

# Introduction to the Special issue on Water Management, Communities, and Environment

*This volume helps redress the existing bias in 'west-civic' historiography in favour of urban and institutional history. It directs the reader to the significant reclamation efforts that transformed the lands bordering the North Sea, especially the Low Countries, in the medieval and early modern eras. This transformation was both economic and ecological, with sometimes unintended environmental consequences. The 'post-modern' historiography evident in this volume employs many of the same sources that earlier historians used, but asks new questions and applies different analytical approaches. All the essayists show that there was nothing inevitable about Dutch land reclamation and water management.*

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Little in the natural history of the Low Countries is not somehow related to the North Sea. The sea itself is a recent geological creation. Ten thousand years ago, the southern part of the North Sea was a marshy plain inhabited by deer, elk, and Stone Age hunters. Until approximately 6,000 B.C., England was an appendage attached to mainland Europe. Melting glaciers slowly raised the water level, however, so that by 3,000 B.C. the North Sea had reached levels close to what we have today. The young sea, turbulent and rising, attacked the coastline, frequently changing the shape of both England and the Low Countries and constantly threatening the sparse population.<sup>1</sup> Sea levels continued to fluctuate throughout the period of Roman occupation and then actually fell in the early medieval period, from the 5th to 10th centuries. By that time, the contours of the modern coastline had clearly emerged, but the sea continued to pose a persistent danger. High tides, combined with gale-force winds, could send water raging over thousands of hectares of land.

These environmental conditions tested even the hardest settlers. Peat bogs, frequent inundations, and storm surges discouraged human settlement, while periodically rising sea levels threatened (and still threaten) catastrophe; about one-fifth of the Netherlands is presently below sea level, in some areas by six meters or more. The region has few woodlands and natural resources. Given these obstacles, the ability of medieval Dutch communities and farmers to transform a forbidding landscape into productive croplands testifies to remarkable human ingenuity.

Unfortunately, university western civilisation textbooks and instructors often ignore this largely agrarian story in favor of a more traditional tale that focuses on the rise of the Netherlands as a great trading and cultural center. Relatively little attention is given to the concurrent story of how Dutch farmers and villages reclaimed large amounts of land, diversified crops, and improved animal husbandry, of how they introduced new technology and experimented with various management schemes to control the water and restore the land. In the early 17th century, much of this happened with a distinctive, and not always happy, cultural blend of Calvinism and nationalism. As cities emerged, urban entrepreneurs, some with decided get-rich-quick mentalities, supplied the financial muscle for land reclamation—and reaped much of the dividends. The subsequent improvements in agriculture and increased farmland provided food for the growing urban centers and decreased Dutch dependence on imports. They helped the Dutch become one of the dominant economic powers of the 17th century.

This volume helps redress the bias in favor of urban and institutional history in traditional Dutch historiography. It directs the reader to the significant reclamation efforts that transformed the lands bordering the North Sea, especially the Low Countries, in the medieval and early modern eras. This transformation was both economic and ecological, with sometimes unintended environmental consequences. All the authors in this book are directly or indirectly indebted to Hendrik van der Linden, whose pioneering work in the mid-20th century belied earlier assumptions that physical conditions in the Netherlands had little changed from the early to the late Middle Ages. Instead, Van der Linden showed that medieval settlers had reclaimed a significant amount of land in the 10th and 11th centuries and that human activities gave rise to the processes that resulted in land subsidence—and increased danger of flooding. A broad interdisciplinary effort since the 1950s confirmed Van der Linden's argument (Van der Linden 1956; TeBrake 2002: 478-479).

The 'post-modern' historiography evident in the following pages employs many of the same sources that earlier historians used, but asks new questions and applies different analytical approaches. Whereas earlier historians used the rich archives of the various polder boards, some dating back to the 14th century, to write institutional histories of the boards, today historians employ computers and spreadsheets to examine lists of landowners, size and use of separate holdings, duties paid to water boards, investment in polders, land inundation, and technological advances, among other subjects. This work employs quantitative examination and the organisation of a vast amount of data. Historians such as William H. TeBrake and Petra J.E.M. van Dam led the effort in deciphering the records, but a growing number of Dutch historians (and a few from other countries) are working together to reveal an agrarian

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world more socially and technologically dynamic than had once been thought and to portray a nuanced and complicated relationship between humans and nature in the medieval and early modern periods.<sup>2</sup> In the present volume, Charles Cornelisse illuminates the economics of peat production and industrial and domestic energy use. Tim Soens, Alfons Fransen, Piet van Cruyningen, and co-authors Milja van Tielhof and Petra van Dam discuss the way capital is obtained and employed for water management, with specific ecological consequences. All the essayists show that there was nothing inevitable about Dutch land reclamation and water management. Nor was the transformation of the landscape always beneficial, either to human settlement or to ecological systems.

