OXFORD

OXFORD STUDIES ON THE ROMAN ECONOMY

TRIANGULAR LANDSCAPES

Environment, Society, and the State in the Nile Delta under Roman Rule

Katherine Blouin

OXFORD STUDIES ON THE ROMAN ECONOMY

General Editors
Alan Bowman Andrew Wilson

OXFORD STUDIES ON THE ROMAN ECONOMY

This innovative monograph series reflects a vigorous revival of interest in the ancient economy, focusing on the Mediterranean world under Roman rule (*c.*100 BC to AD 350). Carefully quantified archaeological and documentary data will be integrated to help ancient historians, economic historians, and archaeologists think about economic behaviour collectively rather than from separate perspectives. The volumes will include a substantial comparative element and thus be of interest to historians of other periods and places.

Triangular Landscapes

Environment, Society, and the State in the Nile Delta under Roman Rule

KATHERINE BLOUIN

OXFORD
UNIVERSITY PRESS

OXFORD
UNIVERSITY PRESS

Great Clarendon Street, Oxford, OX2 6DP,
United Kingdom

Oxford University Press is a department of the University of Oxford.
It furthers the University's objective of excellence in research, scholarship,
and education by publishing worldwide. Oxford is a registered trade mark of
Oxford University Press in the UK and in certain other countries

First Edition published in 2014

Impression: 1

Published in the United States of America by Oxford University Press
198 Madison Avenue, New York, NY 10016, United States of America

British Library Cataloguing in Publication Data
Data available

Library of Congress Control Number: 2014941327

ISBN 978–0–19–968872–2

Printed and bound by
CPI Group (UK) Ltd, Croydon, CR0 4YY

OUP and the author would like to thank the Institut français d'archéologie orientale (IFAO)
for the use of fonts Ifao N Copte, Ifao grec unicode, and IFAO Grec Exposant.
We would also like to thank Jonathan Perez for Ifao n Copte
and Jean-Luc Fournet/Ralph Hancock for the Greek fonts.

So we beat on, boats against the current, borne back ceaselessly into the past.

F. Scott Fitzgerald, *The Great Gatsby*

Pour Mamizabelle, Ella Hermon
et Martine Dumais
Gratias ago

Acknowledgements

This book is a revised and updated version of my Ph.D. dissertation, which I defended in 2006 in the context of a *cotutelle de doctorat* between the Université Laval and the Université de Nice Sophia Antipolis. I am greatly indebted to my two wonderful supervisors, Ella Hermon and Pascal Arnaud, for providing me with invaluable guidance and constructive criticism, and for introducing me to environmental history and multidisciplinary work. Their passion, rigour, erudition, and kindness act as a constant source of inspiration in my life. I also wish to thank the Université Laval's Département d'histoire and Faculté des études supérieures, as well as the Université de Nice Sophia Antipolis' École doctorale lettres, arts, sciences humaines for their institutional support. This project also benefited from several research stays at the Institut français d'archéologie orientale du Caire, as well as from my participation in the 2006 Summer Seminar of the American Society of Papyrologists, which took place at Columbia University under the direction of Roger S. Bagnall.

The Mendesian trail was first suggested to me by Joseph Mélèze-Modrzejewski. I still vividly remember that afternoon of 2003 when he gave me a homemade photocopy of page 577 from Montevecchi's *La Papirologia*. The page listed more recently published archives, and he had made a mark next to the following entry:

> 18. *Archivi carbonizzati di Thmouis*, capoluogo del nomo Mendesio: documenti in varie collezioni d'Europa, particolarmente a Firenze e a Parigi. *Le papyrus Thmouis 1, colonnes 68–160* édité par Sophie Kambitsis, Paris 1985. Sono registri di tasse dell'età di Marco Aurelio, in un periodo di crisi e di spopolamento per le violenze, la peste, e l'*anachoresis*.

The inquisitive spark this short paragraph lit in my mind has kept me busy and captivated for a decade now.

To use a timely agricultural metaphor, the seed of this book was sown in 2008 at the University of Toronto, during a coffee break conversation with my colleague Michel Cottier. It soon sprouted after Alan K. Bowman and Andrew Wilson expressed their interest in publishing my work in their OSRE series. Thanks in great part to

their generous investment of time and energy, this project is now coming into full bloom. For this, I am deeply grateful to both of them.

Although historical research and writing can feel at times like a dreary, solitary endeavour, I like to believe I belong to a wider intellectual community that seeks knowledge through doubt rather than consensus, and through conversations rather than monologues. It is with this ethos in mind that I pay tribute to the mentors, colleagues, and friends who have demonstrated an interest in my Mendesian work over the years: Jean Andreau, Jean-Jacques Aubert, Roger S. Bagnall, Thibaut Boulay, Malcolm Choat, Sylvain Dhennin, Åke Engsheden, Christian Förstel, Jean-Luc Fournet, Jean Gascou, Valérie Giffard, Jean-Philippe Goiran, John Hodgson, Micaela Langellotti, François Lerouxel, Béatrice Le Teuff, Philippe Leveau, Robert Littman, Roberta Mazza, Juan Carlos Moreno García, Nicolas Michel, Andrew Monson, Christophe Morhange, René Morissette, Gregory Mumford, Paul-Hubert Poirier, Anne-Valérie Pont, Dominic Rathbone, Donald B. Redford, Bérangère Redon, Maurice Sartre, Jay Silverstein, Claire Somaglino, Jean-Daniel Stanley, Joshua Trampier, Yann Tristant, Herbert Verreth, and the two anonymous referees of my manuscript. By engaging in stimulating discussions, providing me with complementary—and sometimes unpublished—data, and reading preliminary versions of my work, they have considerably nourished my thoughts. Special thanks ought to be addressed to Alan K. Bowman, Girish Daswani, Regina Höschele, and Rachel Mairs, who painstakingly perfected my English translation; to Dimitri Nakassis, who meticulously and enthusiastically helped me redesign the maps of the nome; to Alexander Kirby, doctoral student at the University of Toronto, as well as to Hilary O'Shea, Kizzy Taylor-Richelieu, Annie Rose, Heather Watson and Alex Johnson from Oxford University Press, for their precious assistance during the editing process.

These acknowledgements wouldn't be complete without a few words for the University of Toronto, which has been my academic home since 2008. Both my colleagues and the administrative staff from the two departments I am appointed to—the undergraduate department of Historical and Cultural Studies at UTSC and the graduate department of Classics in the St George campus—have provided me with a welcoming, supportive, and stimulating working environment. My thoughts go in particular to my past chairs, William Bowen and Alison Keith, as well as to my current chairs, Daniel Bender and Christer Bruun. I am also very grateful to my students, who force

me to keep my academic feet on the ground and fuel me with their cosmopolitan energy and curiosity.

The preparation of this book coincided with a period of international restructuring marked by the 2008 global financial crisis and the ensuing collapse of several European economies, the concomitant and ongoing rise of right-wing conservatism worldwide, and the so-called 'Arab Spring', which included the Egyptian Revolution and inspired the Occupy Movement, Idle No More, and, in my homeland of Québec, the 'Printemps Érable'. While it would be utterly wrong to see history as a predictive science, I humbly hope that beyond their historical value, the issues discussed in this book may also act as a plea for diversity and tolerance, more sustainable environmental and socio-economic policies, as well as the promotion of traditional 'savoirs' and 'savoir-faire' regarding local environments. May they also be a token of my deep attachment to and respect for Egypt, its people, its landscapes, and its unfolding history.

Finalement, ce projet n'aurait jamais pu aboutir sans le support de mes proches: ma belle-mère, dont le thé à la cardamone fait maison m'a permis de terminer ce livre sous les meilleurs auspices; mes amis, dont la loyauté à l'épreuve du temps et des distances ne cesse de me toucher; ma famille qui, pour paraphraser mon père, est depuis toujours mon indéfectible armée; enfin, mon conjoint Girish, à qui je rends hommage pour son intelligence vive, son humour sans pareil, sa patience et son affectueuse présence au quotidien. A vous tous, un immense merci.

