between multiple elements of the world, and challenge Western divisions of nature and culture.

Eleanor Harrison-Buck concludes the volume by seeking to modify some of the claims made by the ontological turn. She is concerned both by the emphasis placed on 'alterity' (or radical difference) by some elements of this approach, and the ways in which others downplay the cognitive and mental aspects of human existence.

This is a welcome volume that adds much to our understanding of the different ways in which agency and personhood can become distributed. It also forms a useful teaching aid for students trying to conceptualise different kinds of past worlds. While there is little to criticise, there are, I think, two matters of concern. The first, as the editors note, is the common reliance on ethnography. Indeed, some of the papers include little in the way of archaeological examples at all. The use of ethnography to destabilise interpretations and allow other voices to guide our understanding is unquestionably welcome. If we determine local ontologies, and who counts as a person, primarily through ethnography and not archaeology, however, what does this mean for someone working in European prehistory, for example? Fortunately, there are chapters that help to answer this question including those by Stahl, Pauketat and Alt, and Brück and Jones.

The second, related, concern is connected to the status of ontology within the volume. Archaeology's ontological turn argues that our investigations can be about the world as it actually *is*, rather than what people *think the world is*. An ontological commitment, therefore, is an approach that opens up a reconsideration of how the world works from first principles. This, of course, can be taken in multiple different directions from discussions of local ontologies (exemplified by Yvonne Marshall and Ben Alberti's work), to broader meta-ontologies (developed both by new materialists and symmetrical archaeologists). In many of the papers in this volume, however, ontology remains at the level of cosmology or cultural claims. So we learn of how things can influence people once they 'acquire' personhood, or how people 'enable' their agency. The notion that things or materials affect the world because this is how the world *actually operates* is not always present. There are three notable exceptions to this. McNiven makes explicitly clear that the animacy of the Torres Strait canoes is not a consequence of human intervention, but rather that such action enhances capacities already inherent in
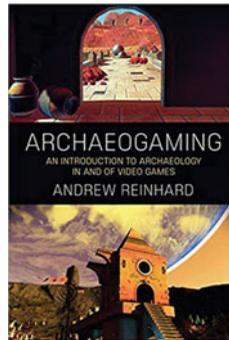
the materials. Similarly, Brück and Jones argue in Deleuzian fashion that the assemblages of materials in graves acted "as a means of 'mapping' the world" (p. 247) and thus constructing it. Finally, Pauketat and Alt take a new materialist approach in order to generate an account of a critical period of the past that neither reduces human beings to the status of unthinking actors, nor accords materials the ability to shape the world only when people believe they do so.

These matters of concern, however, should not detract from the volume as a whole. This book offers us a set of theoretically engaged and fascinating papers that are a pleasure to read. There is much to learn and reflect on here, and each paper shows that an emphasis on relations in specific historical contexts has much to teach us about how humans and non-humans make their worlds.

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ANDREW REINHARD. 2018. *Archaeogaming: an introduction to archaeology in and of video games*. New York: Berghahn; 978-1-78533-873-1 £19.

Archaeogaming explores the dynamic intersections between two academic fields not so obviously related: archaeology and video games. Under this new label, Andrew Reinhard analyses the "archaeology both in and of digital games" (p. 2), a new field of study that, as quickly becomes apparent in the first pages of the book, necessarily demands a multidisciplinary gaze. For this enterprise, Reinhard seems to have the right credentials: his analysis is shaped by his professional expertise as an archaeologist, and by a deep knowledge of and evident passion for video games, a medium he knows well, both as a life-long gamer and as a scholar. It also becomes evident that the author is not alone in this pioneering and perhaps unorthodox academic pursuit. As Reinhard develops his ideas, he frequently

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references works from a vibrant academic community that has formed in recent years. This community actively produces academic publications, hosts conferences and gathers for less formal events such as 'Jams', where archaeologists, game developers and other professionals and enthusiasts meet to play, discuss or develop new 'archaeogames'.

The complexity of archaeogaming is reflected in the variety of subjects covered by the book. As part of its remit, popular perceptions and tropes about archaeology in video games are studied, highlighting how the medium has contributed to reinforcing simplistic views of both what it is that archaeologists actually do and "issues of repatriation, colonialism, and racism" (p. 78) prevalent in popular culture since the nineteenth century (Chapter 2). In this regard, Reinhard concludes that a closer collaboration between archaeologists and game developers is needed to overcome the naive representation of archaeology, or, by increasing levels of technical proficiency, to turn archaeologists themselves into game developers with full control of games' narratives and mechanics.

A second concern of archaeogaming relates to the application of archaeological tools and methods to study the multiple spaces where games are produced, commercialised and played—both by individuals and gaming communities. In this respect, Reinhard insists throughout the book, from an archaeological perspective, that games are both artefacts and sites: two dimensions that demand different means of study.

As artefacts, video games certainly fit the definition of "things of cultural/historical significance made by people" (p. 29). Indeed, even though the materiality of the medium has radically shifted from cartridges to digital downloads, the processes involved in their conception, creation and commercialisation still leave traces in the real world (Chapter 1). In the fast-moving and ever-changing economic landscape of late capitalism, game corporations and development studios are formed and closed almost at the same pace, leaving remnants with stories that soon begin to fade. As the spaces where games were created become abandoned or repurposed, and game titles are forgotten or, as with the intriguing commercial failure of Atari's E.T. game, even physically buried, it becomes an archaeological concern to uncover and bring back to light their social biographies and histories of use.

