

organisation imposes a Western concept of what heritage is, it values the tangible heritage of the site over the people living around those sites today, and it assumes that 'universal value' equates to 'monumental'. Most alarmingly, in some cases World Heritage inscription also provides 'an internationally sanctioned instrument for manufacturing the past, dispensing with historical justice and reconciliation, and potentially reviving old hostilities anew' (p.149).

Reading *A Future in Ruins* is a valuable experience that needs to be shared widely across archaeology, cultural heritage studies, and related disciplines. It is a process of revisiting the consequences of allowing the bureaucratic machine of 'world heritage production' to roll on unchallenged, a journey which is best undertaken without predetermined notions coming from a detailed review of its contents. The text is dense, and at times the narrative gets mired in details of now-defunct organisations; but the need to consider the consequences of the World Heritage system shines through even the most detailed sections.

By looking through the incisive lens Meskell provides on the history of UNESCO and the World Heritage List process, we are encouraged to reflect on how our own research and interests could contribute to 'deliver on the impossible promise' (p. 227) of UNESCO. Is it possible to enforce the protection of our common past, and perhaps, more importantly, of the communities to whom these sites are living landscapes rather than monumentalised pasts? Read the story of UNESCO and begin to dream.

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Carlos Cordova. *Geoarchaeology: The Human-Environmental Approach* (London & New York: I.B. Tauris, 2018, xxi and 294pp., 87 figures, 9 tables, hbk, ISBN 978-1-78831-301-8)

This textbook provides an original yet flawed introduction to the complexity of human-environment interaction and its study in geoarchaeology. Building on the premise that climate change and the Anthropocene represent two of the most relevant research frameworks of our time (pp. 81-82), it addresses, in addition to standard geoarchaeological themes, a number of relevant and pressing issues. Sustainability, resilience, natural disasters,

environmental crises and, ultimately, societal collapse are all notably discussed at much greater length than in any earlier geoarchaeological textbook. As such, Cordova's work serves not only as an introduction to the field, but also as a fitting reflection of modern-day concerns, in particular, our current global climate crisis. Frustratingly, it is also the one textbook that has been produced to a lower-than-average standard in terms of editing,

proof-reading, references, and bibliography, as well as figures and tables. As these failings are further coupled with an imbalance between some excellent ideas and their often unsatisfactory execution, *Geoarchaeology* is also a work that leaves much to be desired.

The book has, nevertheless, several commendable features. Despite a steady stream of textbooks and syntheses over the course of the last twenty years (e.g. Stein & Farrand, 2001; French, 2003; Holliday, 2004; Goldberg & Macphail, 2006; Rapp & Hill, 2006; Gilbert, 2017), an in-depth and up-to-date discussion on the epistemological issues relevant to geoarchaeology is long overdue. An extensive theoretical and methodological section, spread across Chapters 1–5, is, then, a particularly important achievement, although not without its own problems and shortcomings—of which more later. Cordova devotes the first third of his book to examining the nature of geoarchaeology (Chapter 1); its theoretical and methodological foundations and traditions (Chapter 2); the concept of geoarchaeological record (Chapter 3); and various distinct issues associated with it, most notably problems of scale, context, visibility, causality, and modern analogues (Chapter 4). In the process, he portrays geoarchaeology as a dynamic multi-disciplinary field which draws heavily on advancements in geosciences, various environmental disciplines, archaeology and anthropology; yet one which is, at the same time, capable of developing its own robust theories and models.

The author acknowledges the germinal ‘Archaeology as Human Ecology’ (Butzer 1982), and Karl Butzer’s ecological contextual approach in particular, as the main influence on his work (Chapter 5). Like Butzer almost forty years ago, he advocates for the treatment of social and environmental processes as entangled within the space–time continuum. As extensively

discussed in the theoretical section (and consequently hinted at in a number of case studies), this has three major implications for any geoarchaeological research. Firstly, it requires an acknowledgement of the complex—sometimes even chaotic—world emerging through the dynamism and interdependence of a variety of environmental and human agencies (pp. 36–37, 152–67). Secondly, given that the examined phenomena may manifest or be preserved at some scales but not others, it demands a multi-scalar approach (pp. 40–51, 223–27). Finally, it also implies a palimpsest nature of the observed record—which, rather than isolated and frozen in time, is affected by a number of synchronous processes at any point, and therefore needs to be studied rather like an ancient manuscript that is constantly being re-written yet retains, nevertheless, the traces of older writings (pp. 68–70, 99, 109). Cordova’s discussion of the three points is clear and forceful, and certainly one of the most engaging and readable sections of his book.

