

Capitalism and Environment

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Alf Hornborg and Carole Crumley (eds.), *The World System and the Earth System: Global Socioenvironmental Change and Sustainability since the Neolithic*, Left Coast Press, 2007.

This is an ambitious volume. At a time when humanity is grappling with an escalating ecological crisis and increasing political instability, analytically, this volume aims to enhance the methods, concepts, and perspectives for understanding the complex dialectic between social and biophysical systems over the long-term—from third millennium Eurasian nomads to contemporary materials flows analysis of trade relations. The result is a wide-ranging volume with contributions from such diverse areas as paleo-ecology, anthropology, and physical geography. The contributors are united by their ambition to transcend the divide between the social and natural sciences through a common commitment to “systems” thinking; seeking to merge both world and earth-system thinking into a holistic approach that views social and ecological relations on a world scale. Overall, the book offers an important contribution in that it shows that the problem of “sustainability” is not simply a problem of 21st century late capitalism, but rather a historically recurring challenge for many different types of societies over the last 10,000 years since human societies began depending on agriculture, which brought patterns of heightened resource use and altered social hierarchies. At times, however, the book seems fragmented by the dramatically different conceptions of “system” boundaries.

The first of three sections is entitled “Modeling Socioecological Systems” and is the most fragmentary of the book, because of the dramatically different theoretical and methodological conceptions of a “system.” Crumley’s chapter attempts to carve out the perspective of “historical ecology” that “traces the complex relationships between our species and the planet we live on, charted over the long term” [p. 16]. She calls for a multi-scaled ecology (local, regional, and global) that draws upon multiple sources of evidence from archives to paleo-climate data. If this seems like what we call “environmental history,” Crumley is careful to situate the goals in terms of explanation, rather than historical narrative.

John Dearing’s chapter, “Integration of World and Earth Systems,” illustrates the differences between the authors over what counts as evidence and how concepts can be mobilized to make theoretical claims. Rather than searching for connections at multiple scales, Dearing calls for “parallel histories” undertaken “within spatially defined landscape units” [p. 38]. He illustrates this with a place-specific examination of the nearly 6,000 year socioenvironmental history of the Lake Erhai region in the Himalayan foothills of the Yunnan Province in China. By tracing the histories of social and natural processes (monsoons, forest cover, silver smelting), Dearing is able to isolate several simultaneous factors that contribute to historical episodes of environmental stress. The ultimate template “requires a methodological framework in which mathematical models simulate emergent phenomena” [p. 55]. Dearing’s methodological commitment to modeling—even with commitments to “complexity theory” and “nonlinear dynamics” [p. 55]—situates him in stark contrast to other contributors who take unquantifiable domains seriously.

The chapter most likely to get the blood flowing of *CNS* readers is Jonathan Friedman's "Sustainable Unsustainability." For Friedman, socioecological relationships are *not* "preorganized for adaptation but, on the contrary, for accumulation of power and control" [p. 92]. In other words, the central question must not be how do patterns of resource use serve specific cultural "functions," but rather how they reproduce opaque power relations that often prefigure the conditions for socioecological breakdown. For example, by analyzing tribal social reproduction among the Kachin peoples of Burma, Friedman explains how the power of the tribal chiefs are reproduced through specific practices, such as cattle sacrifices and food distribution. Friedman also advances a very important critique of Jared Diamond's recent contention that "societies" can "choose" pathways toward sustainable outcomes. Friedman retorts, "One must clearly identify the actors who could make such choices. There is no evidence that societies, small or large, are like subjects" [p. 105].

The second part of the book is entitled "Case Studies of Socioenvironmental Change in Prehistory." A core contribution of this section is to emphasize that climate change has impacted many different societies through history—not just our own. Here again, we see multiple and somewhat conflicting perspectives on climate. Björn Bergland's essay claims—in a deterministic fashion—that climate is, "recognized as one of the main triggers of cultural development" [p. 111]. William Thompson's contribution promotes the use of "climate as an explanatory variable" [p. 163] in archaeological research. The most nuanced contribution toward an understanding of climate-society relations is offered by Karen Holmgren and Helena Öberg. They argue against what they call "simplistic climate determinism" [p. 121], illustrating that the effects of climate change are highly contingent upon context-specific conditions of political stability. For example, they contend that the collapse of "Great Zimbabwe" around 1450 C.E. was characterized by both deteriorating climate and political instability [p. 125]. It was not climate alone, but the complex confluence of water-shortages and famines combined with a decline in trade that precipitated the political and social breakdown of this society.

Alf Hornborg's essay on "Prehistoric Amazonia" is the most interesting of the case studies. While almost all the authors are focused upon the materiality of resource use, trade, and biogeochemical dynamics, Hornborg argues that cultural processes of "ethnic identity" formation are equally internal to these processes. Specifically, he situates the emergence of the Arawakan cultural identity in relation to their role in shaping the Pan-Amazonian network of trade relations. Thus, just as today when place-specific local or national identities are formed through global social and environmental relations, any particular Amazonian tribe cannot be understood in isolation from the larger systems in which they are embedded.

The third and final section, "Is the World System Sustainable?," is the strongest of the volume. In his essay, "No Island Is an Island," Thomas Malm contributes an impassioned critique of the "Earth Island" analogy, the contention that remote islands with finite resources and "carrying capacities" are akin to the finite planet of Earth. Thus, Malm argues that socioecological collapse on particular islands—e.g. Easter Island—represents a dire warning for the future of Earth and humanity. Malm deconstructs this style of argument by illustrating how most islands in the South Pacific are profoundly integrated within both inter-island and global trade networks and geo-strategic maneuvering among core powers. The core of his critique challenges "any preconceived notion of a once and for all fixed local carry capacity" [p. 273].

Alfred Crosby discusses the historical preconditions of influenza pandemics: dense, sedentary populations often living alongside domesticated animals. His discussion of the deadly

1918-19 flu pandemic reveals how quickly modern hubris can subside to despondent levels. As the Surgeon General of the U.S. Army put it, “I decided never again to prate about the general achievements of science” [p. 286]. In a surreal image, Crosby describes how even in the context of the World War I armistice celebration, San Francisco residents took to the streets wearing protective masks that public health authorities assured them would “Saver Your Life!” [p. 285]. Crosby’s prediction with regard to future pandemics is disconcerting to say the least: “It is inevitable” [p. 287].

The collection ends with a posthumous contribution by Andre Gunder Frank (1929-2005). Notwithstanding the editor’s warning that it is “tentative in nature” [p. 303], the chapter exudes an innovative way to think about the materiality of economic exploitation between the core and the periphery. According to Frank, the world system is characterized by the “transfer of entropy from one area to another” [p. 306]. Entropy in this case represents the disorderly byproducts of industrial processes, i.e. waste and pollution. Frank argues that the mechanisms of uneven entropy dissipation occur through unequal price differentials and strategies of political-military control.

As stated above, the strength of this volume is its interrogation of socioecological relationships over the long term. While an underlying theme of the book seems to suggest that historical examples provide insight into our present predicament, I was consistently struck by how the book fails to come to grips with the *historical specificity* of the current global socioecological moment. Only Emilio Moran was willing to bring this up: “Never before has our impact had planetary scale consequences” [p. 231]. Thus, it seems as if the book’s greatest strength is also its greatest weakness. While emphasizing the transhistorical “everlasting nature imposed condition of human existence”—i.e., the need to produce a livelihood in the presence of ecological and social constraints—the reader is left wondering what conceptual tools and perspectives can be brought to bear on the extraordinary (and historically novel) relations between society and nature today.