Contents

List of Figures

List of Tables

List of Maps

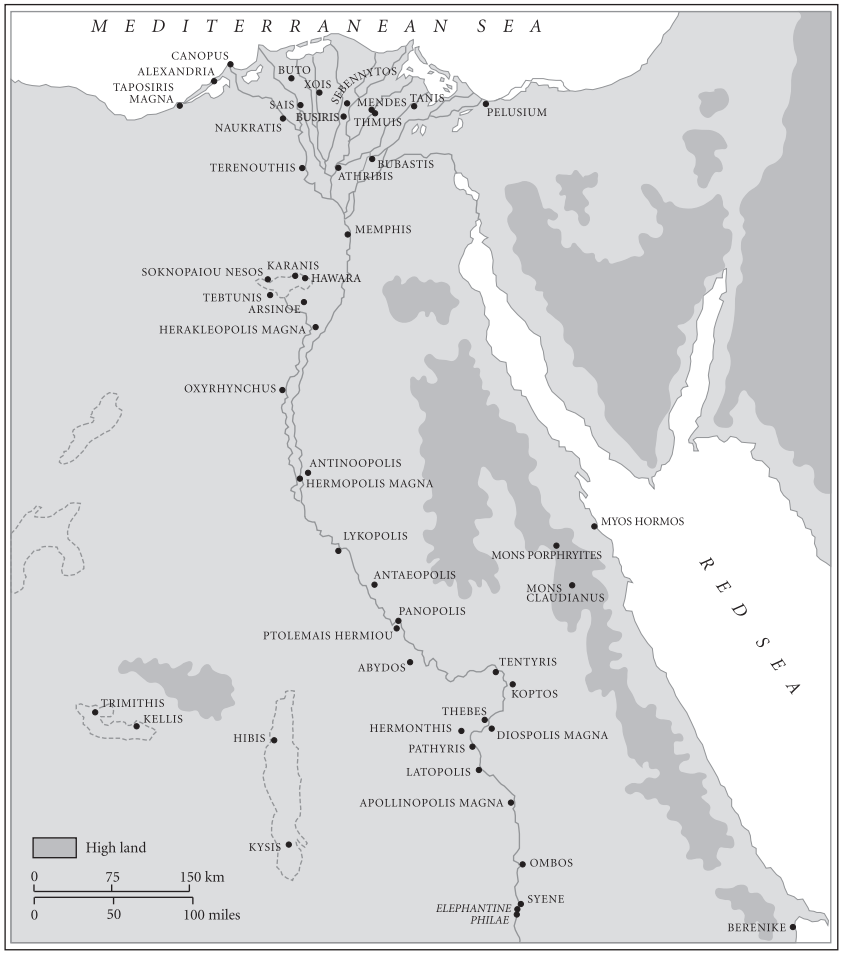
Notes for Readers

TRANSLITERATION AND TRANSLATION

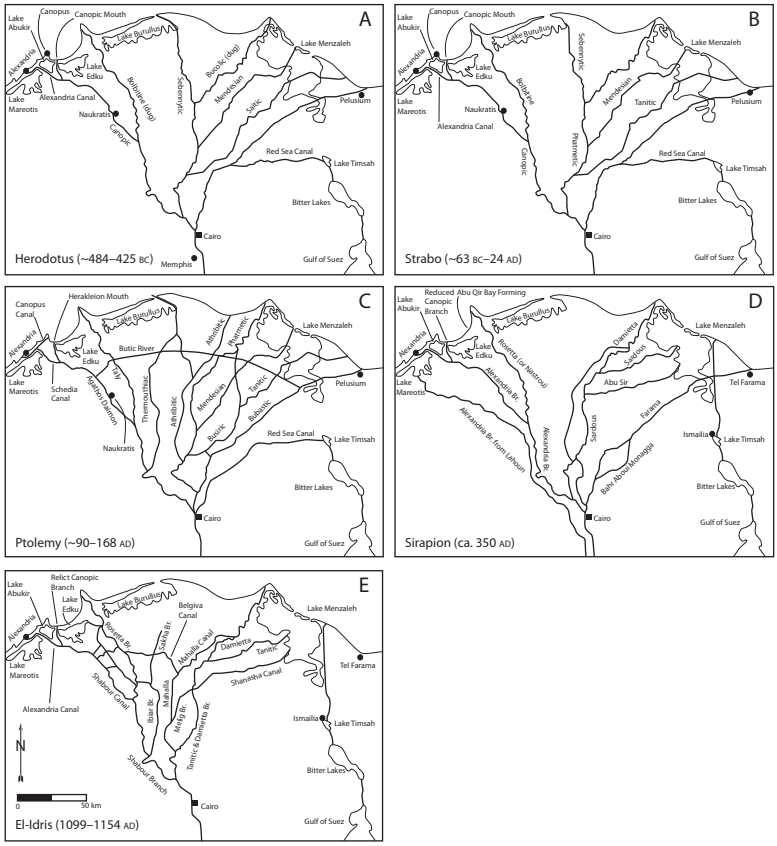
In order to make this book more accessible to a wider readership, I have transliterated all the Greek words that appear in the main text. I have used respectively ē and ō to render the letters *heta* and *omega* and distinguish them from *epsilon* and *omicron*. I have made an exception only in the case of words that are customarily anglicized by scholars (Mendes, Zenon). The original Greek text is only provided in the case of quoted papyri and of technical terms or expressions that are discussed in the text. Lacunas are rendered with normal dots in transliteration, and with infralinear dots in the Greek text. Furthermore, given that almost all toponyms are of Egyptian origin and that Egyptian accentuation rules still elude us, I have preferred not to accentuate these words (Clarysse 1997 and Falivene 1998: xv). In the case of quoted Greek passages from the carbonized archives from Thmuis, I have however kept the accentuation that figures in the *editio princeps*. Literary texts are accessible in their original language in scholarly editions as well as, for Greek and Latin texts, on *Perseus* (<http://www.perseus.tufts.edu/hopper/collection?collection=Perseus:collection:Greco-Roman> (accessed 16 May 2014)). Egyptian words have been transliterated using the Unicode-converted IFAOtimes font (<http://www.ifao.egnet.net/publications/outils/polices/> (accessed 16 May 2014)).

ABBREVIATIONS

The system of abbreviations used for editions of papyrological texts is that of the Web edition of the *Checklist of Greek*, *Latin*, *Demotic and Coptic Papyri*, *Ostraca and Tablets* (J. F. Oates et al. ed., <http://scriptorium.lib.duke.edu/papyrus/texts/clist.html> (accessed 16 May 2014)). Abbreviations used for ancient literary texts follow the system used in the third edition of the *Oxford Classical Dictionary*.