Central to the story of Dutch land reclamation is a substance that inhabitants of more arid countries rarely think about: peat. Peat results when dead plants are so saturated with water (waterlogged) that insufficient exposure to oxygen prevents their natural decay. Such was the case throughout much of the western half of the Low Countries in late prehistoric times, in part the result of the post-glacial rise in sea level that raised the groundwater table and slowed river flows. This watery environment invited the rapid accumulation of peat. By the time the Romans arrived some two millennia ago, peat bogs extended anywhere from 30 to 80 or more kilometers inland, and they continued to grow so long as precipitation exceeded evaporation. Layer upon layer of decayed plant life lifted the land. The bogs came in all shapes and sizes—ridges, domes, or something in-between. All had raised centers with water draining out to rivers that transected or bordered the bogs (TeBrake 2002: 479-480). Early settlers in the lowland sought the driest parts of the countryside such as high banks along streams, and they left the bogs wild and uninhabited. However, around the 9th century this border between human communities and surrounding wetlands began to give way. The population was growing and, with it, the necessity to find more lands to cultivate. The solution appeared obvious—drain the bogs.

The work was arduous. Some of the peat bogs might have contained as much as 90 percent water. The farmers dug ditches leading from the uppermost part of the bogs into neighboring streams. As the water drained off, the groundwater table lowered. Once the table descended a meter or so, peat accumulation stopped, and sod emerged that was capable of being cultivated. At first the peat probably was viewed as simply an obstacle to farming. Later, the farmers dug the peat, dried it, and used it for fuel. As new towns expanded in the coming centuries and the requirement for fuel increased, numerous families turned from agriculture to peat mining. The sum total of these activities was a significant alteration of the natural environment. The most important result was land subsidence, which, in turn, made drainage more difficult and

caused greater damage and more flooding when storms hit the region (TeBrake 2002: 484). The lowered land necessitated the use of dikes, dams, sluices, and, beginning in the 15th century, windmills to pump the water from one elevation to another. Embanked parcels of land within which the water level was regulated were called polders; they dotted the countryside and, along with the ubiquitous windmills, molded the familiar Dutch landscape, in the same way that the 18th century Enclosure Acts created the 'natural' English countryside, or the Land Ordinance of 1785 in the United States imposed a land pattern that is still discernable from the air. In the Netherlands, these changes called for new water authorities, more revenue, additional regulations, and increasingly complicated water management.

British and U.S. land patterns resulted from national legislation, whereas, somewhat counter-intuitively, early local initiatives, engineering, and management shaped the land in the much smaller Netherlands.<sup>3</sup> Most contributions in this volume suggest that fact even in their titles. We read about Holland, Rijnland (two essays), the Flemish coastal plain, Staats-Vlaanderen (Zeeuws-Vlaanderen), and the Diemerdijk. The essays are revealing and complementary and implicitly suggest the limited role of central government (the States-General) in shaping the Dutch countryside. Rather, local and regional water boards took the lead in responding to the common desire to reclaim land, control water (including the onslaughts of the sea), and advance technological capability. The story is complicated, however, and Andrew Wareham rightly points out in his essay that neither the rise nor fall of water management can be reduced to simple explanations. His analysis of pre-modern China, the Low Countries, and the English fens emphasizes the importance of social organisation, legal dynamics, and cultural bias in promoting water management activities. The same factors surely apply to other water institutions and activities around the world. It is also noteworthy that wherever technology finally became too expensive, engineering more professional and rational, or political and legal jurisdictions too complex, central governments eventually came to the aid of local organisers, often at the cost of imposing new limits on decentralized authority. In the case of the Netherlands, this process did not begin until the early 19th century, after the creation of the Rijkswaterstaat in 1798.

