

PREFACE

I have long been an advocate of the relevance of archaeology in the modern world and a firm believer in the importance of lessons from the past (see Allen et al., 2003; Little, 2002; McIntosh et al., 2000; Redman, 1999; Sabloff, 2008; van der Leeuw, 2014 for just a few examples of this perspective). So I am especially delighted by the strength and specificity of the chapters in this stimulating and important volume. In particular, the growing linkages between historical ecology and applied archaeology, that are discussed in the pages that follow, come at a most opportune time. As van der Leeuw and Redman (2002: 597) cogently state: 'current environmental research based in life, earth, and social sciences pays inadequate attention to the long time span and slow-moving processes that often underlie environmental crises. Archaeologists, as purveyors of the past, are well equipped to bring this long-term perspective to bear on contemporary issues ... We believe that the time is right and our colleagues are willing to see an enhanced role for archaeologists in the study of contemporary environmental issues'. Let me briefly focus on two of the reasons that this volume arrives so opportunely. The first is quite obvious, but the second perhaps not.

The first and most important reason why such linkages are opportune is the widespread fear that without significant changes in ecological management the world over, our modern, increasingly urban world system, is not sustainable. The main question is not if but when the global system will break down if current trends continue unabated. Ecology is clearly a necessary part of any attempt to answer this crucial question. As Simon Levin (2009: vii) has forcefully noted: 'Ecology, the unifying science in integrating knowledge of life on our planet, has become the essential science in learning how to preserve it.' So, a related question is how to shift current trends to avert such a breakdown, and it is in this regard that a combination of both historical ecological and archaeological approaches is so promising, as the chapters in this book strongly indicate. I am particularly impressed with the possibility that such approaches may uncover processes, actions, and materials from the past that are not present in the world today but might have useful impacts in confronting modern problems (see Minnis, Chapter 2 on agriculture, for example).

The second reason is that the fields of historical ecology and archaeology are increasingly seeing their subjects through the lens of complex adaptive systems, whether explicitly or implicitly (also see Crumley, Chapter 1; Heckbert et al., Chapter 16; Wells, Chapter 28; as well as Bentley and Maschner, 2003; Kohler and van der Leeuw, 2007; Lane et al., 2009; among others). A complex adaptive system is 'A system in which large networks of components with no central control and simple rules of operation give

rise to complex collective behavior, sophisticated information processing, and adaptation via learning or evolution' (Mitchell 2009: 13). Further, a complex adaptive system is 'a system that exhibits nontrivial emergent and self-organizing behaviors' (Mitchell 2009: 13).

Having moved well beyond older views of ecological and cultural systems as being in equilibrium and closed, as well illustrated in this volume, historical ecologists and archaeologists are now viewing the systems they study as dynamic and ever-changing (or nonlinear systems with emergent phenomena in complex adaptive systems terms). Previous views of stable, pristine environments—for example, the 'pristine' Amazon prior to modern expansion—have been abandoned in light of both historical ecological and archaeological research. As Ekblom (Chapter 5: 85) clearly states: 'The historical sciences in combination with new ecological thinking have taught us that landscapes are constantly in flux.' Further (Ekblom, Chapter 5: 74), 'In the latter part of the twentieth century there was a shift in ecological theory away from the idea of balance to one of dynamic equilibrium, or even non-equilibrium' (also see Golley, 1993; Kingsland, 2005).

Using complex adaptive systems approaches in ecology and applied research allows practitioners not only to more productively study the past but also offers them opportunities to pursue new, potentially (and hopefully!) useful lessons from the past that might help lead to a sustainable planet in the future. Crumley (Chapter 1: 14) puts it succinctly: 'Global-scale models of change cannot point to viable modes of living on Earth without comprehending human history and cognition and incorporating regional diversity.' As the chapters in this volume strongly show, the world needs the disciplines of historical ecology and applied archaeology to grow and flourish!

Jeremy A. Sabloff

External Professor and Past President

Santa Fe Institute

and

Christopher H. Browne Distinguished Professor of Anthropology, Emeritus

University of Pennsylvania

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