

## Book Review

*The Nile and Ancient Egypt. Changing Land- and Waterscapes, from the Neolithic to the Roman Era.* By Judith Bunbury. Pp. 181. Cambridge: Cambridge University Press, 2019. ISBN 978-1-107-01215-8. Price £75.

This book tells a history of Egypt from a geographic point of view, in a wholly original way. It takes, in a sense, a Braudelian *longue durée*-approach, but with the crucial difference that the geography and climate discussed are revealed to be not the immovable bedrock of history, but a shifting ground to which humans need to keep constantly adapting. Bunbury could not be better qualified to write such a book. She has been involved in numerous field projects in Egypt, from the oases, the desert, the Nile Valley to the Delta, and thus years of experience and expertise flow into the book. One could argue an environmental turn has reached Egyptology, not the least due to the work of such scientists as this author. She is entirely correct when she states, referencing Butzer's seminal 1976 study on *Early Hydraulic Civilization in Egypt*, that 'for modern archaeological investigations... sediment logs and boreholes are considered a routine part of the work' (p. 6). The data discussed in the book is ample and varied, and the author aims to tie it all together. The scope of the book is wider than the title (Neolithic to Roman era) suggests. It starts six million years ago, covering the Holocene and reaching to the present day.<sup>1</sup> The focus is, however, on the Pharaonic to Roman periods. The eleven chapters are organized basically chronologically, but often within chapters, other periods are referenced.

Ch. 1: 'Humans and Climate Change: How past peoples can inform our responses to landscape and climate change' provides an introduction to the geological history, the history of the study of landscape and the principles of dating in Egypt. While an awareness for historical changes in environmental conditions appears occasionally in early scientific writing on Egypt, Egyptology has only of late entered a phase of systematic investigations of the country's changes in landscape and climate. This ongoing endeavor is, however, hampered by limitations of the scientific methods to be applied to Egyptian samples due to current restrictive regulations by the Egyptian Ministry of State for Tourism and Antiquities, which are not addressed in the book. The export of geological samples made effectively impossible, this cuts Egypt, Egyptian and foreign scientists off from crucial scientific methods and international debates. When investigating

<sup>1</sup> A second book on the history of the Nile appeared by Cambridge University Press in 2019, which is not referenced: M. Williams, *The Nile Basin: Quaternary Geology, Geomorphology and Prehistoric Environments* (Cambridge, 2019).

the Nile, for example, one would be very interested in employing OSL dating, a method to date quartz sands, and in routinely using AMS C14 dating-methods currently not available in Egypt. These constraints have led to the situation that some of the methodologically most up-to-date work on the Nile is emerging not from Egypt, but from the Sudan,<sup>2</sup> where the export of samples is permitted.

Ch. 2: 'The Green Deserts: Lakes and playas of the Saharan wet phases' discusses historical changes in climate. This chapter relays the fascinating history of a much wetter Sahara Desert, emphasizing the often-overlooked fact that Egypt was not 'Nilocentric' at the beginning of human activity there – the Nile was only an occasionally visited, marshy region. One data set used for climate reconstruction is the Greenland ice cores. Climate is understood as a global phenomenon, but the issue of regional variabilities, which may impinge on the interpretative value of this data, is not addressed.

Ch. 3: 'The Climate Seesaw: The balance between hunter-gathering and farming in the wadis and marshes of the Nile Valley' tells the story of the tamer Nile at the end of the Saharan Neolithic, when reduced rainfall and flood levels made the Sahara a less attractive place for human habitation and the Nile Valley more so. Following a major period of channel and floodplain contraction, rich sediments spread over floodplains and channels become more manageable, which led to the beginning of farming and herding only in the late sixth millennium BC in the Nile Valley. Two fascinating figures (3.3 and 3.7) illustrate the migration of the Nile within the confines of the borders of the Valley. While at Abydos (fig. 3.3), the shift is unilaterally to the northeast since the Early Dynastic Period; at Edfu (fig. 3.7), the river seems to bounce back and forth between the Valley's edges, between the fourth millennium BC and the twentieth century AD. As illustrated in the case of Hierakonpolis, human occupation and use of resources caused, already in the fourth millennium BC, environmental problems, such as deforestation which led to erosion.