The author then centres his attention on the study of games as sites (Chapter 3). Here, his arguments stem

from the view that games are built environments, "something made by people for other people to use" (p. 88), which are not essentially different from the environments we build in the natural world. As Reinhard explains, millions of people spend much of their time every day in these environments, developing in some cases a rich game-based culture not originally conceived by the developers. For Reinhard, the 'immaterialism' of such worlds does not negate their cultural relevance in the Anthropocene. To understand these environments, he proposes to adapt the methods and tools used in real-world archaeology to the synthetic space, collecting and interpreting data from the game media, file systems and the game-space as created by the developers and inhabited by its digital dwellers.

With the purpose of putting his ideas to the test, Reinhard conducted an archaeological survey in the indie game *No Man's Sky*, developed by Hello Games in 2016. The game was chosen for its vast scale—it expands to procedurally generated galaxies with 18 quintillion unique planets to explore—allowing him to understand how emergent behaviours and material culture evolve in spaces made by algorithms instead of game designers. To conduct this study, Reinhard studied and adapted survey methods from real-world excavations; after a year of research, however, his preliminary conclusions were discouraging. As he writes, "it appeared at a first review as if the project had been a failure. We weren't able to accomplish our goals in the digital universe and what we found was largely contextually meaningless" (p. 145). This conclusion is illuminating; despite the fact that most of the game's failure to meet the author's expectations can be attributed to its underdeveloped state at the time of its release, the statement also highlights gaps in some of the arguments made in the book, which need to be addressed if the archaeogaming project is to be successful. As the *No Man's Sky* survey revealed, the current state of gaming technology still offers a limited range of sensory engagement and cultural agency in game worlds, hence a more complete study of the differences between inhabiting synthetic *vs* real worlds needs to be incorporated into the discussion.
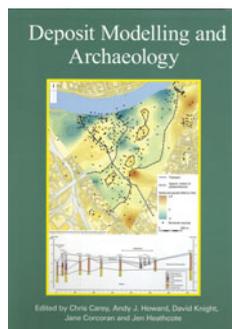
Overall, the book succeeds in its goal of introducing the reader to the new field of archaeogaming. Reinhard presents strong arguments for considering it not just as a new space for archaeological practice, but also as a new methodological approach to the

study of video games. Although the topics and references included in the text are more closely aligned to the field of archaeology than to game studies, the author's clarity of style makes it accessible to all readers, with or without an archaeological background. Moreover, his personal anecdotes and gameplay experiences with different game titles, from which his ideas often develop, make it very enjoyable reading.

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CHRIS CAREY, ANDY J. HOWARD, DAVID KNIGHT, JANE CORCORAN & JEN HEATHCOTE (ed.). *Deposit modelling and archaeology*. 2018. Exeter: Short Run; 978-1-5272-2244-1.

Archaeological deposit modelling comprises a wide variety of approaches to addressing the interrelated challenges of interpreting archaeological sites and landscapes, efficiently targeting fieldwork and managing the archaeological and palaeoenvironmental resources. By interpolating between data points, models provide visualisations and quantifications of layers and deposits, in either 2D or 3D. The sources of data can be broad, linking archives with new fieldwork, and combining boreholes and geotechnical data with the results from geophysics and excavation. By integrating artefact distributions, deposit models can assist in archaeological interpretation, and can identify patterns and gaps in past cultural activity. Furthermore, they provide a means for mitigation and landscape management, such as through identifying or predicting areas of greater archaeological or palaeoenvironmental sensitivity. With the widespread accessibility of digital tools, the potential value provided by deposit modelling is within reach, if only there were sufficient published examples of how this might be achieved.

Deposit modelling and archaeology subsequently presents 15 case studies, each focusing on different questions and challenges, and working at a variety of different spatial and temporal scales. Edited by a cross-sector research team and with contributions from both creators and end-users of deposit models, the volume provides a fresh new attempt to engage with the challenges of definition and best practice by presenting these case studies. It does this in an honest and reflexive manner, highlighting lessons learned throughout the process. Funded by Historic England, the volume represents a principal outcome from a project that commenced with a workshop held in London in 2016. It is supplemented by a paper published in *Geoarchaeology* and will feed into new Historic England 'best practice guidelines'. For a field that has emerged organically, this is clearly of value, addressing re-using archive data, the limits to extrapolation between data points, issues of resolution and how to ensure that the resulting models are widely understood.

The book begins with an Introduction by the editors that includes a helpful summary of what deposit modelling in archaeology is and how it fits into the broader archaeological process. This chapter also considers the challenges of archiving and disseminating the results, highlighting the need for clear protocols. The subsequent chapter by Martin Bates contextualises the subject further, outlining the deeper ancestry of the approach in relation to the geosciences. He raises caution in relation to the need to assess critically the input data, and to make sure that the resulting models are understandable.

The bulk of the book centres on 15 case studies from England spread geographically from the south coast to York; a city that has benefited from many decades of deposit modelling approaches, as noted in the chapter by Kurt Hunter-Mann and John Oxley. The majority of chapters present results from projects in London or the south and south-east of England, but, in addition to York, other examples are drawn from Leicestershire, Nottinghamshire and Cheshire. The concluding chapter by Chris Carey *et al.* draws attention to this imbalanced geographic distribution, recognising that "the application of deposit modelling is extremely variable across the country, with the majority of studies undertaken in south-east England". They suggest that this reflects both the clustering of experienced practitioners as well as the result of a regional focus of intense economic development in recent years. The authors note however, that current and emerging infrastructure projects, particularly those across the Midlands and northern England, provide the opportunity for new extensive deposit modelling projects. In this respect, this book is extremely timely.

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