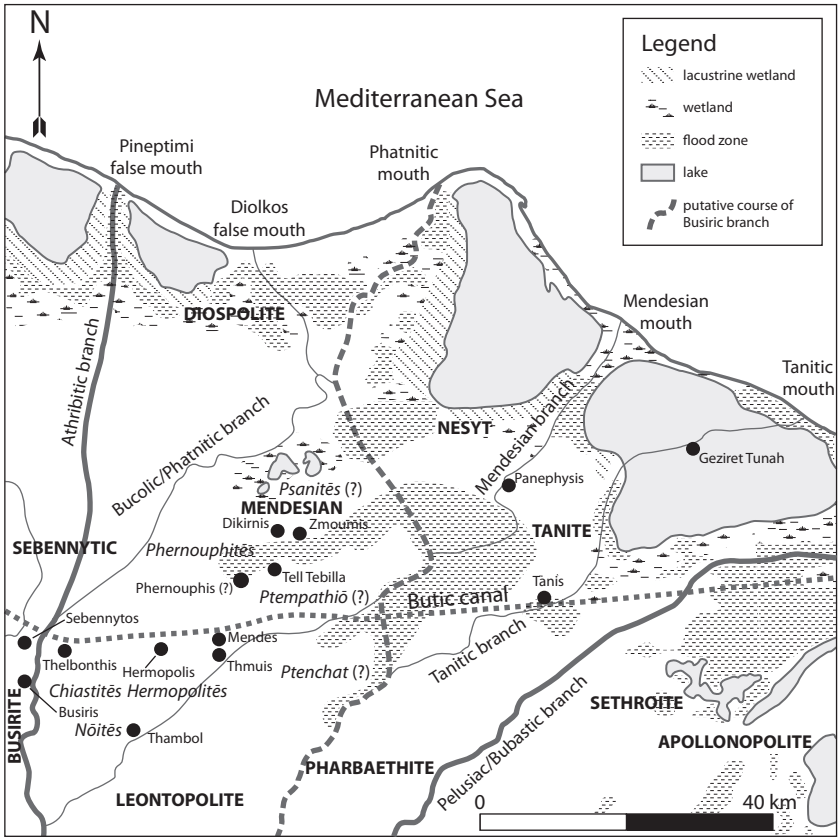


Map 1. Egypt in the Roman Period

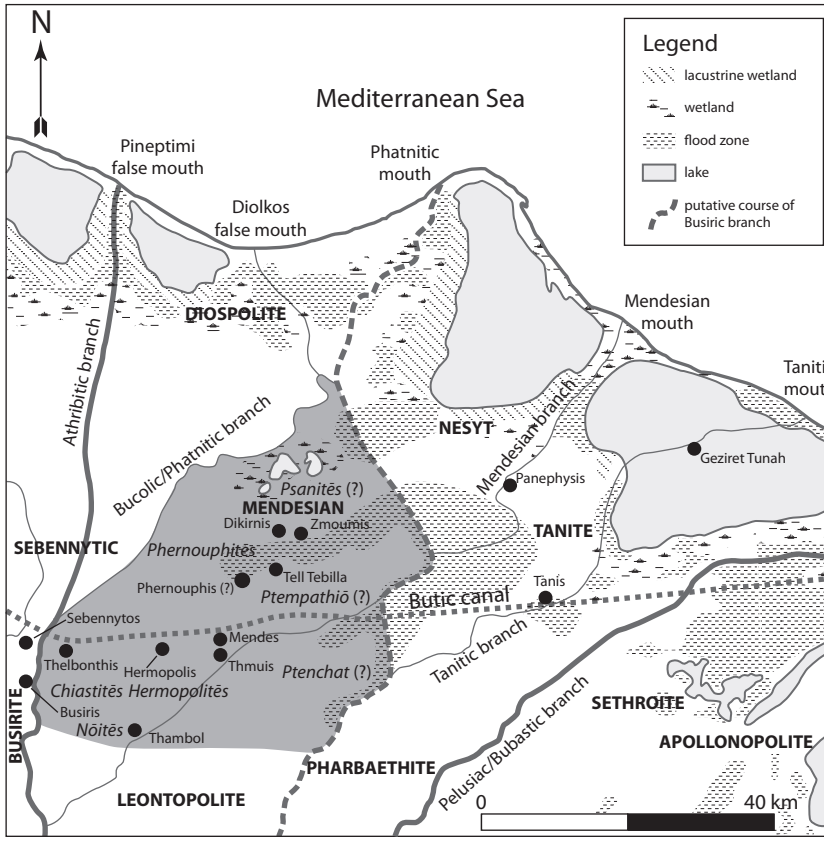


Map 2. The hydrography of the Nile Delta according to Herodotus (A), Strabo (B), Ptolemy (C), Sirapion (D), and El-Idris (E)[1]

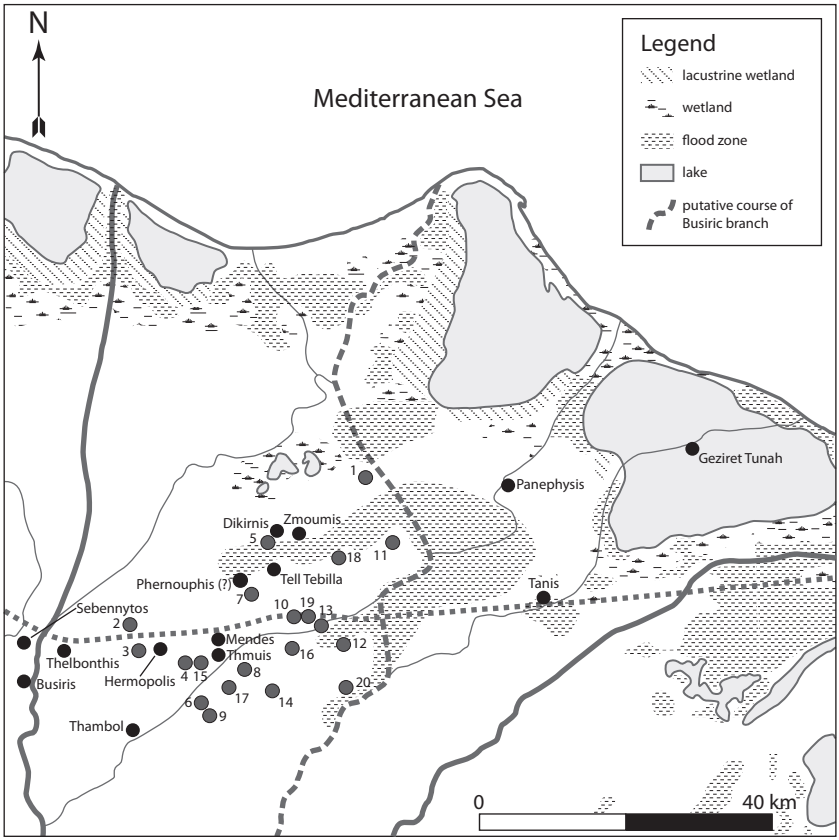
[1] From Stanley, Warne, and Schnepp 2004 (modified version of the maps provided in Toussoun 1926). (© K. Blouin and D. Nakassis)



Map 3. The Mendesian Nome in Roman times (© K. Blouin and D. Nakassis)



Map 4. The Mendesian Nome in Roman times (with borders) (© K. Blouin and D. Nakassis)



Map 5. Distribution of archaeological sites in the area of the Mendesian Nome (© K. Blouin and D. Nakassis)

1. Berimbal
2. Bilgai
3. El-Urman
4. Mit Gharita
5. Mit Rumi
6. Kom el-Hamam
7. Kom el-Taalib
8. Kom Milis
9. Taranis el-Arab
10. Tell aziza
11. Tell Buweib
12. Tell Diab
13. Tell ed-Dahab
14. Tell el-Ghafir
15. Tell el-Humar
16. Tell el-Khirba
17. Tell el-Qutat
18. Tell el-Tarha
19. Tell el-Thufiya
20. Tell Geziret el-Faras

Introduction

> Bien poser un problème
> n'est pas le supposer d'avance résolu.
>
> André Gide, *L'immoraliste*

The starting point of this book is a hydrographical observation: that of the major reorganization of the Nile Delta, which took place between the turn of the era and the ninth century AD. During this period, the Delta went from consisting of seven branches to two, namely the current Rosetta and Damietta branches.[1] In other words, between the Roman annexation of Egypt and the Arab period, five of the seven branches known in antiquity silted up, completely or enough not to be considered river beds anymore. For historians, this may look like a slow process, but on a geomorphological scale, it is a rather fast one. How did human action contribute to the hydrographical reorganization of the Nile Delta? How did it happen? Why did this process start around the Roman period? And did it impact (if so, how) on ancient Deltaic communities? Such global questions command local investigations. This book, which focuses on a district of the north-eastern Delta called the Mendesian Nome, aims at reflecting on these questions through a local perspective.

