Rivers in Prehistory

edited by

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Cover photo: Giant king fish (Caranx ignobilis) gather in preparation for a unique migration up the Mtentu river. The Mtentu river is one of few remaining pristine wildernesses in South Africa, so the Africa crew avoided using disruptive motor boats, instead paddling to the location each day in a canoe.
Image elaborated by Cornelia Stancu.

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Table of Contents

List of Figures

Rivers, Where Humankind Meets Nature

Rivers of civilisation

Case Studies

Dugouts from North Patagonia (center-south of Chile): Sailing on Trees[1]

Exploitation of the Aquatic Resources of Lake Lubāns and Its Hydrological Regime during the Stone Age

A River Runs Through It: the Semiotics of Göbekli Tepe's Map (an Exercise of Archaeological Imagination)

Rivers, Human Occupation and Exchanges Around the Late Bronze Age Settlement of Frattesina (ne Italy)

People of the Waters in Northern Italy

The Perennial Rivers and the Changing Settlement Patterns on the Two Sides of the Tiber in Central Italy – the Case Studies of Nepi and Gabii

Bronze Age Barrow Complexes on the Lincolnshire Fen Margin

Roads, Routes and Ceremonies: the Fenland Superhighway

Continuity of Seasonal Access and Occupation on the Turloughs of Ireland

An Approach to the Fluvial Networks of the Papaloapan Basin: the Use of the Lower Papaloapan, México, from the Pre-hispanic Period to Early Xx Century

Preface

This book is the result of two successful sessions held at the 2008 WAC-6 Congress in Cork, under the title of "Wetland archaeology and movement" and co-organised together with Ingelise Stuijts, Nora Bermingham and Claire Anderson. A third session was organised the following year at the 15th meeting of the European Association of Archaeologists in Riva del Garda, where the "Movements across and along water within landmasses" session was held. Claire Anderson and Ingelise Stuijts co-organised with me that session. Later, it was hoped to publish selected papers from the sessions in a volume co-edited by myself and Ingelise Stuijts. Eventually, that volume became impossible, partly due to other commitments of the session co-organisers. I have taken over the project and re-focused the volume on rivers, resulting in a very different outcome than initially planned.

A lot of patience was necessary from everyone to enable completion of the volume. Rivers have proven as fascinating as daunting a subject. There are several aspects that could be tackled, but I became particularly fascinated by thinking of rivers as fluvial networks, allowing the movement of people and commodities inland similarly to maritime exchange networks, which I had researched in my previous work. My aim has been to show how rivers have been pivotal in enabling the movement of people and commodities, from exploration and first settlement to the organisation of proper exchange networks, as well as in providing the essential services of providing drinking water and water for hygiene and agriculture. Rivers have often been a key step in transforming the natural environment into the anthropic landscape, which now covers most of the merged land in our planet. Rivers have been a central point of contact between humans and environment; one that even in present-day cities represents the only surviving element of the original environment, and one still being a force to be reckoned with, because of menacing overflows and destructive flooding.

Ultimately, I understood that rivers have played a much greater role in the human colonisation of our planet than I had first thought, and I came to see them as flows, of water, people, commodities, and even time. They provide a fixed element in the landscape that enables human cultures to develop, mark seasons with variations in flows, and yet always provide fresh water. Even the western perception of nature, which is perhaps the most technological and detached among any culture, is shaped after rivers: nature is mighty and yet can be constrained, as well as immutable and self-regenerating. It is not a modern view founded on science; it is rather an ancient one still surviving and providing the basis for the conflicting present-day relationship between humans and natural environment. Understanding people's relationship with the environment in antiquity may prove beneficial to make sense of where we are and where to go next in urbanisation.

I wish to thank to all co-organisers and participants to the WAC and EAA sessions, without whom this book would not have been written. Keri Brown was helpful in making suggestions, Koji and Hiromi Mizoguchi were exceptionally helpful in discussing Japanese river gods. I wish also to thank the many friends at the EAA. Dr Elena Fumagalli at Insula s.p.a. in Venice and Dr Tobias Springer of the Germanisches Nationalmuseum were most helpful in providing information on images available at their institutions that have been used in this volume. I wish to single out here Ingelise Stuijts for having supported the volume as much as she could, and for her immense contribution in organising the sessions. Without her, this book would not have been conceived.