The cultural ecological perspective (pp. 1–3) also serves as a guiding principle in the book’s content structure: each non-theoretical chapter aims to provide *both* a social-historical and an environmental background for a wide range of interesting and up-to-date themes, explored within a vast spatio-temporal frame encompassing four continents (Africa, Eurasia, North America, and Australia) and some two million years. Topics addressed in a rather traditional cultural-evolutionary sequence (Chapters 6–17) focus on distinct interactions between early hominins, hunter-gatherers, (early) farmers and pastoralists, as well as different complex societies, including modern ones, and their diverse environments. While some of these—human impact on landscape through forest clearance and cultivation, for instance—are fairly standard subjects in geoarchaeological

textbooks, others, most notably environmental disasters (Chapter 13), environmental crises (Chapter 14), and the collapse phenomenon (Chapter 10), represent an important addition to the discourse. Current research trends and underlying funding policies in the wider field of archaeological science have, over the last twenty years, been governed to a large extent by the issue of rapid global warming and associated environmental crises, and Cordova's strong emphasis on these and other related themes, including sustainability, risk management, and resilience (pp. 155–56, 158–62, 167), is very pertinent in that regard.

To illustrate possible geoarchaeological approaches, each chapter provides one or two case studies. Almost half of the twenty-one presented examples stem from Cordova's own research and his various project collaborations, including his work on the Pre-Pottery Neolithic (pp. 146–49) and Bronze Age sites (pp. 219–23) in the Levant, ancient Greek (pp. 172–78) and modern landscapes in Crimea (pp. 256–62), pastoral locales in southern Africa (pp. 149–51), North American prairie soils (pp. 193–98) and the effects of the 1930s Dust Bowl on the Great Plains (pp. 223–27), the Xitle volcano catastrophe and its effects on the Pre-classic and Classic landscapes in the Basin of Mexico (pp. 203–10), the impact of the Spanish colonial land system on the Aztec landscape in the Texcoco region (pp. 231–34), and traditional irrigation systems in the Balsas river basin of southern Mexico (pp. 245–51).

Inevitably, then, the book exhibits a noticeable bias in its discussion of distinct landforms and different analytical techniques. While fluvial and lacustrine settings recur in the selected examples, others, such as mountain, slope, desert, and coastal systems remain less well represented. Caves and rockshelters, despite their significance in human history, have no case study of their own. A similar

imbalance also occurs in the introduction of various geoarchaeological analytical techniques. Those that crop up most frequently include geomorphological, sediment, and soil analyses at landscape scale; these are often discussed in combination with various absolute dating techniques and palaeobotanical data. Others, most notably geophysical and chemical analyses, are rarely mentioned. I assume those particular lacunae owe much to Cordova's personal interests, specialism, and career path—but they are, without doubt, detrimental to the book's overall balance.

In fact, imbalance and inconsistency are two of the book's major sins. Both occur on many different levels, and from the very first pages onward. When outlining content structure, for instance, Cordova (p. 3) writes that 'in each chapter two practical case studies [...] are intended to be representative of the issue discussed.' Inexplicably, then, Chapters 6, 16, and 17 provide the reader with only *one* geoarchaeological study. In a similar vein, Cordova (p. 3) declares that 'about a third of the cases come from [his] own research and experience.' His name, however, appears in relation to ten out of twenty-one featured examples; surely that is more than a third of the total? Individual chapters are, in addition to the selective and uneven representation of various geomorphological settings and different analytical techniques, further unbalanced by the ratio of text on the introduction of various social-historical phenomena to that devoted to their geoarchaeological settings. The latter are generally given extensive and generous coverage; moreover, some points (such as those on the importance of geoarchaeology in understanding site formation, abandonment, and preservation processes; or its relevance in contextualising findings on a number of scales) are repeated, in almost identical wording, across the book *ad nauseam* (cf. pp. 125, 137, 244). In