The damp climatic conditions and high population density that prevail in the Nile Delta have always been and are still detrimental to the conservation of ancient remains. For this reason, scholars have traditionally neglected this region, focusing instead on the better documented—and often more spectacular—sites of the Nile Valley

[1] Ball 1942; Bernand 1970; Bietak 1975; Butzer 1976: 22–5; Said 1993; Stanley and Warne 1998; Toussoun 1922.

and Fayum oasis.[2] This led to an unfortunate historiographical paradox, whereby our ignorance of ancient Lower Egypt does not match the socio-economic, political, and agrarian importance of this region, to which Egypt's founding myths and Egyptian, Greek, and Latin sources testify.[3]

The calls for urgent action voiced at the conferences *L'égyptologie en 1979. Axes prioritaires de recherche* and *The Archaeology of the Nile Delta*[4] led to a multiplication of archaeological excavations in the Nile Delta in the 1980s.[5] These projects gave rise to an increasing number of local studies,[6] which complement the available Hellenistic and Roman papyri and inscriptions from the region.[7] These works have allowed prehistorians and Egyptologists to date the occupation of the Nile Delta to well before the fifth millenium BC,[8] and to assert the region's economic and religious importance from, at least, the Old Kingdom (*c.*2686–2160 BC) on.[9] Recent scholarship has also

[2] See Redon 2007: 17–25.
[3] Watrin 2003; Yoyotte 1958b; Zivie 1975: 15.
[4] Van den Brink 1988.
[5] See Bietak 2009.
[6] In addition to André Bernand's and Jean Yoyotte's pioneering work (see bibliography), these include: Leclère 2008; Razanajao 2006; Redon 2007; Trampier 2010; Tristant 2006. See also *Dossiers d'archéologie* 213 (1996), as well as Penelope Wilson's online *Western Delta Regional Survey*, the *Egypt Exploration Society's* (EES) *Delta Survey*, and the Egyptian Supreme Council of Antiquities' *Geographic Information System* (both online). Further, many Deltaic sites are the subject of a growing bibliography. It is notably the case, from west to east (with selective bibliography), for Taposiris Magna and Plinthine (Boussac 2009; Tronchère 2010); Alexandria (Empereur 1998; Goddio and Fabre 2008; Robinson and Wilson (eds) 2010); Canopus, Heracleion, and the Abukir Bay (Stanley 2004; Stanley, Goddio, and Schnepp 2001); Nelson Island (Gallo 2001); Beheira (Kenawi 2010; 2011; 2012); Kom Firin (Spencer 2004; 2008; 2009); Naucratis (Bresson 2005; Coulson 1981; 1996; Möller 2000); Terenouthis (Dhennin 2009; 2011); Sais (Wilson 2006; 2011); Bouto (Ballet 2011; DAI 2011); Athribis (Sztetyłło-Myśliwiec 2000; Vernus 1978); Hermopolis Parva (Zivie 1975); Tell el Balamun (Spencer 2003; 2011); Mendes (Redford et al. 2004; 2009; 2010a and b; Swan Hall and Bothmer (eds) 1976; 1980; Wilson 1982); Avaris (Bietak 1975; 1996; Rehucek 2008 for exhaustive bibliography); Tanis (Brissaud and Zivie-Coche 1998; 2000; Zivie-Coche 2004); Migdol (Valbelle 1995; Valbelle and Carrez-Maratray 2000; Valbelle and Nogara 2000); Pelusium and the eastern edge of the Delta (Carrez-Maratray 1999); Tell el-Mashkuta = Pithom (Holladay 1982).
[7] These include a hieratic papyrus from Heliopolis (Meeks 2006), carbonized papyri from Bubastis (Frösén and Hagedom 1989; Hagedorn and Maresch 1998), Tanis (Chauveau and Devauchelle 1996), and Thmuis (Kambitsis 1985; Martin 1967), as well as funerary inscriptions from Terenouthis (Abd el-Al, Grenier, and Wagner 1985; El-Nassery et al. 1978; Hooper 1961; Wagner 1978) and non-funerary inscriptions from Alexandria (E. Bernand 2001). Numerous inscriptions are also published in Kayser 1994, Carrez-Maratray 1999, and Milne 1905.
[8] Tristant 2006; 15–17.
[9] See also on the matter Burghouts 1988; Yoyotte 1958b.

documented the close links, which existed from a very early stage, between the region, the Near East, and the Greek world, hence improving our understanding of Egypt's role within ancient Near Eastern geopolitics.[10] In spite of these developments, however, the historical value of the evidence coming from or related to the Nile Delta remains to this day largely unexplored. Yet the potential of the available data is great. This is especially true, when it comes to the Roman period, of the sources related to the Mendesian Nome.

During most of antiquity, the Mendesian Nome, a district located in the north-eastern Nile Delta, was traversed by the Mendesian branch of the Nile. This fluvial tributary, which apparently started silting up in the Hellenistic period, disappeared at some point in Roman times. The nome, which borders part of modern Lake Menzaleh, was also rich in marshy zones and had direct access to the Mediterranean. Such features allowed for the development of a variety of food production and industrial activities that, together with the nome's strategic maritime and fluvial location, made Mendes one of the most prosperous commercial and religious cities in the Delta, and even, under the 29th dynasty (399–380 BC), the capital of Egypt.[11]

The Mendesian Nome is documented by archaeological, literary, and papyrological evidence. To date, three sites have been excavated: Mendes, Thmuis, and a Pharaonic harbour site known as Tell Tebilla. Overall, the structures and numerous artefacts found *in situ* date essentially from the Predynastic to the Hellenistic period. The digs carried out at Mendes (especially in the area of the ancient harbour and of the sacred lake) and Thmuis illuminate the evolution of the city's hydrographical environment from the Pharaonic to the end of the Hellenistic period. They also document the political and socio-cultural history of the Mendesian capitals, including their multicultural profile. Literary testimonies cover a period from the fifth century BC to the fifteenth century AD; they are mostly written in Greek, but also in Latin, Coptic, and Arabic. The works of Herodotus, Strabo, and Ptolemy are especially precious, for they are, together with palaeo-environmental data, our main sources on the evolution of the Deltaic hydrology from the Late Period to the Roman Principate. Ancient authors also mention or discuss the hydrography, administrative

[10] Bietak 1975; Carrez-Maratray 1999; Coulson 1996; Redford 1994; Tristant 2006, 10–13; Watrin 2003.

[11] Grimal 1988; Redford et al. 2004; 2005; 2009; 2010a.

geography, economy, and cults associated with the nome, and more specifically with its two successive capitals.

The Mendesian Nome is also one of the very few Deltaic zones documented by a significant papyrological corpus. Overall, it covers a period spanning from the third century BC (Zenon archive) to the sixth century AD (*P.Oxy*. XXXIV 2732), with most documents dating from the first and second centuries AD. Most papyri belong to the carbonized archives from Thmuis (CAT). These archives were found in Thmuis, the Roman metropolis of the nome. They contain fiscal reports, land surveys, and tax arrears registers dating from the end of the second to the beginning of the third century AD. Other papyri—both administrative and personal documents—found elsewhere also deal with the nome.[12] To date, this documentation has never been subject to a comprehensive study. Yet it provides us with a wealth of information on the region's landscape (topography, hydrography), administrative geography, agrarian economy, land tenure, and communication networks.