Ch. 4: 'The Development of Egypt's Capitals: Condensation of the Nile into meandering channels with inhabited levees' discusses the impact of the climate changes

<sup>2</sup> See, e.g., M. A. J. Williams, et al., 'Late Quaternary floods and droughts in the Nile Valley, Sudan: New evidence from optically stimulated luminescence and AMS radiocarbon dating', *Quaternary Science Reviews* 29:9–10 (2010), 1116–37; J. C. Woodward, M. G. Macklin, and D. A. Welsby, 'The Holocene fluvial sedimentary record and alluvial geoarchaeology in the Nile Valley of Northern Sudan', in D. M. Maddy, M. G. Macklin, and M. G. Woodward (eds), *River Basin Sediment Systems: Archives of Environmental Change* (Abingdon, 2001), 327–56.



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on landscapes, funerary monuments and settlements. One key point is the formation of marginal lakes at the desert's edge during the Old Kingdom in Abusir and Saqqara (fig. 4.2). Intriguing is the issue as to what extent these were natural processes, caused by the blocking of the mouths of wadis by levees, or human interventions. In the Old Kingdom these lakes were connected to the pyramids by causeways (fig. 4.2). It has been suggested that in the New Kingdom they were artificially reflooded to create a breeding zone for ibis birds. It is not always clear how extensive the data is that this and other reconstructions are based on and reference is made to boreholes in an unpublished PhD.<sup>3</sup> Recent studies,<sup>4</sup> for which a series of boreholes were conducted in the Abusir area, refute the existence of the lake in the investigated part, thus questioning the extent of Lake Abusir during the Old Kingdom. The topic of the effects of the drying climate, such as the influx of wind-blown sand from the Sahara into the Nile Valley, is introduced here, but discussed in greater detail in the following chapter. At times it is not quite clear how one should understand certain descriptions, such as 'by the end of the Middle Kingdom, the whole of Egypt was blanketed with sand' (p. 56). How thick a blanket is the author suggesting? Is the Delta affected in the same way as the Valley? Effects of climatic changes on political developments are presented as strong and direct when it is argued that dryer conditions between the Old Kingdom and the New Kingdom caused a 'detachment' of life in the Delta from Upper Egypt and consequently a loss of Egyptian control over that area, providing the basis for the rule of the Hyksos. It remains unclear what exactly is meant by this detachment and more details would be necessary to understand this point, which, as it stands, seems to be somewhat overstated. Current debates avoid monocausal arguments as explanations for complex historic developments.

This question arises again in the following Ch. 5: 'Climate Change and Crisis: Differing views of devolution across the First Intermediate Period'. Here the period at the end of the third millennium is discussed, which has been in the center of a fervent debate on the impact of natural phenomena on political-historical events. This debate is mainly centered in Mesopotamia and the Near East, where it has been argued that droughts led to a dramatic political collapse.<sup>5</sup> In this vein, a catastrophic end to the Old Kingdom in Egypt has been argued by, among others, F. Hassan,<sup>6</sup> cited by the author. The

