

cohesion of an increased population' (p. 105). This reading implicitly or explicitly also informs the authors' understanding of connections to other communities and the purpose of intentionally breaking the figurines, more so making them in such a way, so as to break them, and is arguably an interpretation that clings to the functionality of material culture (p. 109).

Despite these reservations—or indeed because of them, since the book allows one to have reservations by creating space to discuss matters of significance, rather than just presenting nice illustrations—this is a book of great merit. It paves the way as few other studies of figurines from the area have done (although I would single out here Talalay's publication of the assemblage from Franchthi, Talalay, 1993), for a rich future discussion on the place of figurines in people's lives in the past. I would highly recommend it to anyone interested in the Neolithic and the Chalcolithic of the Aegean, Anatolia, and the Balkans, but I am certain it will be favourably received even further afield.

REFERENCES

- Karamurat, C., Atakuman, Ç. & Erdoğan, B. 2021. Digging Pits and Making Places at Lindsey Büster, Eugène Warmenbol and Dimitrij Mlekuž, eds. *Between Worlds: Understanding Ritual Cave Use in Later Prehistory*. (Cham: Springer, 2019, 270pp., 17 b/w illustr., 85 colour illustr., hbk, ISBN 978-3-319-99021-7)
- Uğurlu During the Sixth Millennium BC. *Oxford Journal of Archaeology*, 40: 23–42.
- Nanoglou, S. 2006. Regional Perspectives on the Neolithic Anthropomorphic Imagery of Northern Greece. *Journal of Mediterranean Archaeology*, 19: 155–76.
- Nanoglou, S. 2008. Qualities of Humanness: Material Aspects of Greek Neolithic Anthropomorphic Imagery. *Journal of Material Culture*, 13: 311–34.
- Nanoglou, S. 2015. Situated Intentions: Providing a Framework for the Destruction of Objects in Aegean Prehistory. In: K. Harrell & J. Driessen eds. *THRAVSMA. Contextualising the Intentional Destruction of Objects in the Bronze Age Aegean and Cyprus*. Louvain-la-Neuve: Presses universitaires de Louvain, pp. 49–59.
- Takaoglu, T. & Nanoglou, S. 2021. Figurines and Figural Objects from Chalcolithic Gulpınar in Northwestern Anatolia. *Anatolica*, XLVII: 95–119.
- Talalay, L.E. 1993. *Excavations at Franchthi Cave, Greece, 9. Deities, Dolls, and Devices: Neolithic Figurines from Franchthi Cave, Greece*. Bloomington and Indianapolis, IN: Indiana University Press.
- Tsirtsoni, Z. ed. 2016. *The Human Face of Radiocarbon: Reassessing Chronology in Prehistoric Greece and Bulgaria, 5000–3000 cal BC*. Lyon: Maison de l'Orient et de la Méditerranée.

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In all geographical and cultural-heritage contexts and since the beginning of archaeological exploration, caves have been attractive to archaeologists. They have offered them the opportunity of investigating an unconventional and liminal

landscape inscribed with a range of multi-period and multi-faceted cultural assemblages that often include the earliest traces of human history at an utmost state of preservation. In Europe, aside from a few prominent publications on caves starting

with the iconic volume by Bonsall and Tolan-Smith (1997), there is a much longer record of investigated cave sites and material collections encompassing a range of different theoretical and methodological approaches. Most of these records exist in a fragmented and basic level of documentation, lacking detailed contextual information—I can think of hundreds such publications about fieldwork in caves in Greece. At the same time, the tourist industry has been assertive in integrating caves in European cultural heritage strategies.

That said, it is also true that caves in European archaeology have been poorly understood through integrated and synthetic archaeological narratives, some of which are the outcome of an only recent resurgence in cave research. This collective volume has set the standards very high in articulating a theoretical framework for caves as dynamic places, from the insightful integration of all modern scientific and interpretive tools and the repositioning of caves at the centre of a holistic discourse that stands beyond traditional dichotomies.

Between worlds explores two central themes in this direction concerning caves in Europe during later prehistory. The first part sets out a 'theoretical manifesto' (p. 9) on the study of caves and includes a series of chapters approaching caves from anthropological, philosophical, and ideological perspectives. Part two demonstrates various ways of integrating state-of-the-art digital capture technologies in a comprehensive narrative about cave rituals.

Specifically, the first three chapters offer constructive criticism of the dominant unidirectional narratives of archaeology on caves that are limited to standard de-personalised questions about chronology, typology, and the 'human use of caves' (p. 10). All three chapters try to articulate the components of a theoretical agenda that has the potential to move beyond viewing caves through unilinear priorities

and incorporate a diverse range of approaches and disciplines that reveal the cave as an agent of a dynamic and vibrant hybrid place.