More specifically, the CAT document three phenomena that are of particular interest for the purpose of this study: the gradual transfer of the nome's metropolis from Mendes to Thmuis, the contemporary massive depopulation of many of the nome's villages, and the *Boukoloi* uprising, which, apart from the short-lived Theban revolt of 29 BC, is the only indigenous revolt of significance in Roman Egypt. The decline of Mendes and rise of Thmuis can be linked to both the migration and marginalization of the Mendesian branch of the Nile—which literary, archaeological, and topographical data attest to—and the changing cultural profile of the city. The exact timeline and the specific socio-economic and cultural implications of this phenomenon remain, however, largely unknown to us. The rural depopulation and the rebellion must be seen as both symptoms and aggravating factors of the socio-economic crisis affecting the nome—and possibly a wider portion of the Delta—in the second half of the second century AD. If the exact causes of the *Boukoloi* uprising remain unknown, *P.Thmouis* 1 holds *anachōrēsis* (land desertion), an epidemic (possibly the Antonine plague), and the 'impious Nikōchites' responsible for the nome's depopulation. Considering the environmental context of the period,

[12] See Appendix 1.

it is worth wondering how socio-politico-environmental dynamics contributed to the development of this crisis.[13]

Over the past twenty years, on the heels of the emergence of environmental history, the topic of agrarian practices has been of rising interest among historians and archaeologists of the ancient Mediterranean,[14] and notably of Roman Egypt. In addition to Schnebel's 1925 study of agriculture in Hellenistic Egypt, we now benefit from the results of several regional,[15] diachronic,[16] and quantitative[17] studies. These deal with a variety of issues such as local environments and micro-ecologies, population and settlement patterns, water management and food production, agrarian and fiscal policies, landscapes, and religion.

On this matter, the complexity of Roman Egypt's legal and fiscal structure and the rigour of the Roman fisc—which documentary papyri from this period abundantly testify to—have traditionally been understood as attempts to enhance the province's economic (including agrarian) yield.[18] Accordingly, it has been suggested that Egyptian taxpayers were more oppressed under Roman rule than under any previous regime,[19] and than anywhere else in the Empire.[20] Yet, although ethno-fiscal inequities, corruption, power abuses, and overindebtedness were real issues, such phenomena are in no way peculiar to Egypt nor to the Roman period. In fact, a great deal of what seems more acute in Roman Egypt might well result from the fact that we possess more data from there and then than from any

[13] See Kemp (2006: 303): 'All macroeconomics systems represent a balance, a compromise, an uneasy truce between two forces: the urge of the state to provide itself with a secure base for its own existence and its plans, and the fragmented pressure of private demand'. Cf. also Bousquet 1996: 287; Leveau 2005.

[14] Banaji 2002; Bowman and Wilson 2013; Hermon and Clavel-Lévêque 2004; Horden and Purcell 2000.

[15] Rathbone 1991 (Arsinoite Nome); Schubert 2007 (Philadelphia); Rowlandson 1996 (Oxyrhynchite Nome); Bousquet 1996 (Western Oases); Bagnall 1997 (Kellis).

[16] Bowman and Rogan 1999; Moreno García 2005.

[17] Bowman 2009 and 2013.

[18] Bonneau 1971; Foraboschi 1988; Lewis 1988; Préaux 1983. On Roman Egypt's fiscal and liturgical system see Lewis 1997; Wallace 1969 (1938). On the *Idios Logos*' Code, see Bowman 1996: 127–8; Lewis 1999: ch. 8; Lewis and Reinhold 1990: 379–83.

[19] Huzar 1988b; Lewis 1999; 32–3 and ch. 8; Préaux 1983.

[20] Hence Eleanor G. Huzar wrote in 1988 (1988b): 'Egyptian taxes seem the more complex in the empire' and 'by the end of the first century, it was becoming evident that following Augustus' policies to their logical ends, Egypt must suffer, to feed Rome and to enrich the empire'.

other ancient region and period.[21] Furthermore, the recent 'rehabilitation' of the Ptolemaic governance model, as well as, more generally, the improvement of our understanding of pre-Roman[22] and extra-Egyptian[23] economic and administrative policies, have revealed more spatio-temporal continuities and commonalities than has traditionally been assumed. Recent scholarship has notably underlined the importance of private investments, landholding, and commerce in the economy of Roman Egypt, and shown how these features were not introduced into Egypt by the Romans, but rather *managed within* and, when needed, *adapted to* the wider geopolitical context of the Roman Empire.[24] The present study reflects on these issues through the lens of Mendesian evidence and sets Roman data into the larger chronological and environmental context from which they stem. In doing so, it investigates the complex networks of relationships between local environments, socio-economic dynamics, and agro-fiscal policies and, ultimately, poses the question of the 'otherness' of the Nile Delta, within Egypt, but also, more broadly, within the Roman Empire.

This study belongs to the field of new environmental history. Environment history emerged as a historiographical school in the 1960s. It was inspired by geographical history, the Annales school, and (in North America especially) the American ecological movement.[25] Under the influence of environmentalist discourses, some historians have advocated for either a natural determinism on human societies or, inversely, a systematic destruction of nature by humans.[26] Such

[21] See for instance Bagnall 1995; Palme 2009. Manning 2010: 52–3 comes to a similar conclusion regarding Ptolemaic sources, which have for long been interpreted as evidence of the colonial nature of the Lagid regime.

[22] Kemp 2006, chs. 4 and 7; Manning 2010, ch. 2; Monson 2012; Moreno García (ed.) 2005.

[23] The best example is without a doubt the 'Cadastre B d'Orange'; see Favory 2004. See also Kron 2012.

[24] See Bowman 2011 and 2013; Monson 2012; Rathbone 2000. This is also relevant to the question of Egypt's contribution to Rome's grain supply.

[25] Grove 2001; Myllyntaus and Saikku 2001; Shipley 1996.

[26] It is the position defended by Hughes (1994), who believes that the 'decline' of Greek and Roman 'civilizations' was the result of environmental problems. In his book, he proposes an ecologically orientated interpretation of ancient literary sources (palaeoenvironmental and archaeological data are very seldom alluded to), according to which environmental changes are systematically bad, human-induced phenomena. Further, Hughes does not take into account the diversity and complexity of Mediterranean ecosystems, nor the role of climatic and geomorphological phenomena

views, according to which contemporary ecological problems are rooted in a remote, often ancient, past, have been highly criticized for their over-schematic nature and contemporary bias.[27] In reaction to them, a 'new' environmental history has developed since the 1990s.[28] New environmental history characterizes relationships between humankind and its surroundings in term of reciprocity[29] and, for this reason, can be qualified as 'ecosystemic'[30] or 'holistic'. It considers environments to be fundamentally dynamic, multidimensional entities made up of a complex amalgam of continuities and ruptures.[31] The chief aim of new environmental history is to study interrelationships among human societies and the various components of the ecosystems in which they live and—crucially—to which they themselves belong.[32]

in environmental dynamics, nor the specific sociological and cultural contexts characteristic of ancient societies.

[27] For a critique of Hughes' approach, see Hermon 2004a and Shelton 1998. See also Beagon 1996 and Cronon 1993: 12. Rackham (1996: 20), contradicts Hughes' view of ancient 'deforestation' by arguing that the surface covered by woodlands in Greece actually grew between antiquity and today, whereas Kron 2004 criticizes the use of modern determinist theories for the understanding of agriculture and husbandry in ancient Southern Italy. For a more nuanced conception of determinism, see for instance Béthemont (1987: 24 cit.), who defends a 'not absolute but relative' determinism of Deltaic environments on human beings. Arnaud-Fassetta (2008: 9–10) and Butzer (2001) go in the same direction.

[28] In addition to *Environmental History* (formerly *Environmental Review*), *Environment and History*, and *Water History*, associations and websites dedicated to environmental history now blossom. These include the Network in Canadian History and Environment (NiCHE), the European Society for Environmental History (ESEH), the American Society for Environmental History (ASEH), the Australian and New Zealand Environmental History Network, the International Water History Association (IWHA), Kindunos (Ressources en histoire environnementale en France), as well as the Réseau universitaire des chercheurs en histoire environnementale (RUCHE). Ancient environmental history has greatly benefited from the works, colloquia, and collaborations sponsored by Ella Hermon's Chaire de recherche en interactions société-environnement naturel dans l'Empire romain (Université Laval, Canada: Hermon and Clavel-Lévêque (eds) 2004; Hermon and Bedon (eds) 2005; Hermon (ed.) 2008a; 2008b; 2009; 2010). Let us finally mention the ground-breaking, multidisciplinary contributions of French scholars belonging to the Institut des Sciences et des Techniques de l'Antiquité (ISTA), Archéorient, the Centre Camille Jullian, the Maison de l'Orient Méditerranéen, and CEREGE (UMR 6635), as well as the contributions of the Institut Català d'Arqueologia Clàssica.