discussion in Egypt and the Near East has moved on from such environmentally deterministic approaches. The author argues for an environmentally challenging period, defined by low floods and the encroachment of sand, which led to inner conflicts and a reduction in centralized power. A strong case is thus made for climate change and its effects on the landscape, and this is convincingly described. The author avoids apocalyptic scenarios, but does argue for a strong causal relationship between such climatic changes and societal and political changes. The author's knowledge of different sources is impressive, and their uses are original, such as when she cites, as evidence for the drying climate, literary descriptions of landscape, owl pellets from tombs, the shifting role of the god Seth, a causeway immersed in sand and boreholes in the Nile Valley. Each data set, however, requires critical analysis which is not provided; if it were, it would create a considerably less succinct book. For example, well known textual sources are cited as evidence, a procedure which has a long and problematic history in Egyptology and requires much critical evaluation. For a current summary of the debate see T. Schneider.<sup>7</sup> The causeway at Dahshur leading from the harbor basin to the valley temple of King Snofru is discussed and shown in figure 5.1. It is described as a tunnel, but it was not constructed as such. It was originally an open causeway, which, in a second construction phase in the late Old Kingdom, was covered by a vault, thus transforming it into a covered causeway. This happened, most likely, as a reaction to the encroaching sand. Ultimately, the entire causeway was submerged in sand and thus transformed into a tunnel – a process which supports the author's arguments. Most interesting, here and throughout the book, is the presentation of genuine geographic data, such as the information gained by individual grains of sand, which, under the microscope, show specific traces that tell the story of their transportation, whether by air or by water (fig. 5.2). What remains is the challenge of linking the individual grain of sand to major historic developments.

Ch. 6: 'Islands in the Nile' emphasizes the important role of islands in the Nile for settlements and as areas to build temples. Islands are, somewhat surprisingly, rather stable places. While they may no longer be an island after about 100 years, and instead become attached to one side of the Nile, other areas adjacent to the Nile were more vulnerable to erosion or silting up. The most famous case study illustrating this is the great temple of Karnak in Thebes, which today lies on the east bank of the Nile, about 500 m removed from its shore, but it was originally founded on an island. This chapter also discusses the lateral migration of the Nile, a topic that, of late, has become a focus of research. A well-known illustration (fig. 6.2), based on a model generated by K. Lutley and originally published by her and the author in 2008, is reproduced here. It shows the possible migrations of the Nile in the Memphite region and to its north and south as a jumble of lines. No image better captures the dynamics of the Nile in one picture. While the vertical aggradation of the

<sup>3</sup> E. Earl, *The Lake of Abusir, Northern Egypt* (Cambridge, 2010).

<sup>4</sup> W. Toonen, M. Odler, K. Arias, J. Krejčí, V. Brůna, M. Bárta, and H. Willems, 'Short contribution on the past desert edge landscape at (Lake) Abusir, Egypt', *PES* 25 (2020), 103–10.

<sup>5</sup> H. N. Dalfes, G. Kukla, and H. Weiss (eds), *Third Millennium BC Climate Change and Old World Collapse: Proceedings of the NATO Advanced Research Workshop on Third Millennium BC Abrupt Climate Change and Old World Social Collapse, Held at Kemer, Turkey, September 19–24, 1994* (Berlin, 1997); H. Weiss (ed.), *Megadrought and Collapse: From Early Agriculture to Angkor* (Oxford, 2017).

<sup>6</sup> F. Hassan, 'Nile floods and political disorder in early Egypt', in H. N. Dalfes, G. Kukla, and H. Weiss (eds), *Third Millennium BC Climate Change and Old World Collapse: Proceedings of the NATO Advanced Research Workshop on Third Millennium BC Abrupt Climate Change and Old World Social Collapse, Held at Kemer, Turkey, September 19–24, 1994* (Berlin, 1997), 1–23.

<sup>7</sup> T. Schneider, "'What is the past but a once material existence now silenced?': The First Intermediate Period from an epistemological perspective', in F. Höflmayer (ed.), *The Late Third Millennium in the Ancient Near East: Chronology, C14, and Climate Change* (OIS 11; Chicago, 2017), 311–22.

Nile floodplain by sedimentation is roughly calculated at 1 m/millennium, the lateral migration is strikingly greater: generally, 2000 m/millennium, with a maximum of 9000 m/millennium. The effects of the migration of the Nile are discussed for the shifting of the head of the entire Delta, as well as in a case study showing the river's migration in Middle Egypt from Hermopolis east to Antinopolis.

