

1869). So the reputation that author Wamsley reconstitutes is based less on numbers and more on substance.

This fact justifies his giving so much attention to that part of Hayes' life that developed his abilities to become an effective polar leader and authority. We see how his orthodox Quaker upbringing in Chester County, Pennsylvania, helped shape his humanism. His ability to discern essentials of knowledge enabled him to both contribute to and learn from his Kane expedition experience. One of the important lessons he took from the difficult Second Grinnell Expedition under Elisha Kent Kane was how not to lead. This lesson would serve him well five years later on his highly productive and much less personally troubled North Pole expedition.

These acquired favorable traits continued to be evident in his other careers as medical facility director (of the world's largest hospital during the American Civil War) entrepreneur (mining venture), public servant (six-time elected New York State legislator), celebrity (lecturer and author), polar authority, and polar community counselor.

He was a good, strong-minded man with a well-developed sense of how to lead organizations successfully through stressful situations. Hayes cultivated a wealth of valuable polar exploratory knowledge that would mark him as a person well ahead of his time and more comprehending of what constituted the polar regions and their conquest. His personality, intellect, and scientific education also gave him a dedication to pursuing polar science as more than just a perfunctory adjunct to geographical exploration.

In his relatively brief polar exposure, Hayes pioneered focusing on management for the attainment of the North Pole. Others later would find various degrees of success following the most favorable route (Smith Sound) whose course he established.

He would be the first to seriously regard the Arctic as habitable by "Europeans," a view that later would become the "Friendly Arctic" philosophy. Before Charles F. Hall and others, Hayes recognized the need to adapt techniques of the Inuit in order to survive and persevere in what otherwise would be a much more brutal environment.

Perhaps his greatest contribution had nothing to do with what he directly did in the Arctic. It had more to do with what his role became in providing for a future polar exploration legacy. He spent the latter part of his life writing a host of literature that kept alive an interest in the polar regions: articles, scientific treatises, fiction, and even children's books. Many either had a direct or indirect polar nature. American President Theodore Roosevelt (1858–1919) counted one of these, *Cast Away in the Cold* (1868), as a favorite children's book.

Hayes died penniless in 1881, so his literary activities could not be considered personally beneficial. Neither did his business ventures and public service contribute much income, as valuable to others as they may have been. However, the author supports his contention that Hayes' wealth of publications helped fuel a constant interest in polar subjects that can be credited with helping to maintain continual interest and activities in the polar realm.

All these aspects of Hayes' life are packaged in a marvelously researched book that effectively uses valuable primary source material, some of it newly discovered. Wamsley's thorough knowledge of his subject and environment can often be seen when he refers to collateral polar events and personalities that were influenced by Hayes. His descriptions of the Kane expedition from the perspective of Dr. Hayes are especially noteworthy. They alone make this a worthwhile read.

The publisher (American Philosophical Society) should be commended for allowing the worthiness of the text to help dictate the length of the book it was to print. Publishers today might tend to shy away from subsidizing such a large volume on a topic that rarely makes the Amazon bestseller list.

The beautiful, complex cover graphic also deserves citation. Four important, though obscure, historic illustrative elements make up the jacket art (explained on the inside rear cover flap) and set the beautiful, detailed tone for what is to follow therein.

Dr. I.I. Hayes lacked a biography, but deserved one. Now he has one that deserves its place among our best polar biographical literature.

Hal Vogel
Professor Emeritus
Rowan University
Glassboro, New Jersey 08028, USA
vogel@rowan.edu

SUSTAINABILITY NETWORKS: COGNITIVE TOOLS FOR EXPERT COLLABORATION IN SOCIAL-ECOLOGICAL SYSTEMS. By JANNE HUKKINEN. New York: Routledge, 2008. Routledge Studies in Ecological Economics. 192 p., 17 illus., index, notes with citations. Hardbound. US\$130.00.

Helsinki University Professor of Environmental Policy Janne Hukkinen defines sustainability as "the idea that human beings should manage their interactions with each other and the environment so that future generations also have the chance of a good life" (p. 3). His "textbook that turned into a research essay (p. ix)" bridges the gap between sustainability experts working in a government or academic office and those tending herds in a pasture and serves as a guide for the former adversaries to work together in small, interdisciplinary groups.