[29] See Dincauze 2000: 3–19; Hermon 2004a; Horden and Purcell 2000.

[30] I am borrowing Ella Hermon's wording (2004a: 14).

[31] See Cronon 1993; 1996 (ed.); Grove 2001; Hermon 2004a; 2005; Horden and Purcell 2000; Lehtinen 2001; Myllyntaus 2001; Worster 1994.

[32] Dincauze 2000: 5–6. See also Myllyntaus and Saikku 2001.

Just as human beings should not be considered in isolation from their surroundings, it is necessary to recognize the peculiar relationships between humankind and nature and the socio-cultural dimension of environments.[33] Indeed, humankind possesses singularly advanced cognitive abilities that allow it to allocate resources for specific ends, transform natural phenomena in order to satisfy perceived needs, and develop abstract intervention strategies within its surroundings.[34] Because of such socio-cultural aptitudes, human beings are capable of interacting with abiotic and biotic environments in ways that are more visible and lasting than with any other living organism. Accordingly, the study of past environments requires us to take into account this fundamental cognitive phenomenon.[35]

Since historians study environments within which past societies evolved, an important distinction must be made between the 'humanized' components of a particular environment, what P. G. Guzzo names a 'territory', and its 'natural' ones. The latter correspond to climatic and geomorphological features whose very dynamics are independent of human actions. Territory, namely the organization of environment by human beings, shall also be distinguished from landscape, which corresponds to the tangible result of a particular environment's 'anthropization'.[36] Such terminological distinctions illuminate the different phases of the humankind–environment relationship and underline its reciprocal nature. The examination of past environments thus appears as one of the key conditions of any geographically focused historical analysis.

To reach this goal, diachronic inquiries and multidisciplinary approaches resorting to archaeology, geomorphology, climatology, and social sciences are mandatory.[37] On that matter, since the

[33] Burnouf and Leveau 2004.

[34] Butzer 1982: 32.

[35] Cosgrove 1984, ch. 1; Cronon (ed.) 1996; Halstead and O'Shea 1989.

[36] Guzzo 2002: 17, 33–7. The term anthropization comes from geography and has been widely used by French-speaking scholars in Social and Human sciences over the past twenty years. It can be defined as 'any intervention by human societies that has an impact on natural elements'. While ecology has invested the term with an idea of systematic degradation, it is generally understood as referring to all processes of 'appropriation, artificialization, and development' of space. This second, more neutral angle, is the one I adhere to (Elissalde 2005, including quotes).

[37] See on that matter Allinne 2007a; Arnaud-Fassetta 2008; Butzer 2008; 2011; Goiran, Djeghri, and Ollier 2008 (on the geo-archaeology of ancient Mediterranean harbours).

1990s, many trans-disciplinary research teams dedicated to the study of ancient Mediterranean environments have been formed, notably in North America and Europe. Their work has amply shown the scientific legitimacy, if not the necessity, of disciplinary openness in ancient history. For instance, the innovative results of recent work undertaken by French teams on the Rhône Delta (France) have led to a reconsideration of the patterns of settlements and economic activities in these areas of former Roman Gaul.[38] Other projects of the kind have been carried out elsewhere in France, as well as in Spain, Italy, Cyprus, Lebanon, and Egypt.[39] Through multidisciplinary collaborations of the sort favoured by environmental history, historians can more satisfyingly grasp the complexity with which past societies evolved and the short-, middle-, and long-term consequences of these evolutions.[40] For this reason, the present study will incorporate available geo-archaeological evidence on the evolution of the Deltaic hydrology.

The book is divided into four parts. Part I anchors Roman Mendesian data into the broader hydrological, documentary, and

[38] Allinne 2007b; 2009; Allinne and Bruneton 2006; 2008; Allinne and Leveau 2002; Arnaud-Fassetta et al. 2000; Arnaud-Fassetta 2002; 2008; Bruneton et al. 2001; Colas 2004; Leveau 1995; 2000; 2004a.

[39] France: Allinne, Bruneton, and Leveau 2006; Berger, Fiches, and Gazenbeek 2004; Bertoncello 2006; Leveau 2004b; 2007; Morhange, Laborel, and Hesnard 2001; Provansal, Bertoncello, and Gili 2006. Spain: Leveau 2000. Italy: Amorosi and Milli 2001; Arnaud-Fassetta 2008; Bernasconi, Stanley, and Caruso 2010; Goiran et al. 2007; 2008; 2009a; 2009b; 2010; Morhange et al. 1999; 2002; 2003; Amato et al. 2009; Pasquinucci 2004; Salomon et al. 2010; Stanley et al. 2007; Vecchi et al. 2000. Cyprus: Butzer and Harris 2007; Goiran 1998; Sourisseau, Goiran, and Morhange 2003; Morhange et al. 1999; 2000. Lebanon: Geyer et al. 2010a; 2010b; Marriner and Morhange 2005; Marriner, Goiran, and Morhange 2008. Egypt: Flaux 2012; Flaux et al. 2009 and 2011; Goddio et al. 1998; Goiran 2001; Goiran, Bourcier, and Morhange 2003; Goiran and Morhange 1999; 2003; Goiran et al. 2000; 2005; 2008; Goodfriend and Stanley 1999; Marriner, Goiran, and Morhange 2008; Millet and Goiran 2007; Stanley and Bernasconi 2006; Stanley, Bernasconi, and Jorstad 2008; Stanley and Toscano 2009; Stanley et al. 2004; 2008; Tronchère 2010; Tronchère et al. 2008; van den Brink (ed.) 1988; Véron et al. 2006. See more generally Hermon and Bedon 2005; Brown, Basell, and Butzer 2011; Burnouf and Leveau 2004; Morhange, Goiran, and Marriner 2005.

[40] Leveau (1995) rightly acknowledges the potential risks of multidisciplinarity. In order to avoid circular reasonings, he insists on the need for all disciplines involved in a collaborative project to develop and preserve their own, autonomous problems and reflections. See also Leveau 2005 and, regarding Egypt, Burghouts 1988. Butzer 2005: 1773–4, calls for 'small-scale but intensive collaboration among researchers each of whom masters several sets of skills'.

historical contexts from which they stem: Chapter 1 sets the region's fluvial evolution within the hydrological history of the ancient Nile Delta, reflecting also on how the interplay between perceived risks and environmental opportunism structured Mendesian socio-environmental dynamics; Chapter 2 introduces the archaeological and papyrological evidence coming from the nome; Chapter 3 proposes an overview of the history of the nome from the Predynastic period to Hellenistic times, with special attention to data coming from the Zenon archive as well as to the transfer of the nome's metropolis from Mendes to Thmuis. Part II, which draws mostly from the CAT, is dedicated to the reconstruction of the Mendesian landscape: The nome's topography and administrative geography are discussed in Chapter 4, while Chapter 5 analyses what agro-fiscal papyri tell us regarding land tenure. Part III examines the strategies of diversification (Chapter 6) and the modes of valorization of marginal land (Chapter 7) attested in the nome in the Roman period. Finally, Part IV is dedicated to the crisis that affected the nome in the second half of the second century AD. Chapter 8 focuses on the massive rural depopulation attested in the CAT, and, by way of epilogue, Chapter 9 proposes a socio-environmental analysis of the *Boukoloi* uprising.