Andrea Vianello

Introduction

ποταμοῖσι τοῖσιν αὐτοῖσιν ἐμβαίνουσιν ἕτερα καὶ ἕτερα ὕδατα ἐπιρρεῖ
(Potamoisi toisin autoisin embainousin, hetera kai hetera hudata epirrei), On those stepping into rivers staying the same, other and other waters flow.

Heraclitus, DK B12

"It is this what you mean, isn't it: that the river is everywhere at once, at the source and at the mouth, at the waterfall, at the ferry, at the rapids, in the sea, in the mountains, everywhere at once, and that there is only the present time for it, not the shadow of the past, not the shadow of the future?" "This it is," said Siddhartha.

Hermann Hesse, Siddhartha, Ch. 9: The Ferryman

Consciousness...does not appear to itself chopped up in bits. Such words as 'chain' or 'train' do not describe it fitly as it presents itself in the first instance. It is nothing jointed; it flows. A 'river' or a 'stream' are the metaphors by which it is most naturally described. In talking of it hereafter, let us call it the stream of thought, of consciousness, or of subjective life.

William James, The Principles of Psychology (1890), Vol. 1, 239

Rivers have often been the gateway to natural wilderness and the first element of a natural landscape that humans made their own. Some rivers have become the symbol of whole civilisations, such as the Nile or the Tiber to Egyptians and Romans respectively. More recently, pioneers exploring the continent of America have explored the new land from within rivers, whose names have become by extension the name of the land: 15 of the 50 states composing the United States of America are borrowed from rivers.

The more I delved into the topic, the more I appreciated how important have been the rivers to humans. No other natural feature has become embedded into human narratives as the river. Rivers are frequently featured prominently in natural landscapes by writers and artists, but they also turn up in unexpected places, such as the mythical Greek underworld or Dante's Inferno. Rivers made of stars (the Milky Way) have been recognised in the sky by the Inca, Chinese, Koreans, Japanese (the "Peaceful River of Heaven"), Hindu, Maori, Aboriginal Australians as well as other cultures. The flow of a river has prompted many reflexions of its similarity to time as well as human life and consciousness, becoming a recurring theme in culture and philosophical thought.

In recent archaeological literature, rivers are often ignored from narratives, or seen as part of the natural landscape. Yet, rivers and streams have shaped most cities in the world and they should be inserted more frequently, if not systematically, in archaeological interpretations and narratives. The sea is very much in the minds of scholars after the work by Braudel (1972), especially in Europe, but rivers are denied the same interest. I hope that this volume will generate some fresh interest.

Braudel has been influential also promoting the methodological approach of *longue durée* historiography, which has no scale defined and attempts to approach the past as a single stream of long-term events. In that view, the small scale of the individual is lost to a grand narrative. Braudel's approach risks to perpetrate the same problem of ancient historiography since Caesar's *De Bello Gallico*: only the history of the victorious or successful ones or the author is recorded, producing incomplete narratives or even distorted truths. Unlike the vast sea, rivers require regional narratives that provide nuanced perspectives, fine-grained approaches telling the stories of communities and even individuals. Rivers are also different one from another, as people, and no two narratives will be equal. This is not the case of seas, where the same sea connects multiple civilisations and therefore it becomes the uniting, shared element. Rivers instead distinguish and characterise, as lakes also do, despite all being bodies of water.

Uniform approaches focusing on palaeoenvironmental data have been attempted. For instance, the Younger Dryas climate change event has been suspected to be responsible for a global change in the culture of hunter-gatherers, but it has been proven then to be less universal in its effects and synchronisms and less determinant after regional studies were carried out (Alley 2007; Eren 2012). Any large social and environmental event can be described as the sum of regional situations as well as in terms of general patterns. Rivers have been researched widely to look at the general patterns, but much less at regional perspectives, and how local situations came to be.

There are many different perceptions of rivers, some of which known from antiquity: they were sources of

freshwater to drink and bath, symbolic places connected to religion (or divinities themselves as in Japan), waterways suitable for transportation, contributing features of particularly beautiful landscapes, threatening places (because of floods, rapids, etc.), sources of food, or obstacles on the way. Rivers are very dynamic parts of the landscape, and change significantly naturally. The perception can also be varied from person to person and from place to place on the same river (e.g. tranquil river or dangerous rapids). Lakes are not specifically the focus of this volume, but implied as natural formations along several rivers, and these further provide a different environment to the typical river. Changes in landscape, merging rivers and bifurcations, portages extending fluvial networks, are all further elements adding complexity to rivers. In the end, I do not think that it is possible to describe rivers using any univocal definition, nor categorising rivers is possible. This can appear odd, because seas, mountains, the sky and even forests are much less variable, following seasonality and the occasional weather event.