Reflecting on Dutch land reclamation, one cannot help but conclude that unintended consequences extended to national culture. Whereas the vastness of the American West stimulated a quixotic belief in the power of land to regenerate and rejuvenate society through individual efforts, the confining space of the Dutch lowlands produced a society that looked to cooperation and consensus for its survival. Whereas trans-Mississippi forests promised a prelapsarian paradise to the first European settlers and an idealized yeoman

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society to 19th century Americans, Dutch peat bogs brought forth no similar imagery. At best, they promised human survival if they could be drained and even some profit from selling peat for fuel. But, as Soens shows in his study of the Flemish coastal plain, the peasants could not always pay the cost of water management. They became leaseholders, while venture capitalists and other wealthy people bought the land and increasingly controlled water management. Van Tielhof and Van Dam tell a somewhat similar story about the Rijnland, where many late 17th century farmers simply could not pay the water taxes, and Van Cruyningen's essay shows the domination of urban landowners in investment consortiums in Staats-Vlaanderen in the southwestern part of the Netherlands. The important point may be, nevertheless, that local and regional water management institutions survived. They may have, as Soens suggests, developed some 'sub-optimal' arrangements for the maintenance of water systems but, at least in parts of the country, they instituted technological, environmental, and financial reforms that allowed for better water regulation and increased revenue.

Peat bogs discouraged agricultural development, but they hardly could have inspired the same fear as did wind-driven storms from the sea—the so-called 'waterwolf' of Dutch history and folklore. Contemporaries suggested that an avenging deity directed these storms at individuals or communities guilty of various transgressions. The awesome displays of nature were literally 'acts of God'. They promised nothing but devastation and lost dreams. In sum, the medieval landscape in the Low Countries challenged human technology, ingenuity, and spirit. Success depended on having an abundance of all three.

Precisely because of the unequal battle with the forces of nature, the Dutch fell back on building a line of defense—dikes, dams, and sluices—to lessen damage when the storms struck and to regulate the supply of water to the polders. Military metaphors seem particularly apt when applied to the Netherlands. Once the Dutch built their water systems, never could they let down their guard, never could they afford to believe the war was actually won. Moreover, their fear of the enemy—uncontrolled water from whatever source—created powerful incentives to put aside local rivalries and address the common danger. Beginning in the early medieval period, the Dutch built a technological system that continues to be refined to the present day. It is a technological system that more than shapes the landscape; it *is* the landscape. Years ago the American historian Leo Marx wrote about the 'machine in the garden', the introduction of factories and machines of all sorts into America's pastoral environment (Marx 1964). In the case of the Netherlands, the garden became the machine.

Given the natural challenges facing the Dutch, what can we say about their views of nature? Milja van Tielhof and Petra van Dam observe that value judgments about ecological issues are time-sensitive. If today we regard land loss as an environmental problem, is it right to make the same judgment about 16th or 17th century land loss? Was it, to quote their essay, 'always such a bad thing'? Scientists and naturalists would no doubt say 'yes', citing dangers to the ecology independent of time. Christian theologians might take an entirely different tack, arguing that God gave mankind the responsibility to 'tame' the land. They possibly miss the point that lowered land, with consequent drainage problems and increased damage during storms, might be less desirable than peat bogs. Others might simply conclude that gaining profit, or at least a living, from the land is no sin. Regardless of the different conclusions, all would agree that the key to Dutch actions can be summarized in one word: survival. Farm families for whom the banks of Amsterdam were distant abstractions struggled to make a living on leaseholds or small plots. Their backbreaking labor turned the Dutch countryside into an artificial landscape that brought burdens and unexpected challenges. This is the other side of Dutch history, with lessons that transcend time and place and must not be forgotten.

## Notes

- 1 The amount and duration of sea level fluctuations in the North Sea remain controversial. Fagan (2000: 63-65) asserts that sea levels significantly rose in the 11th and 12th centuries and then fell again, but Dutch and Flemish researchers believe no credible evidence exists that the North Sea rose along the coastline of the Low Countries after 1000 A.D. I thank the editors for providing information on this topic.
- 2 TeBrake's pioneering book is *Medieval Frontier: Culture and Ecology in Rijnland* (1985). Petra van Dam's contributions include *Vissen in veenmeren* (1998), *Sinking Peat bogs* (2000) and *Ecological Challenges, Technological Innovations* (2002). I am indebted to Marjolein 't Hart for providing me with an overview of Dutch archives and water board historiography.
- 3 I use the term 'The Netherlands' to describe the territory that coincides with today's borders, but it should be remembered that the seven northern provinces (Holland, Zeeland, Utrecht, Friesland, Groningen, Overijssel, and Gelderland) did not win their independence from Spain until the Peace of Muenster in 1648. Each province obtained the right to vote in the States-General. The province of Drenthe also exercised some degree of authority over its own affairs, but the states of Brabant, Vlaanderen, and Limburg were considered spoils of war (and Protestants feared the Catholic Church, which had a strong following in these areas). These states had no representation in the States-General nor were they allowed independent assemblies.

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