I

The Mendesian Nome in Context

1

Hydrological Context

This chapter aims at providing a general overview of the hydrological context underlying the human settlement of the Nile Delta—and of the Mendesian Nome—from the Predynastic to the Arab periods. Drawing from geo-archaeological and historical evidence, I shall first introduce the main features of the Nile river and discuss the ways in which they shaped ancient Egyptian attitudes toward the environment, before turning my attention to the hydrological history of the Nile Delta in antiquity.[1]

A. THE NILE AND ITS FLOOD

Definition

The Nile flows from the Ugandan and Ethiopian highlands to the Mediterranean Sea over a distance of 6,800 kilometres, channelling along its course a three million square kilometre catchment area. The river is fed by two tributaries, whose meeting point is located around 3,000 kilometres south of the Mediterranean, in the vicinity of Khartoum. The first one, consisting of the Blue Nile, the Atbara, and the Sobat rivers, originates from Ethiopia's mountains; there, 75 per cent of all yearly rainfalls occur between June and September, causing a fortyfold increase in the water and sedimentary discharges of the Blue Nile and Atbara. During this period, this tributary system provides

[1] Given the general scope of this chapter and the fast pace at which new studies on the ancient Nile Delta are published, I make no claim for exhaustiveness. My hope is, however, to provide an overview that is accurate at the time this book goes to press.

90 per cent of the Nile's water and 96 per cent of its sedimentary charge, and causes the annual flood. The second tributary, the White Nile, has its source in Lake Victoria. Thanks to its more stable discharge—which results from the regularity of equatorial rainfalls—it supplies the Nile with 83 per cent of its water outside of the flood season.[2]

More than 80 per cent of the Nile's discharge flows during the period of the flood, which took place in Egypt roughly between June and October before the building of the High Aswan Dam in the 1960s. The hydrographical and climatological configuration at the origin of this yearly phenomenon developed between *c.*13145 and 3775 BC.[3] The floods were then three times greater than those recorded in the twentieth century, with an estimated yearly discharge of 300 billion cubic metres.[4] Around 2400 BC, i.e. during the Old Kingdom, the southward migration of the rain belt caused the levels of the Nile flood to drop; they eventually stabilized at around 80 to 90 billion cubic metres during the middle of the first millennium BC.[5]

Because of its hydrological regime, the Nilotic basin is characterized by a great sedimentary instability. This phenomenon results more specifically from three interconnected phenomena: the general profile of the Nile valley, the gradual elevation of the river's minor bed, and its propensity to meander in the valley. Indeed, like all waterways, the Nile tends to flow faster along its concave (external) shore, creating, on the one hand, erosion on the concave bank and, on the other, sedimentary accretions on the convex (internal) bank.[6] Furthermore, given that erosion is at its strongest close to the point where the concave and convex curves meet, the sinuosities move gradually upstream.[7] This process also favours the formation of islands and marshes within the major river bed. On a larger scale, since most of the sediments carried by the Nile accumulate along the

[2] Butzer 2001; Said 1981.

[3] See Adamson et al. 1980; Goiran 2001: 26; Hoelzmann et al. 2001; Lamb 1977: 140–1.

[4] Said 1993. Two phases of high floods resulting from an extension of the rain belt took place between *c.*9000 and 8000 BC, and between *c.*7500 and 6000 BC. They were followed by a dry interval between *c.*6000 and 5200 BC, and two other—though milder—rainy phases (*c.*5200–3900 BC and 3100–2400 BC); Goiran 2001: 26; see also Butzer 2001, with slightly different dates.

[5] Goiran 2001.

[6] On the agrarian and fiscal management of eroded riparian land and alluvial accretions in Hellenistic and Roman Egypt, see Blouin 2010a and forthcoming a.

[7] I thank Nicolas Michel for these details.

river's bed and shores, the fluvial channel at times becomes higher than the surrounding plain. When this is the case, the flooded Nile overflows and, by way of meandering, adopts a new course, the position of which follows the slightly cambered profile of the valley.[8] This has caused sections of the river to move considerably since antiquity. For instance, between the Pharaonic period and today, the course of the Nile between Akhmim and Memphis has migrated up to three kilometres eastward;[9] the same is true of the Bahr Yusuf.[10] Human activity also has an impact on fluvial sedimentary dynamics: agriculture and deforestation, inasmuch as they cause soil erosion, lead to an increase in sedimentation processes;[11] inversely, the building of dams and reservoirs leads to a drop in alluvial supply.[12] The natural hazards associated with the Nile river hence come not only from the annual and cyclic variability of its flood, but also from its hydro-sedimentary instability. In order to get the most out of this extremely fertile yet unstable environment, local communities developed an array of strategies, all of which ultimately aimed at minimizing the fluvial risk they were facing.

Fluvial risk

The concept of 'risk' can be defined as the 'expected losses caused by a particular phenomenon'.[13] It supposes the perception of a danger,[14] which is generally understood as the product of a hazard and a vulnerability.[15] When perceiving a risk, human beings, whether acting individually or in a group, undertake a reflection (risk assessment), whose aim is ultimately to devise an answer capable of minimizing the risk's negative impacts.[16] This tripartite cognitive

[8] Said 1993.

[9] See Said 1993: 61–8, with particular emphasis on the evolution of the Nile in Cairo.

[10] Butzer 1976; Rowlandson 1996: ch. 1; Said 1993: 61–3.

[11] De Wit and Van Stralen 1988; McManus 2002. For North American and Chinese parallels, see Meade 1996.

[12] It is estimated that the Nile river presently carries 1% of the sediment it used to carry prior to the building of the Aswan High Dam; Poulos and Collins 2002; Stanley and Warne 1998.

[13] Coburn, Spence, and Pomonis 2001: 68.

[14] See Clément and Jaurand 2005; Coburn, Spence, and Pomonis 2001, 15; Rosenthal, Boin, and Comfort 2001.

[15] Bravard 2004: 397; Pigeon 2003: 460–1.

[16] Coburn, Spence, and Pomonis 2001: 11.

process (perception, reflection, answer) corresponds to the notion of risk management, which is one of the fundamental structuring forces of all human societies.

For the inhabitants of ancient Egypt, the main risk associated with their surroundings was fluvial risk. Fluvial risk is a concept developed by geographers. It is a form of natural risk,[17] which can be understood as the product of a natural hazard (that is ensuing from physical, climatic, or hydrological processes) and a human vulnerability.[18] The main natural hazard in Egypt was the Nile itself, and more specifically the variability of its annual flood and the geomorphological instability caused by hydro-sedimentary dynamics and human actions. The vulnerability corresponded to the presence of human settlements and agrarian land in the Nile valley and Delta (including the Fayum). This vulnerability should not, however, be conceived as purely passive, inasmuch as human interventions often contribute to an intensification of natural hazards.[19]

The particular fluvial regime of the Nile river presupposes that the fluvial risk along its floodplain differs from the risk observed in other Mediterranean fluvial environments. In fact, while the main natural hazards generally associated with Mediterranean fluvial systems are floods,[20] in Egypt, the annual flooding of the Nile has been a regular, predictable feature of the river for about ten thousand years.[21] Rather than coming from the flooding *per se*, the Nilotic hazard results from the timing and speed of the rise, the volume and the fall of the flood waters.[22] Any flood quantitatively and qualitatively outside the 'normal' range was seen as a potential threat to human presence and

[17] Allinne and Leveau 2002.

[18] See Bustany 2003; Dubois-Maury (ed.) 2001, avant-propos; Clément and Jaurand 2005; Pigeon 2003.

[19] Allinne 2007b; Clément and Jaurand 2005; Pigeon 2003. On the importance of environmental and social heritage for the articulation of fluvial risk, see Bravard 2004; Leveau 2005.

[20] See Bravard 2004, who insists on the role played by morphodynamic factors in the composition of fluvial risk.

[21] Said 1993: 54–5, 96–7.