Hukkinen's primary case study describes the bitter dispute between three Saami herding brothers fighting with a government lumbering enterprise supported by the fourth Saami brother, a lumberjack. Near the village of Nelim, Finland's Forest and Park Service cut old growth forest that was home to rich stands of tree lichen. Without tree lichen, reindeer herders must purchase expensive fodder during early spring when daily thawing and refreezing leaves ground lichen covered with a thick layer of ice. After

Greenpeace brought the conflict to the world's attention, as Europe's only indigenous people, Saami herders petitioned the UN Human Rights Commission to stop the lumbering.

Hukkinen presents his socio-ecological system (SES) as a three-dimensional model of sustainability with ecological, economic, and socio-cultural dimensions. In the SES model, northern herding consists of the interactions between reindeer and pasturage as resources, herders as resource users, the physical and social infrastructure, and infrastructure providers (such as the Ministry of Agriculture and Forestry). Sustainability experts may use the model to determine the relationships between these various entities and how they influence each other and the system as a whole. Hukkinen's model defines the vulnerability dynamics of reindeer herding as internal factors such as expenses, pasturage, herders, and animals, which function within the constraints of proximate and ultimate drivers outside the system, such as labor costs and state regulations. When applied to the Nellim conflict, the model illustrates how external drivers such as building centralized slaughterhouses throughout northern Finland to comply with EU regulations changed the nature of reindeer harvesting. Reindeer slaughters moved from a labor-intensive, community-based roundup and slaughter that integrated herders and non-herders alike to a centralized, commercial operation far removed from the traditional form.

Four disciplines contribute to the SES model: neo-classical economics, institutional economics, population ecology, and systems ecology. In the Nellim case, the cross-disciplinary model of the renewal cycle suggests that cutting Finland's old growth forests is part of a viable sustainable development strategy. The historical renewal cycle of old-growth forests includes a climax (i.e., mature tree stands), followed by harvesting, renewal, and regrowth. Cut several times during the past few centuries for tar production, ship building, and more recently paper manufacture, the Nellim forest is quicker to regenerate itself than those in other regions at the same latitude because of the warming effects of the Arctic Ocean. Using this long-term perspective, reindeer operations can function effectively if controls are placed on herd size to prevent overgrazing of pastures—especially tree lichen. Neo-classical economics reinforces that perspective by combining herd size limits with efficient forestry management to ensure a sufficient supply of tree lichen.

Hukkinen stresses that analogies must be used in sustainable development cases to make them understandable to everyone involved. By breaking down unknown events and concepts into relations between objects that can be compared to familiar things, new phenomena can be “mapped” onto familiar ones to facilitate comprehension. That process allows those on the management and implementation (i.e., herders) sides to participate equally in the process, regardless of whether they lack either formal academic training or herding experience. Analog models usually break down because of the limited experience and knowledge held by individuals, and the break points include spatial scale, temporal scale, and the culture-nature divide. New

understanding occurs when existing knowledge crosses break points to form blends. Reindeer herders in particular use analogies to understand complex sustainability issues, creating blends both as outside observers and inside operators. An example is the “When we get lost, we go home” analogy (p. 73). When lost or disoriented in winter, reindeer herders envision home, where they build a fire and make a cup of coffee to warm up. Although there may be a natural tendency to panic when lost, the calming action of “going home” allows herders to calmly work through the steps necessary to find a solution.

The author believes that scenarios and indicators are fundamental concepts for achieving sustainable development. Indicators such as meat production per live reindeer and pasture carrying capacity are applied to create effective reindeer management scenarios. One type of scenario, predictive, allows for alternative solutions to account for variable fluctuations such as changes in climate or market prices. Planning scenarios contrast positive with negative outcomes to achieve a balanced solution that will be sustainable over the long term. Scenarios occur within three types of power. Decision-making power is held by individuals or groups whose decision triumphs. Agenda-controlling power means that some have the authority or credibility to control what issues are even considered in sustainability cases. Preference-shaping power describes the way that entities influence consumer or end-user behaviors on the basis of perceptions of what they desire. Sustainable development combines scenarios and power. For example, decision-making power based upon scientific principles in a predictive scenario is the most common combination in sustainability cases. Often the purview of think tanks or research organizations, such sustainability decisions are used to predict how activities like reindeer herding will influence a national economy.

