Tuna Kalayci, Karsten Lambers and Victor Klinkenberg (eds), *Digital Archaeology: Promises and Impasses*, [Analecta Praehistorica Leidensia 51], Sidestone Press, Leiden, 2023 | Book Review

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Digital archaeology is now a well-established field of archaeology but is proving to be as promising as it is complex, due to its constant evolution. It is on this dichotomy that the discussion of the volume "Digital Archaeology: Promises and Impasses", published in 2023 by Sidestone Press as part of the series Analecta Praehistorica Leidensia (APL), is based. The authors, mainly (but not exclusively) from the Faculty of Archaeology at Leiden University, provide an in-depth analysis of the challenges and opportunities associated with the use of digital technologies in archaeology. What stands out in this volume, edited by Tuna Kalyci, Karsten Lambers and Victor Klinkenberg, is a collection of essays that explore the application of digital technologies in archaeological research and cultural heritage management. By focusing on the challenges and "unfulfilled promises" of digital archaeology, the authors help to promote the responsible use of technologies and encourage further developments in the field. The book provides an opportunity to critically examine the current state of the art of Digital Archaeology, highlighting not only the successes of this field but also its limitations.

"Digital Archaeology Promises and Impasses" begins with an introduction by Karsten Lammers, in which she reflects on the meaning of digital archaeology itself by introducing the book. She also gives space to present data on the interest in digital archaeology among students at the Faculty of Archaeology at Leiden University, and the career prospects it can offer them. From the beginning, the editor emphasises the strength of this publication, namely that all the work is the result of the direct experience of the authors. Therefore, there is nothing empirical about the topics covered. It is important to stress this premise, because it actually strengthens the aim of the book: to take a critical look at the positive, the negative and the dubious aspects that currently surround digital archaeology. The book is then divided into seven chapters, each dealing with a different topic related to digital approaches and methodologies in archaeology. The topics range from the collection of archaeological data to its processing, analysis, re-use and dissemination, including the very young field of archaeogaming. All authors reflect on the strengths as well as the more problematic or dubious aspects of the digital approaches they deal with, providing a clear picture of the state of the art as well as their experience with the particular topic, method or analysis.

In keeping with the title of the book the opening essay, written by Tuna Kalaycı and Piraye Hacıgüzeller, provocatively begins by saying "We are all digital archaeologists". This incipit,

which is a quote from a 2012 article by Morgan and Eve (Morgan and Eve 2012), serves as an introduction to the topic of the paper. In fact, it critically analyses the development of digital archaeology over time, highlighting both its potential and its challenges. Digital, the authors argue, is transforming and influencing both the understanding of archaeologists' work as well as the collaboration between them. While optimistic about the future application of digital methods and technologies (old and new) to archaeological research, the authors also question their uncritical adoption in the field, from the use of Big Data to Artificial Intelligence (AI). The paper attempts to take stock of whether these practices can and/or do contribute to a more inclusive and collaborative archaeology and, above all, which player benefit most from such innovations. In the second paper, the discussion shifts to a topic closely related to the management of digital archaeological data in the Netherlands. Milco Wansleeben, Walter Laan and Ronald Visser reflect on the need for a standard protocol for the management of these data, focusing on the case study of the so-called SIKB0102 protocol. SIKB0102, a standardised XML data exchange format for the interim storage of data on objects deposited in Dutch archaeological repository, was first introduced in the Netherlands in 2011. In this chapter, the authors attempt to trace the history of the launch of this format, trying to understand the nature of the problems associated with it, possible solutions, and possible developments to make it as accessible as possible. In line with this, the topic of archaeological data management is taken up again by Tymon de Haas and Martijn van Leuseno. They highlight the exponential growth of digital archaeological data over time and the challenges associated with its management and analysis in the third paper of the book. The authors emphasise the need to standardise the documentation of archaeological data. This will make it more accessible to a wider audience. However, they also highlight the problematic issue of gaps in the publication and archiving of survey data in the field of archaeology. They conclude with proposals to improve the situation in the medium term, such as the adoption of semantic modelling and LOD, and the improvement of training in archaeological documentation and archiving. The focus then shifts from data acquisition, management and storage to data analysis in the fourth paper in the book. Indeed, Jason E. Laffoon and Till F. Sonnemann discuss the topic of data analysis by addressing the management of isotopic data, which are useful for building predictive models (isoscapes) to trace geographical origins in archaeology. Through a case study of the existing strontium and oxygen isoscapes for the Circum-Caribbean, the authors address the issue of the reliability of such isoscapes. They emphasise that there is a need for much more systematic analysis of individuals of known origin than has been done to date to prove their reliability in the field of archaeology, and particularly in the study of human mobility and migration. The topic of data analysis is taken up again in the book's fifth paper, in which, Sarah Klassen, Tommaso Pappagallo and Damian Evans discuss deep learning applied to 2D and 3D aerial remote sensing data to identify archaeological evidence from the Khmer Lidar Archaeological Consortium (KALC) and Cambodian Archaeological Lidar Initiative (CALI) processes. The authors discuss the challenges and opportunities it offers, keeping in mind that the goal is to facilitate the archaeologist's task in trying to identify possible new archaeological sites. In the sixth paper, Iza Romanowska and Fulco Scherjon take up the topic of simulation and its introduction into the field of archaeology for the virtual reconstruction of now-lost landscapes or archaeological evidence. They take a close look at the current state of the art in the field and try to answer the question of whether or not the expectations associated with the world of simulation have achieved the goals that were announced in previous years. The seventh chapter by Aris Politopoulos and Angus Mol deals with a fairly young discipline in the field of archaeology, i.e. archaeogaming, highlighting

both its shortcomings and the impacts it has had in these early years of development. At the end of the book, the editors have invited Rachel Opitz to provide an outstanding review of all the chapters. Opitz's reflection provides an umbrella view of the themes and issues addressed within the book, as well as the questions and answers posed and given by the authors to each of the issues addressed.

What distinguishes Digital Archaeology Promises and Impasses is undoubtedly the effort of the editors and the authors themselves to bring together all their experiences with digital archaeology, without focusing exclusively on the positive aspects or successes of their work. The constructive criticism of each topic covered and the questions posed (sometimes deliberately left with a question mark) are proof that the purpose of the volume has been fully achieved. It provides a timely and clear picture of the 'promises' and 'impasses' that currently characterise digital archaeology.

Bibliography

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