[22] For an examination of the amplitude of Nile floods between the first century AD and 1650 according to historical and climatological data, see Hassan and Stucki 1987. Tristant (2006: 98), who emphasises how the Nile is one of the most predictable rivers on earth, specifies that of the 820 floods referenced on the Nilometer of Roda (south of Cairo) between the seventh and the fifteenth centuries AD, 73% are qualified 'normal', 22% 'low', 7% never reached plenitude or were late, 15% flooded only part of the flood plain, and 5% reached a destructive level.

installations (fields, settlements) in the flood plain[23] that could—and at times did—lead to phreatic problems (rises in water level and soil salinization), erosion, or flooding.[24]

Throughout antiquity, Egypt's populations and successive governing authorities tried to cope with fluvial risk through a variety of strategies that testify to their understanding of the natural hazards associated with the Nile: settlements above the flood plain, instruments for measuring and predicting the flood, development of maintenance and surveillance hydraulic networks,[25] religious beliefs and ritual practices.[26] These strategies aimed not at eliminating the risk—something after all impossible—but rather at limiting its negative impact.[27] They proceed from a behavioural typology of risk that Philippe Leveau summarizes by three scenarios: to undergo, to adapt oneself, or to leave.[28] Indeed, whenever a community undergoes or adapts itself to the risks associated with a particular settlement, it means that the benefits (economical, political, strategical) potentially generated by its features are deemed superior to the risks incurred.[29] Consequently, collective risk management behaviours must be conceived as resulting not only from defensive concerns, but also from proactive ones. In Egypt, one of the key benefits associated with the Nile river—and as such, one of the key engines of human intervention in the Nilotic flood plain—was its agrarian potential. In this regard, fluvial and alimentary risk happen to be very closely related.

Alimentary risk corresponds to the shortfall between food production (hazard) and food demand (vulnerability). Food availability

[23] Bonneau 1971: 39. [24] Arnaud-Fassetta 2008: 2.

[25] Bonneau 1993. Such strategies can be paralleled to the four risk prevention techniques which Allinne (2007b) identified on several Western Mediterranean Roman sites liable to flooding: 1. intervention on the river-bed layout; 2. development of the river channel and of its shores (see also, regarding Lyons, Colas 2004); 3. building of bridges; 4. management of damp areas. Regarding cross—and often complementary—risk management interventions emanating from public and private initiatives, see Allinne 2007b: 79–80.

[26] See Bonneau 1964. [27] Halstead and O'Shea 1989; Leveau 2005.

[28] Leveau 2004a: 36.

[29] See Allinne 2007b, 79–80 (79 cit.), who rightfully underlines how tolerance to fluvial risk is much higher in the case of prosperous cities—whose attractiveness results from their proximity to a river—than in that of modest and isolated settlements. See also Arnaud-Fassetta (2008: 7–8) who, when discussing human activities in the ancient Rhône Delta, underlines how rural interventions were 'milder' in the region, whereas urban ones, which took place in contexts where more was seen as being at stake, were most often 'precocious' and 'more radical'.

depends on the environmental and anthropogenic factors that affect food production; hence the close link, in Egypt, with fluvial risk. The actual availability of food also depends on the release of surpluses by those who exert control over them. Indeed, many ancient and modern famines have been caused not by bad harvests, but by the speculative manipulation of staples.[30] As for food demand, it fluctuates according to the size of the population that depends on a specific source of food. It also generally results from the superposition of several, often competing, spatial scales of vulnerability (private, local, regional, international). This was certainly the case for Roman Egypt, whose grain production not only fed the inhabitants of the province, but was also exported, as tribute or private cash crop, to several Mediterranean cities, including Rome. Alimentary risk management results from the exploitation of the joint three variables: the natural resources available in a given territory, the temporal variability of their availability, and their spatial disparity. Following Horden and Purcell's classification, I shall refer to diversification, storage, and redistribution (see Chs. 5–7).[31]

From representation to management

The Nile flood provided ancient communities settled along its banks with water and highly fertilizing silt and nutrients. These nourishing properties of the Nile, together with the risks that came from its variable and humanly uncontrollable nature, played a fundamental role in the socio-economic and political development of ancient Egypt. Not understanding nor effectively controlling the *sine qua non* condition for their survival, Egyptian communities attempted in different ways to 'tame' the river.[32] Very early on, the river was associated with a complex system of social representations.[33] According

[30] See notably Garnsey 1996; Erdkamp 2005.

[31] Horden and Purcell 2000. 'Redistribution' includes Paul Halstead and John O'Shea's (1989) 'mobility' and 'exchange'.

[32] See Halstead and O'Shea 1989, who consider social responses to the variations of biological and social environments as an important engine of social change.

[33] For the 'exceptional' requires an explanation, and the 'automatic explanation' provided by causal or attributive social representations allows for a feeling of control, hence calming group tensions; Hewstone 1997; Mannoni 1998. On religious beliefs related to Nile water, see Amenta, Luiselli, and Sordi (eds) 2005: III–IV; Aufrère 1999b; 2001; Bonneau 1964. Social representations can be defined as socially conceived and shared forms of knowledge endowed with practical aims that contribute to

to the ancient Egyptians, the 'cause' of the annual flood was cosmogonic. Stemming from Nun, the primeval Ocean, located somewhere to the south, 'the great river' (*n itrw ʿ3w*), and more especially the floodwater, were closely associated with the divine.[34] From the Pharaonic period on, the floodwater was considered to be a godly force named Hapy; its Greek equivalent was, starting from the Ptolemaic period, *Νεῖλος*.[35] The sacralization of water was also the keystone of Pharaonic theocracy.[36] Divine incarnation and intermediary between the human and divine realms, the pharaoh acted as the ultimate guardian of Maat (*M3ʿt*), the cosmic order that was paramount to Egypt's survival and prosperity, and notably to the quality of the Nile flood. It was hence the pharaoh's responsibility to conciliate the divine through legal and magic–religious means. Only then would the flood 'come in its due time'.[37] According to this logic, the quality of the Nile flood results from an exchange between the pharaoh (and, through him, the Egyptian people) and Maat (and more generally the gods). Accordingly, the river's 'goodness' is directly proportional to the quality of the pharaoh's propitiatory actions.[38] Through such causal representations, the intangible phenomenon of the flood becomes tangible, and the sociological

the construction of a commonly shared reality within a social group (Jodelet 1997). They are a fundamental constitutive element of social constructs such as myths, religious and political discourses, stereotypes, clichés, superstitions, ideologies, etc. (Garnier 2002; Mannoni 1998; Moscovici 1997 and 2000).

[34] Bonneau 1995: 3196. On water religion as a 'religion of provenience', see Horden and Purcell 2000: 421.

[35] *Νεῖλος* is the Greek version of *n itrw ʿ3w*; Bonneau 1964: 219–42; 1995: 3196; Claus 2005 (Hapy). The revived interest in the Nile god under the Principate is clearly visible on Egyptian coins; their propagandist nature is obvious, especially since it seems that Nilotic themes were issued only on good flood years; Bonneau 1964; 1995. Regarding the cult of the Agathos Daimon and the branch of the Nile (more commonly known as the Canopic branch) bearing that name, see Bernand 1970; Blouin 2009 and forthcoming b. Nilotic rituals were integrated into Egyptian Christianity, and the 'supernatural Nile' became one of the 'chief features of the cultural landscape of Christianity'; Frankfurter 1998: 42–6 (45 cit.).

[36] On the sacred water from Xois (Nile Delta) and its association with the local nilometer, see notably Vernus (1989), who also observes how water often becomes sacred where it seems to 'be born' and to 'die'.

[37] Bonneau 1964; 1987b. On Maat, see notably Assmann 1990; Teeter 2001.

[38] Bonneau 1987b: 194–5. For an in-depth analysis of the Nile river cult in the Hellenistic, Roman, and Byzantine periods, and of its close relationship to Pharaonic representations, see Bonneau 1964.