Prijatelj and Skeates (Ch. 2) advocate a theoretical framework for caves formed from the merging of traditional dichotomies such as human/non-human, nature/culture, subject/object, past/present, and many others, and 'the rapprochement of social theory, political ecology, and scientific techniques in new approaches' (p. 10). By using an emphatic vocabulary, they argue for caves as 'vibrant' and 'participant' places constructed from multiple fluid connections between human and non-human agencies. The latter includes cultural material being equal to all the natural features of caves that are 'integral to the pattern and character of the activities which took place' (p. 5). I would like to draw attention to the specific set of theoretical tools they suggest: the fluidity in which caves are structured as networks from changing connections between various nodes of agency (p. 11); the 'distributive agency' that the different materialities of caves have, acting as an assemblage (p. 14); the different temporal dimensions of all components of cave sites, including contemporary living time and indigenous experiences (in contrast to traditional linear temporalities); the hybrid mix of time and place generated from mutual signification between them; the critical reflexivity (p. 17) necessary for the acknowledgement of the political, contested, appropriated, and controlled facets of caves in various circumstances, for example, claims to exclusive ancestral burial grounds in prehistoric caves, recent heritage rights, or even research competition over certain cave sites.

Peterson (Ch. 3) elaborates on a very analytical review of theories about agency and practice in archaeology to answer why a cave has agency and how agency theory

can apply in thinking about the human use of caves. The chapter offers a comparison of structuration theory, habitus, new ecology, art and networks and reveals different contributions to the study of caves as agents. It highlights how cave systems can act upon people in various ways, create indexes of changes made by their physical properties, and shape humans through their 'affordances' provided during repeated encounters with their space. Building on the theoretical connection between ecological structures, habitus, and memory, Peterson reveals the role of caves as agents acting through the embodied and material experience of time in their space and the human indexes and traces left in them.

Mlekuž (Ch. 4) discusses the notion of the animate cave and natural landscape as a dynamic substratum for powerful, immersive, and resourceful engagement with humans and a heightened sense of involvement during a ritual performance. This line of thought allows him to link the wild nature of the rugged and folded landscape around the Škocjan Caves in Slovenia with the exclusive use of the caves for rituals and funerary purposes and the development of territorial control over the surrounding area as demarcation of the underworld in the Late Bronze Age.

Wilford (Ch. 5) offers a research paradigm based on the analysis of ritual deposits in caves in Britain during the Late Iron Age/early Roman period by looking at them from the perspective of surrounding contemporaneous open-air sites and natural locales. He suggests that certain caves were chosen by transhumant groups and craftworkers because of their location at the edge of everyday landscapes, and that they possibly enabled control over the unpredictable forces associated with metalworking (p. 82). However, I would be cautious with interpretations of 'marginal' and 'nomadic' lifestyles given the settlements in the area, while the link between

metalworking and ritual cave deposition might need to be explained more clearly.

The following chapters in Part I and II adapt experiential approaches to ritual caves expressed with high-resolution analysis of sites and contexts and the application of innovative digital documentation technologies.

Silvestri and colleagues (Ch. 6) take us to central Italy for a comprehensive analysis of the Middle Bronze Age ritual assemblage excavated inside one of the chambers at Pastena Cave, southeast of Rome, which formed from the ritual deposition of precious votive artefacts such as bronzes and faience on hearths, structures, and in pits, consumption of meals, and mortuary activity. This account seems especially interesting because of its date from the Middle Bronze Age during which human connections with caves are the least well known, especially in the Mediterranean.

Yioutsos (Ch. 7) focuses on ancient Greece and the prominent cult of Pan in caves, a god who was all about sound and was worshipped with performances that critically incorporated various ways of noisemaking, music, and dancing. Based on a comprehensive review of theoretical studies in ancient acoustics and surveys for the modelling of acoustic qualities at various caves and other sites around the world including ancient Greek theatres, Yioutsos undertook an interdisciplinary project to investigate the resonating effects and echo phenomena in the cave sanctuaries of Pan. The study reconstructed the aural experiences of ancient worshippers and their behaviour in the context of these underground soundscapes.

Delaere and Warmenbol (Ch. 8) present the underwater investigation carried out at the cave complex of Han-Sur-Lesse, in Belgium, in an effort to contextualise earlier discoveries of Late Bronze Age ritual and mortuary assemblages including

some fascinating copper and gold artefacts, as well as a comprehensive modern documentation of the subaquatic site. I found it extremely interesting that the project paid equal attention to the recovery, documentation, and sedimentary study of the remains of incipient tourist activity at the site in the sixteenth century and reconstructed its history through to the twentieth century.