Ch. 7: 'The Flood and the New Delta' focuses on the Delta, a region from which we continue to have much less data than from the Nile Valley. It seems thus very suitable to use a model to better understand the development of the Delta. Such a model, based on the work of B. Pennington, et al.,<sup>8</sup> suggests initially a period of 'large-scale-crevassing', that is, a denser network of interconnected waterways allowing widespread distribution of settlements, which came to an end around 2000 BC. This is followed by the 'consolidated delta' (figs 1.2, 7.4) which is characterized as a 'meandering delta', with a reduction in branches and therefore a different distribution of settlements. Larger settlements form at nodes, while those parts of the central Delta not supplied by branches suffer from a lack of food resources. This is extremely intriguing, but as little of it can be backed up by data, it ultimately awaits verification. The trend of the reduction of Nile branches is clearly correct, a process which led to the diminution to two branches by around 1000 AD, which is still the case today. But this process was not linear, and one may question the usefulness of the model, as it smooths over and thus possibly conceals crucial intermediary steps. New data for the northwestern Delta, for example, provides evidence for a late 'large scale crevassing' phase, which was the basis for wide-spread settlement in Ptolemaic–Roman times,<sup>9</sup> most likely the first time that this region was settled so intensely. What remains unclear is the extent of human intervention in these developments. When settlements are founded which are not linked to the necessary freshwater access via the Nile, such a link is created by artificial canals, as is the case in Alexandria. This is most likely the more important source of water than the fossil water stored in ancient beach ridges. The lagoons, marshes, and salt pans of the Delta are described as an area under the control of the Asiatics from the end of the Old Kingdom until the New Kingdom. Evidence for an Asiatic population only exists for the late Middle Kingdom and Second Intermediate Period, and only in the northeastern Delta. The suggested presence of Asiatics at the end of the Old Kingdom is based entirely on literary sources, which, with only rare, but indeed well-argued, exceptions,<sup>10</sup> are today not seen as a basis for historic reconstructions.

<sup>8</sup> B. T. Pennington, J. Bunbury, and N. Hovius, 'Emergence of civilization, changes in fluvio-deltaic style, and nutrient redistribution forced by Holocene sea-level rise', *Geoarchaeology* 31:3 (2016), 194–210.

<sup>9</sup> A. Ginau, R. Schiestl, and J. Wunderlich, 'Integrative geo-archaeological research on settlement patterns in the dynamic landscape of the northwestern Nile delta', *Quaternary International* 511 (2019), 51–67.

<sup>10</sup> K. Jansen-Winkel, 'Der Untergang des Alten Reichs', *Orientalia* 79 (2010), 273–303.

Ch. 8: 'Renewed Strength in the South: The rise of Thebes (Karnak) and management of the minor channels of the Nile' focuses on water management techniques employed in the New Kingdom. Minor channels serve as harbors, and new temples are laid out within strategically blocked old channels. In the case of Memphis (fig. 8.6), the space gained from infilled defunct channels was used to lay out the huge new temple compounds.

Ch. 9: 'High Tides of Empire: The New Kingdom to the Roman Period – Development of large-scale water management' presents various case studies for landscape design. In the New Kingdom at Gurob, water was diverted in order to create a branch reaching a new settlement, palace and temple, and at Malqata, a channel was constructed as a connection to the huge reservoir of Birket Habu. High global temperatures, which coincide with the New Kingdom and the Roman Period, are cited as reasons for the expansion of successful empires. A milder climate is linked to increased mining activity in the New Kingdom and the Roman Period, and the Roman city dwellers are said to have flourished due to an abundance of food and new produce, again linked to a milder climate. These causal links seem somewhat reductive. How New Kingdom military activity and success was affected by warmer climate and why a warmer desert encouraged more activity there, is difficult to understand. The Romans are presented as to have 'arguably finally attained mastery of the Nile' (p. 124). Roman accomplishments are undisputed, but it also seems somewhat odd to reach such a conclusion following, at that point, over 3000 years of most successful Egyptian water management history. One could argue that it is the ample Roman sources and the more accessible physical traces from the Roman era which may favor the Roman evidence for water management.