The volume focuses primarily on prehistory, but it is not restricted to any regional prehistory, and rather concentrates on the relationship between humans and rivers intended as element of the natural environment. There is a discussion on the specific topic of the relationship between humans and environment, a few general presentations of rivers that were pivotal to some great civilisations and how they were inserted into the socio-economic dynamics of those cultures, and further particular case studies that showcase the many ways to approach the study, without ever trying to be exhaustive. There are many ways to write a book on rivers: it can be a monograph presenting some tight ideas followed by one or few examples; an encyclopaedic collection of papers on several rivers, effectively presenting many regions with limited detail; or a collection of papers, perhaps focusing on some interdisciplinary approach. Yet, none of these appeared satisfactory. In this book, the reader will find a few sections written in opposite order: last to be written and yet first is the discussion of the role of rivers in the relationship human-environment, which could be written only after the following sections were ready. The decision to present briefly the Nile, Tigris and Euphrates river system, Danube, Indus, and Yangtze depended on the need to show how a few civilisations emerged from rivers, respectively the Egyptian, Mesopotamian, Central European, Indus and Chinese civilisations. They provide excellent case studies of some of the general themes expressed in the precedent discussion, but do not provide any original research, just an original perspective. The final case studies provide original research, and show a variety of methods and regions, but because they lead the volume to a multitude of regional perspectives, there can be no single conclusions. As it is, the volume is a voyage to the local perspective, effectively resulting in the opposite approach of what I did for my volume on 'Exotica in the prehistoric Mediterranean', where I grouped materials. I showed then how exotica were a uniform phenomenon combining neurological natural attention for different and glittering materials, sociological need for acquiring a role in society, and economic sense in exchanging desired and desirable materials. The same phenomenon was adapted to local contexts and different materials repeatedly. Here instead, the same natural phenomenon, rivers, leads to different regions through its peculiar characteristics and locality.

The interest for the relationship between human beings and the natural world, albeit limited to rivers here, is clearly a product of the present time and the uncertainties about it. Do we have any control on or responsibilities over the environment? Present problems are often rooted in the past, and present-day activities threaten the future, making more difficult for people to see the causal relationship of their agency. In some views, humans are locked in a battle with nature from which they cannot escape: nature poses challenges to humans, who have to adapt. In others, nature is perfect without humans (e.g. *Myth of the Pristine Environment*, Denevan 1992), and humans have to find ways to spoil it the least. I prefer to look at how the relationship balances. I recognise humans to be both passive and active agents of change (i.e. humans adapting to local environments and changing the environment to suit them better). Evolution also plays a role in our planet, in that it forces change by changing all active agents and in so doing, it shapes the natural environment. There is no doubt that the physical planet is what it is because of life on this planet. The oxygen-rich atmosphere, for example, is a by-product of organic activity and particularly photosynthesis by bacteria and algae. Plants preserve the soil in some environments and alter the hydrogeological cycle. Humans are a product of evolution, and also contribute to shaping the planet as it is. Our modern problem is taking control of the processes given their speed and unintentionality, and to do that we need to look at the basic relationship and understand how it develops and what effects it produces. Pollution, deforestation, technology disconnecting people from the natural world, destructive chemicals, genetic food and many others are all negative aspects, or aspects presented in negative light, of our modern time. Ultimately, this approach seems to result in the tragic dichotomy nature vs. mankind, respectively good vs. bad. It represents the first stage of recognising and taking responsibility for mankind's agency, but it frames the debate into an impossible conundrum, where they cannot both coexist.