In Part II, Burens and colleagues (Ch. 9) offer a compelling demonstration of a tailor-made and integrative modelling technology, which generated an accurate visualization and documentation of the Bronze Age rock art and the votive and domestic assemblages found at the cave of Les Fraux, in southwestern France. Their work is based on a state-of-the-art georeferenced 3D mapping system (integrating terrestrial laser scanning, digital photogrammetry, and spatial imaging systems), informed by multiple datasets that were obtained during different field seasons to allow multi-scalar indexing within the same system. It also utilised equipment designed to meet the extra-visual and extra-spatial demands of the complex cave environment. The application of 3D magnetic prospection, adapted to the high-resolution data acquisition demands of the cave, for location and mapping of hearths (especially the invisible ones) was another compelling achievement of the project. Even more impressive is that this technological method was designed to meet the requirement for conducting non-invasive and contact-free research. The unique surficial character of the ancient material in this cave and the lack of superimposed contexts motivated the project plan to ensure the *in situ* survival of all the ancient material and protect the integrity of the site.

Büster and colleagues (Ch. 10) continue this theme by turning more directly to digital documentation for cultural heritage protection and management purposes at Sculptor's Cave in Scotland, which yielded

a Late Bronze Age mortuary assemblage and later carvings. It was interesting that this physically inaccessible site gave me a sense of a shared history with Greece on account of its excavator, Sylvia Benton, the pioneer female explorer, who also undertook the first excavations at several challenging caves in the Ionian Islands in the 1930s. The project at Sculptor's Cave integrated multiple datasets obtained with different scanning methods into interactive models (either site-wide or at the scale of individual carvings) to enable archaeological interpretations, visual documentation for heritage officers, and inclusive visual displays for the public.

Hambly and colleagues (Ch. 11) provide another example of a digital heritage project. This one intended to upgrade the value of the damaged and inaccessible Wemyss Caves in Scotland, containing first millennium AD carvings, and to address the challenge of enabling the current generation to see beyond the condition of the caves and understand their significance and history. The team employed combined digital data capture for documentation and visualisation using multiple techniques such as laser scan survey, Reflectance Transformation Imaging, 3D models, and overlay panels in a simulated website environment. The virtual cave contexts managed to engage the local community in a digital journey that enhanced the value of the heritage sites.

The final Chapter 12, by Waller, reappraises the theme of the acoustic qualities of caves acting as vital elements in rituals and as spiritual agents in creating cave art (discussed again in Ch. 7). Based on ethnographic accounts, the project involved the application of digital echo capture technology (using percussion noises) and the production of acoustic maps in two caves in France. Waller suggests a typical direct correspondence between sound reflection and Palaeolithic rock art placement at large scale and, at a

smaller scale, the prehistoric depictions themselves are seen as representing echo spirits. Based on this model, he makes an interesting suggestion about the practical applications of acoustic analysis for creating immersive and interactive experiences for visitors in cave heritage sites.

The chapters are lengthy allowing the reader to enjoy the rich use of language to convey the natural, spiritual, and symbolic power of caves. They are supplemented by informative figures including, among others, images of digital models and digitally processed surfaces; there are also a couple of interesting artistic representations of cave ritual practices (figs. 2.4; 8.14).

Between Worlds comprises a most stimulating theoretical and methodological source for understanding the ritual material from caves in late prehistoric Europe. It has been very systematically designed to provide a substantial contribution to novel methodological applications intended for the documentation, study, and interpretation of ritual activity in caves and relevant heritage strategies (Garstki, 2020). It illustrates the development of certain specific digital tools adapted from open-air archaeology to enhance the recording, analysis, and dissemination of archaeological data from caves. There are multiple meaningful connections and inferences about these perspectives to be drawn between the geographically (from Scotland, Britain, France, Belgium, Italy, Slovenia, Greece) and methodologically diverse examples included in the book—and the many others available from cave projects in Europe not represented here (Sakamoto et al., 2020; Papanthasiou et al., 2018; Idrees & Pradhan, 2016).

As the next step in this resurgence of publications that we are currently noticing

on caves, I would look forward to seeing the same theoretical and methodological dialogue brought to bear on caves found at a sub-regional and local scale, within a common geographical and cultural context. Across various cave forms, sub-landscapes, human behaviours, social engagements, periods, and cultures developing in the same context, such a synthesis would reveal discourses of agency and practice in the use of caves within certain local traditions.

REFERENCES

- Bonsall, C. & Tolan-Smith, C. eds. 1997. *The Human Use of Caves*. Oxford: Archaeopress.
- Idrees, M.O. & Pradhan, B. 2016. A Decade of Modern Cave Surveying with Terrestrial Laser Scanning: A Review of Sensors, Method, and Application Development. *International Journal of Speleology*, 45: 71–88.
- Garstki, K. 2020. *Digital Innovations in European Archaeology*. Cambridge: Cambridge University Press.
- Papanthasiou, A., Parkinson, W., Pullen, D.J., Galaty, M. & Karkanias, P. 2018. *Neolithic Alepotrypa Cave in the Mani, Greece. In Honor of George Papanthasiopoulos*. Oxford: Oxbow.
- Sakamoto, T., Pettitt, P. & Ontañón-Peredo, R. 2020. Upper Palaeolithic Installation Art: Topography, Distortion, Animation, and Participation in the Production and Experience of Cantabrian Cave Art. *Cambridge Archaeological Journal*, 30: 665–88.

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