contrast, social-historical phenomena are, in some instances at least (e.g. hunter-gatherer societies, the Neolithisation process), reduced to a meagre paragraph or two. Given their brevity (which almost mirrors one's study notes), some of the presented case studies likewise stand out like a sore thumb (e.g. 6.1, 7.2, 10.1). Further, a final interpretation is only provided for each of the discussed examples, whereas any raw data and any reasoning leading to the final conclusion are omitted entirely: this is rather annoying (as it prevents one's independent assessment of the arguments), and very unusual for an academic work. Disappointingly, the book also lacks a concluding chapter, which would bind together its various disparate themes and present some of geoarchaeology's future prospects and possible directions. As a result, *Geoarchaeology* often feels haphazard, and fashioned on an ad hoc basis.

Set within this framework are other shortcomings. Cordova's agenda of addressing epistemological issues and employing an integrative, social-historical-environmental approach are most certainly bold, and without doubt extremely ambitious—but regrettably unfulfilled, in a number of significant ways. There is, to take one example from the theoretical section, something wearying about the way he rehashes a discussion on the differences between archaeological geology and geoarchaeology (p. 7), before entrenching artificial divisions within the field even further (pp. 8–11). Readers who rely on his discussion of archaeological theory (pp. 23–24, 35–36) could easily be misled into believing that postprocessualism is the most recent development in the field. How wrong they would be (e.g. Harris & Cipolla, 2017)! By failing to engage with current perspectives, most notably New Materialism, Cordova misses an exciting opportunity to radically erase persisting boundaries between social archaeology and

geoarchaeology. Rather than vibrant, plural, complex, and heterogeneous, the world emerging through his narrative is often reductionist. To use a caricature, people in his book tend to change their world through subsistence practices that most often modify their environment gradually and incrementally. The environment itself, on the other hand, hits people back from time to time, with different natural disasters and environmental crises. The very many other possibilities of human-environmental dynamics, most notably interactions stemming from people's beliefs, worldviews, folklore, rituals, and religion, the traces of which can be and have been addressed in geoarchaeology (e.g. Boivin, 2010), get not a single mention in the book. Cordova's work, then, is one devoid of the intangible aspects of human dwelling that are so essential to the human condition.

Furthermore, Cordova's writing style is lacking: often inarticulate, sloppy, repetitive, and tedious, it made reading hard work. Crawling persistently across the book's pages are innumerable syntax and grammatical errors, and sentences that make no sense: one example, 'The question as to why domesticated wheat in a site previously believed to be pastoral because of its location in the desert is not clear, but the only possible reason is short-lived, but a period of enhanced precipitation' appears on page 146; however, I could pick and choose from many, many others. Surely there is no excuse for undergraduate-style limitations such as describing New Archaeology as 'one of the most influential theoretical models' (p. 23); claiming that 'early hominins [...] already practiced a noticeable use of their environment' (p. 105); or carelessly reducing the Neolithisation phenomenon to either local development or a diffusion process (p. 124)? Hand in hand with these errors go numerous mistakes in in-text references, figure numbers, and the bibliography, ranging from the incorrect spelling of

authors' names, inclusion of the date of publication but not the author's name, and the omission of references in the bibliography, to providing figures which are often too small, accompanied by unexplained acronyms and incorrectly referenced in the main text.

Geoarchaeology's considerable flaws made me wonder about some of the lavish praise it has received (*cf.* Berna 2019). In contrast to Berna's experience (2019), Cordova had me in his grasp with his exciting agenda, only to lose me almost entirely with his book's many disappointments. At so many crucial moments in the narrative, his book seemed sloppily put together: an ensemble of reductionist definitions and artificial divisions where there should have been a vibrant, unified whole.

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