The focus on rivers here shows how much nature and mankind are inextricably connected, one affecting the other equally. There is no such thing as an environment left unmodified by organic living processes, enough for the term *biosphere* to be coined, and no human that can live outside the natural environment. Humans may be at the top of the pyramid in which living beings are organised, and therefore those affecting the planet the most, but by no means they are alone. Cyanobacteria, probably organised in stromatolites such as those still found in Western Australia, were responsible for the formation of an oxygen-based atmosphere. Oxygen is normally poisonous to life, and an oxygen atmosphere does affect the natural

environment significantly, and this demonstrates that changes in the environment by biological organisms are not unprecedented on a vast scale, though not as fast as the changes in present-day environment. Despite volcanism probably reversing their action for many million years, an oxygen atmosphere came to be. With humans, it is difficult to understand what they do, and whether it is necessary to do it that way, because economic interests blind people on responsibilities, and technological progress sometimes is too fast to foresee any future damage or issue at point of adoption. Looking at rivers, some have dried or changed course, or become polluted enough to bring devastating effects on local populations and whole regions. The case of the Aral Sea, a lake in Central Asia once the fourth largest in the world, has been reduced to just 10% of its former self in the 2010s, after the Amu Darya and Syr Darya rivers were redirected by Soviet authorities to provide water to cotton plantations. The eastern basin, completely dried up since 2014, is now the Aralkum desert. In this case, it can be argued whether cotton farming and its economic benefits really outset the desertification of a vast area, once productive, and no doubt the ill-planned decision by Soviet officials makes it an easy target to critique. The Colorado River is another significant example of unintended destructive effects after poor planning, and it is located in the United States of America. The waters of the Colorado River have been used as an inexhaustible source of water to grow crops and hydrate towns and cities, but now the river dries up long before its historical mouth in the Gulf of California, contributing to California's problems in obtaining enough water for its needs. Better water management, as it was done sometimes in antiquity (as at times in present-day), would avert some of the most serious consequences. Rivers prove even from these disasters that they are an excellent case study on the relationship between humans and environment.

There are very few natural features that are as pervasive as rivers. Seas and the air are far too vast and alien environments to be explored: these are environments that required the development of significant technologies to be explored, namely sea-going boats and airborne devices. Even with these, the underwater world and our atmosphere are still the least known environments in our planet. Other environments such as volcanoes have attracted much attention, but active volcanoes are not ubiquitous. Mountains and hills define particular landscapes, and as such produce regional cultural responses. Only rivers, streams, lakes and ponds are features that encompass almost all environments and that force a response from humans, be it crossing, avoiding, navigating, drinking, following, seeking and many others. There are people that have built their homes on freshwater, such as the pile-dwellings of the prehistoric Alps. Rivers have provided food and drink to people. Entire civilisations have been built on relationships with rivers. There are people that are more comfortable to move on water than land, be these the citizens of Venice or the indigenous people of some Amazonian tribe (Erickson 2008: 174).

Humans seem to change their environment more dramatically, fast and thoroughly than any other living being. Because of the speed of the changes, it may be impossible to adapt in front of unintended consequences and effects despite the humans' strength in being able to adapt to different environments. This a topic that produces much discussion, including the recent idea that civilisations follow a "life cycle" ending in collapse (Diamond 2005), though this is a literary vision rather than a scientific conclusion. The collapse of one culture is often the birth of another, and may be interpreted as evidence of some dramatic adjustment rather than evidence of end (e.g. McAnany and Yoffee 2010).

Humans change their perception and cognition of the world even faster than in the physical world. The transformation of the environment is often linked to the developments of local cultures. Changes in practices can affect the environment. In other cases, some activities move away from the physical into the metaphysical world. For instance, hunting scenes that may have described an essential part of everyday life at one time may become symbolic evidence of the prowess of some people in other times. The conclusion is that a shift in the environment is not necessarily detectable in human material cultures and practices and vice versa. A change in the environment, is unlikely to trigger a cultural or social response (Meltzer and Bar-Yosef 2012: 255-259; Meltzer and Holliday 2010). Archaeologists are finding out that continuity was the preferred response to climate and environmental change, in the form of small adaptations to carry on or in relocations to continue practicing their usual culture without dramatically alter it (Eren 2012: 20). There are sudden responses to environmental issues, for instance the abandonment of *terramare* (Cremaschi, Pizzi and Valsecchi 2006) and the transition between Late Bronze Age and Iron Age in the Levant, which set people in movement and towns such as Ugarit to be abandoned. Incidentally, these two events are linked by the same dry event, and Kristian Kristiansen (pers. comm.) has suggested that Italic people from the terramare became Sea Peoples, too simplistically in my opinion. The analysis of the archaeological evidence however shows that ancient people in the terramare tried to maintain normal life as much as possible, with minimal adaptations, and abandoned the sites just when it became obvious that their cultural practices were no longer suitable for survival. This conclusion in the specific case of terramare meant that the water management system adopted, already stressed by being overexploited outside its location of origin, succumbed to additional stress some time after the climatic change. Sudden relocations and movements of people often have multiple causes, and while unexpected environmental changes may trigger them, they very rarely are the first or only cause. In the Levant at the time of the Late Bronze Age transition, some people changed, some cultures adapted, but others, such as the Egyptian culture, stayed unaffected. This demonstrates that human cultures are generally resilient to environmental change, while the natural environment is more likely to react to changes prompted by humans in the form of