Ch. 10: 'From Coptic to Islamic Times: A well-documented movement of the Nile from Al-Fustat through Babylon' credits Roman innovations in the management of the Nile as establishing the patterns which persisted until the twentieth century. Did Romans not build on patterns established by Pharaonic Egypt? Examples of that are provided throughout the book. Little data on water management from Islamic and Medieval Egypt is discussed, making it difficult to assess the veracity of the claim that no new patterns emerged post-Roman Period. As one example, for Mamluk irrigation, the Zinnar basin in Middle Egypt is cited. The shifting centers of Cairo, starting with Fustat, are linked to the shifts of the Nile.

Ch. 11: 'Modern Changes to Egypt: Dams and Irrigation: Can we ever control the Nile?' finally reaches the period from the new phase in irrigation initiated under Muhammad Ali in the nineteenth century until the recent schemes to reclaim land under the pressure of a rapidly expanding population. This is followed by an appendix of eleven pages length, providing a useful introduction to landscape interpretation tips. This covers reading satellite images, a history of augering, the types of sediments found in Egypt, and brief sections on windblown sand, *sebakh* and pottery series dating. An Egyptological audience would certainly profit from expanding this chapter in length and depth. Finally, a glossary provides explanations for a selection of geographic, archaeological and Egyptological terms. This may be a good indicator of the intended audience: both geographers and

Egyptologists. Again, Egyptologists would presumably appreciate more geographical terms explained, such as, for example, oxbow lake, or capture (in a fluvial context), which are used in the book.

Egyptologists, in particular those working or planning to work in the field in Egypt and trying to better grasp the methods and potentials of geoarchaeological fieldwork will profit from this book. Those already involved in geographic questions will, at times, wish that the geographic data were discussed in more detail. Numerous references are made to unpublished dissertations (e.g. T. Duckworth, D. Dufton, E. Earl, L. Pryer, and Y. Quin) which would provide more data – one can only strongly hope that these works are made accessible in some form, as is the case with the highly valuable work of P. Gonçalves and B. Pennington, which can be downloaded online.<sup>11</sup> The volume is richly illustrated, with 90 figures and black and white photographs distributed throughout. This book bridges the chasm between the natural sciences and humanities. It does so in a way most beneficial for both sides, providing an introduction to history and archaeology as well as the basics of geophysical methods. The language is accessible and the enjoyable style of writing neither intimidates nor talks down to either side.

Corrections: On p. 39 the author misstates the length of the entire Nile as 2,700 km (this includes only Sudan and Egypt; from south of the Equator it is around 6,825 km). On p. 40 the width of the Nile Valley is described as ‘no more than 12 km wide’, later, on p. 82, as ‘in some places the Nile floodplain is up to 10 km wide’. Actually, in Middle Egypt, the Valley is twice that width, around 20 km. On p. 63, when discussing Old Kingdom monuments in the Memphite region, 120 large pyramids are listed. This number is way too high. There are roughly 40 known large pyramids in this region, including incomplete ones and those of the Middle Kingdom. On p. 82, the dry season is described as generally from early May to early September. With the Nile flood starting in June, part of this falls into the season of flooding. On p. 101, interventions into the waterways of the Delta are discussed as an initiative of Nasser in the 1930s. Nasser, who was born in 1918, did not come to power in Egypt until the 1950s. Large-scale interventions into the waterscape of the Delta, however, clearly predate him and reach back to the nineteenth century.

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<sup>11</sup> P. M. Lourenço Gonçalves, *Landscape and Environmental Changes at Memphis During the Dynastic Period in Egypt* (PhD thesis, University of Cambridge; Cambridge, 2019) <<https://doi.org/10.17863/CAM.35048>> accessed 26.07.2021; B. Pennington, *Environmental Change in Deltaic Settings and the Emergence of Civilisation: A Study in Palaeolandscape Reconstruction Focusing on the mid-Holocene Nile Delta* (PhD thesis, University of Southampton; Southampton, 2017) <<http://eprints.soton.ac.uk/id/eprint/424723>> accessed 26.07.2021.