Hukkinen describes his European Union project that brought together ten groups called “work packages.” Hukkinen's work package included researchers from several countries and reindeer herders, all of whom were “sustainability experts.” By establishing communication and achieving cooperation, these experts from various backgrounds—and often on opposing sides of the issues—had their views “integrated into coherent policy recommendations [by] identify[ing] the characteristics of knowledge integration that hold promise from longer-term institution building” (p. 115). By assuming the position of “hybrid professionals,” both herders and academics and administrators expanded their knowledge across the boundaries that normally separate practitioners from policy makers to “understand each other and work together” (p. 138). The Nellim case, which originally involved practitioners (reindeer herders), bureaucrats, and analysts, expanded later to include the categories of activist, layperson, judge, journalist, and politician. Eventually the case produced hybrid professionals, including analyst-practitioners, or researchers who engaged in herding, and practitioner-activists, or herders who contacted Greenpeace to publicize their plight.

The book's price tag is hefty, and the work does not read like a textbook, which was the author's original purpose. End notes instead of a bibliography limit the accessibility of the work. Yet, the book is appropriate for Arctic scholars not only because sustainability is a key component of northern economies, but also because its examples come from Finnish reindeer herding. While the work might be important to practitioners and students of sustainability, it does not represent a "must have" for the casual observer or for an undergraduate library. Some of the text is tedious (e.g., the seemingly continual references to what the author said in earlier chapters or will say in later ones). Hukkinen's stories (i.e., analogies) break up the sometimes complex text; however, their meaning in relation to the primary material is not always apparent. Some of the stories seem to do little more than distract from the main points, particularly several that serve only to show the author's disdain for the United States.

Robert Wheelersburg
Department of Sociology-Anthropology
Elizabethtown College
Elizabethtown, Pennsylvania 17022, USA
wheelersburg@etown.edu

BOOKS RECEIVED

- ACROSS THE TOP OF THE WORLD: THE QUEST FOR THE NORTHWEST PASSAGE. By JAMES P. DELGADO. Vancouver, British Columbia: Douglas & McIntyre, 2009. (Reprint of hardcover published in 1999.) ISBN 978-1-55365-159-8. xii + 228 p., maps, b&w and colour illus., notes, bib., index. Softbound. Cdn\$24.95.
- ARCTIC DOOM, ARCTIC BOOM: THE GEOPOLITICS OF CLIMATE CHANGE IN THE ARCTIC. By BARRY SCOTT ZELLEN. Santa Barbara, California: ABC CLIO Publishing, 2009. ISBN 978-0-313-38012-9. xi + 232 p., notes, bib., index. Hardbound. US\$49.95.
- FURS AND FRONTIERS IN THE FAR NORTH: THE CONTEST AMONG NATIVE AND FOREIGN NATIONS FOR THE BERING STRAIT FUR TRADE. By JOHN BOCKSTOCE. Foreword by FELIPE FERNANDEZ-ARMESTO. New Haven and London: Yale University Press, 2009. ISBN 978-0-300-14921-0. xxi + 472 p., maps, b&w illus., notes, bib., index. Hardbound. US\$35.00.
- JOSEPH-ELZÉAR BERNIER: CHAMPION OF CANADIAN ARCTIC SOVEREIGNTY 1852–1934. By MARJOLAINE SAINT-PIERRE. Translated by WILLIAM BARR. Montreal, Quebec: Baraka Books, 2009. ISBN 978-0-9812405-1-0 (paperback). 371 p., maps, b&w illus., notes, appendices, bib., index. Hardbound, Cdn\$75.00; Softbound, Cdn\$39.95.
- PREDATORS OF NORTH AMERICA. By DAVE TAYLOR. Erin, Ontario: Boston Mills Press, 2009. ISBN 978-1-55046-520-4. 320 p., 300 colour illus., index. Hardbound. Cdn\$29.95.
- WORLD OCEAN CENSUS: A GLOBAL SURVEY OF MARINE LIFE. By DARLENE TREW CRIST, and JAMES M. HARDING, Jr. Richmond Hill, Ontario: Firefly Books, 2009. ISBN 978-1-55407-434-1. 256 p., maps, b&w and colour illus., glossary, further reading, index. Cdn\$40.00.