direct reaction. This difference in reaction is important to understand why many small changes in human practices leading to small changes in the environment are likely to pass unobserved, thanks to the very efficient ability to adapt of humans. Conversely, when changes add up leading to major upheavals, humans are not only unable to cope effectively, but they also seem taken by surprise. In general, the study of rivers in particular seems to reveal that humans are capable of planning sophisticated water management and environmental exploitation, and can adapt with relative ease even in case of occasional flooding or a river changing bed, being at ease in managing wild resources. They also seem equally oblivious and hopeless when they disconnect from their surrounding environment and live mostly in their cognised or urban environment. A particularly poignant case is the management of flood valleys and the fluvial system through drainage and the building of defences in England, which was improved already in Victorian times. After drainage and water management was abandoned for 50 years in the mid-20th century, it left several English counties prone to flooding at the beginning of the third millennium, further helped by land previously used for discharge floodwaters being built or used, and responses have been haphazard, as if taken by surprise.

The possible solution coming out from these considerations, what could be implemented as a policy, is making sure that local communities are better aware of their surrounding environment and small changes, so that informed decisions may be made more effectively and pre-emptively. The same communities may be able also to provide information on the state of the environment through distance digital communication systems, the Internet being the most obvious, reporting on localised or "near-misses" in events such as floods, so that the effectiveness of water and environmental management systems kick in at the right time, i.e. before a predictable catastrophe. There are recent solutions to environmental problems being alleviated, if not resolved, thanks to greater awareness and ingenuity applied to problems before they reach irreversibility. For instance, a "bumblebees highway" (aerial path through the city marked with plenty of seasonal flowers) has been opened in Oslo, and similar ones are being planned elsewhere. This has followed however a successful campaign in alerting people on the disappearance of bees worldwide and locally, as well as information on the impact on the biodiversity and costs due to missed pollination of crops. This practice however should be extended also to natural features such as rivers, which although not alive, support life in multiple ways. This volume aims also to raise some awareness on this aspect, because ancient dynamics between humans and environments have relevance also to the present-day.

The case studies

Nicolás Lira has focussed on Chilean dugout boats, presenting the extensive fluvial network in the Andes from the perspective of indigenous people. Labels such as "river society" and "navigation culture" clarify that while this is a world much more modern than prehistory, it offers a peek into societies that were much closer to that period than the western modernity. It also provides information on a working system using fluvial networks, effectively adding an ethnographic and anthropological perspective to the study of rivers.

Ilze Loze focuses on how the establishment of fluvial networks in northern Europe has been functional to the establishment of a long distance trade route, the so-called Amber Route. Her narrative exposes how the ancient people of Lake Lubāns moved settlements across the landscape as natural fluctuations in the water levels reconfigured the paleogeography of the region. It appears that the original settlement and final abandonment mark the period in which amber from this area was most valuable, with other areas being actively exploited by the final period. The fluvial system was specifically employed to gather and work one natural resource and export it very efficiently, and indeed it was the fluvial system that enabled the local economy to prosper the way it did.

Dragoş Gheorghiu brings us to Anatolia, but takes a semiotic approach, where the river is imagined in symbols. He recognises that stone pillars at Göbekli Tepe form a map of the surrounding landscape, centred on a river. Rivers were very important in the Near East, with the Nile as well as Tigris and Euphrates river system being central to the life of some of the most important civilisations in the region. The river would therefore bring life to the community and assume a metaphysical role, which could be understood through the depictions in the pillars only by the local community. It is possible that the main role of the map was to create some form of unity among the community, whatever the message hidden in it may have been, just playing on the fact that the information was locked to members of the community, who must have known very well the land surrounding their settlement. Most intriguingly, some images have been erased, which following the interpretation by Gheorghiu, would mark changes in the landscape. The map, therefore, was being kept current marking all natural resources available to the community, and erased images may have been interpreted as symbols of resources available to the ancestors.

