted to the role of the cryosphere in global climate. Treating the subject in relation to historical and recent climate change, these chapters give overarching climatic context to the cryospheric elements discussed previously, explaining the two-way linkages between the apparent and inherent properties of the cryosphere and atmospheric, terrestrial, and oceanic properties and climate processes. It was especially interesting to see the history of the cryosphere set in the context of millennia, as most of the marine cryospheric literature I am familiar with concerns itself with the past in terms of decades or centuries. This section also elucidated, at least for this reader, the potential lack of integration between the many forms and paths a student of cryospheric science might take. The book ends with a succinct and thoughtful summary of cryospheric changes in recent history, giving some thought to the social and ecological consequences of these changes.

The reviewed paperback version of the text is fairly standard quality. The graphs and the few illustrations and photos are all black and white, which is typical of a paperback but sometimes makes the legends or annotations difficult to discern.

The most difficult task of this review is to recommend an appropriate audience for the book. The nature and amount of prerequisite knowledge that the author assumes in his readers suggest that an undergraduate student of physics or chemistry would be most at ease reading *The Cryosphere*. However, clever navigation through some of the book’s detail might make it well suited to use as a text in an introductory class on the subject in Geography or Environmental Science. As part of the Princeton Primers in Climate series, it probably wasn’t necessarily intended to be state-of-the-art, but it is up to date and topical. It likely wasn’t designed as reference material either, although the annotated bibliography could allow one to investigate further works of reference.

Finally, I enjoyed reading the book, and thank the author for his contribution to the literature.

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POLAR TOURISM: HUMAN, ENVIRONMENTAL AND GOVERNANCE DIMENSIONS. Edited by PATRICK T. MAHER, EMMA J. STEWART, and MICHAEL LÜCK. Putnam Valley, New York: Cognizant Communication Corporation, 2011. ISBN 978-1-882345-55-7. 306 p., 25 contributors, maps, b&w illus., index. Softbound. US\$110.00.

In recent decades, the field of Tourism Studies has been enriched with diverse theoretical, methodological, and substantive insights stemming from multiple disciplinary perspectives. While tourism content is often peripheral in the pages of *Arctic* and in broader discourses of polar research, a critical mass of scholarship has converged around understanding polar tourism as part of complex Arctic and Antarctic systems (Dawson et al., 2007; Maher, 2007). Recent volumes have examined polar tourism in relation to regional development (Grenier and Müller, 2011), social-ecological change (Hall and Saarinen, 2010), the cruise sector (Lück et al., 2010), and environmental management (Stonehouse and Snyder, 2010). However, as the editors of *Polar Tourism: Human, Environmental and Governance Dimensions* point out, much of the foundational literature on polar tourism lacks a coordinated and focused empirical research agenda. As polar tourism products diversify, tourist numbers and community involvement in tourism development increase, impacts accumulate, and climate patterns change, there is a pressing need for high-quality research that informs polar tourism governance, management, and sustainable development.

Accordingly, the primary objective of *Polar Tourism* is to present “cutting-edge empirical research completed since the new millennium, assembled in a structured manner under the topics of human, environmental, and governance dimensions” (p. 10). Taken as a whole, the book achieves this broad objective. The 16 chapters report on research in diverse disciplines carried out by an impressive group of international contributors: academics, graduate students, industry representatives, and government officials. Individual chapters, each dedicated to either the human, the environmental, or the governance dimensions of polar tourism, are organized into four substantive sections that are regionally focused—Arctic, Antarctic, Sub-Arctic, and Sub-Antarctic. Each section begins with a chapter by leading scholars who set the stage with helpful contextual information and overviews of tourism-related issues affecting the particular region. The book concludes with a wise summary by Debra Enzenbacher, a distinguished author with both Arctic and Antarctic expertise. Enzenbacher also synthesizes various polar tourism trends, emerging issues and challenges, and key concepts into calls for future research, informed policy, and industry action. For readers pressed for time or interested in timely research questions, I recommend engaging with this final chapter first.

The clear strength of the book is comprehensiveness; it integrates research that spans not only the polar regions and interrelated tourism dimensions, but also disciplinary