Paolo Bellintani and Massimo Saracino look at the case of Late Bronze Age Frattesina, and the extensive exchange network that also used the fluvial system of Veneto. In their discussion, the collapse of the *terramare* and the connection with the maritime network exchanging Mycenaean materials take central place. Frattesina proves an extraordinary settlement bridging sea and fluvial networks, and worlds as far as Loze's Latvia and Cyprus.

Andrea Vianello returns on the Veneto, but takes a literary approach representing the flow of rivers as historical flow. Beginning with the earliest evidence of pile-dwellings in the Varese Lake, probably arrived along with agriculture from the south, these architectural structures are tracked

across cultures in the Po Valley. Frattesina becomes peripheral to the narrative, and the historical perspective shows how a technology characterised some cultures in a restricted area, and moved across different periods, areas and cultures, connecting them in a way that shows ups and downs for these cultures, rather than a emergence/collapse dichotomy typical of narratives focused on main centres. There is no end to it, since pile-dwellings are still being built, and hence the parallel of the narrative with a flowing river.

Ulla Rajala focuses on the Tiber, and how it became the river at the centre of the world (Rome). Its local importance clashes with our image of an untameable river capable of flooding Rome at the height of its Empire, the site of harbours where commodities from all over the Mediterranean and bordering lands transited. Rajala remembers us that without that river, whose key characteristic was being perennial, Rome would have never emerged as it did. She also brings our attention to a river that was quite interesting before becoming famous.

Peter Chowne takes us in northern Europe, Lincolnshire precisely, focusing on round barrows. A land of many watercourses, Chowne recognises in the archaeological record a liminal landscape similar to Gheorghiu's interpretation. The barrows here, instead of pillars, marked the landscape affirming this particular view, again very much locked into local knowledge and communities. Chowne also uses state-of-art technology with LiDAR data and tries to track movement across the ancient landscape. Wetlands were desirable and efficiently used.

Tim Malim focuses on causeways and fenlands in England, and describes a peculiar environment sometimes recalling Amazonia for the use of log boats, sometimes the lagoon of Venice for the highly efficient transportation of goods across islets and waterways. The fluvial network is central to his narrative and is interpreted as "Fenland Superhighway", which made use of specialised engineering skills able to overcome many potential problems. These skills are part of the local culture, who was perfectly adapted to wetland life and made full use of rivers.

Amy Bunce introduces seasonality and keeps the focus on turloughs, seasonal lakes of Ireland. The particular environment prompted adaptations by ancient people to survive there, but in her study it becomes apparent that the guiding force is a cultural one rather than functional. She makes an excellent case for human communities choosing to adapt to the environment and resist as much as possible against all odds, to maintain continuity with the past, even in front of other choices who may have been more effective.

Edith Ortiz Díaz takes us back to America, in pre- and post-Hispanic Mexico. The Papaloapan River and basin was an important axis of communication for the indigenous people, later transformed by the Hispanics into a gateway to conquer their lands. She focuses on modernity however, and how the issues between indigenous people and colonisers can be reduced to different attitudes to the environment. The Spaniards built a railway, followed by dams and roads to force people into using "modern" communication gateways. Much effort was aimed at abandoning the navigation of the river, which was considered obsolete and inefficient, partly because practised by "primitive" indigenous people. The river however enabled the indigenous people to travel long distances and became embedded in their culture. The Spaniards are still seeing it as they always saw it, just as a transit gateway replaceable by more efficient ones. The river is today unusable for navigation, adversely affecting the indigenous cultures, who see their environment destroyed and feel forced to a cultural change. The Spaniards conversely think they provided new opportunities for development to the indigenous people. Who they think do not wish to embrace modernity. This clash of cultures and perceptions highlights the concept of rivers being perceived differently, and how much they are a local phenomenon embedded into local cultures, here unfortunately exposed in a destructive clash with modern ignorance and people increasingly detached from their environment and unable to understand if not share the local cultural tradition.

The case studies provide a series of examples of several topics and themes presented above, some of which are discussed further in next chapter. They also offer a stark contrast with their local dimension from the grand narrative of the rivers of the great civilisations. They begin with an anthropological perspective of how fluvial networks worked, and end with a similar perspective emphasising how understanding rivers is key to resolve many problems of our time.

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