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Venice Reconsidered

The History and Civilization
of an Italian City-State,
1297–1797

EDITED BY

John Martin and Dennis Romano

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Toward an Ecological Understanding of the Myth of Venice

ELISABETH CROUZET-PAVAN

Perhaps no city on earth has a more striking relationship with its environment than Venice, a thriving human community improbably built upon water and nestled in the lagoons of the northern Adriatic. In the first written account of Venetian life, dating from the sixth century, when the islands of the lagoon were first settled, Cassiodorus described an amphibious people who made their living off salt and fish. And later commentators have never ceased remarking on the city's extraordinary locale, to which they have attributed aspects of its life as diverse as its apparent social harmony and the use of shimmering colors by its celebrated artists. In this essay, which reprises some of the themes of her path-breaking study "Sopra le acque salse": Espaces, pouvoir et société à Venise à la fin du Moyen Age, Elisabeth Crouzet-Pavan offers a more complex picture of Venice's environmental development, one in which the relationship between the Venetians and their surroundings is portrayed as reciprocal. She argues that the Republic's social and political structures developed in a complex reciprocal relation to the environmental history of the city, as efforts to wrest land from the waters of the lagoon both shaped and were shaped by the city's magistracies and ideals. Over time, the myth of Venice's providential founding on beneficent waters gave way to a discourse about nature's dangers. In Crouzet-Pavan's formulation, the natural environment, human action, and ideology together gave form to the Venetian experience.

VENICE—a harmonious structure of stone, wood, and brick, a composition of fullness and emptiness, a bold and successful artifact—reigns over a series of lagoons. The unique urban mass of Venice stands out against a watery background. Arrayed around this center, which is more symbolic than geographic, is a series of islets.¹ In the distance looms a shoreline marking the frontiers of

another world, which, however, the *dominante* little by little subdued: it is a rural landscape, symbolized by a field or two and a couple of trees.² Not quite so far away, just beyond the taut cordon of beaches, begins another expanse, of a sea that replenishes the lagoon just as it replenishes the city. This aquatic region seems naturally to amplify the inner circle of Venetian waters, offering an escape from finitude and bestowing life and depth.³

Such is the way Venice is described in fifteenth-century travelers' accounts and above all in maps and plans that were continually reproduced throughout the early modern period.⁴ Moreover, as is so often true with regard to Venice, reality cannot be separated from its *mise en scène*. Historian-onlookers have long been impressed by this *mise en scène*. According to this persistent representation, the city, a triumph of human industry, dominates the elements of an ordered, pacified nature. The Venetian community, we are told, subjugated the waters of the lagoons as it established its dominance, amassed its wealth, and secured its maritime dominion before conquering an empire on the *terraferma*, the Venetian term for the mainland. As a result, the water, the environment, and its constraints have long been ignored by historians of Venice. To be sure, numerous monographs have been written about the geography of the lagoons and the gradual mastery of this difficult environment. But these have been in a traditional vein, and until recently they constituted a distinct historiographic sector whose potential contributions were not incorporated into a more general account.⁵ Of course the peculiarities of the site and of the geographical situation of a city built between two worlds and fully engaged in the maritime environment were included among the factors invoked to explain the success of Venice's commercial adventure. And descriptions of the lagoons were always provided as background for discussions of how the city was populated, how people settled the various islands and shores and began to exploit local resources. But once the ineluctable growth of Rialto-Venice begins, it tends to monopolize historical attention. In many prominent works of history the water, tamed and reduced to a mere element of the marvelous Venetian décor, figures only in discussions of the urban aesthetic and theatricality or in meditations on the city's magic. Thus the lagoons have been relegated to oblivion: emptied of their people and activity on behalf of the capital, they were simultaneously stripped of their history.⁶

Images, in other words, have once again shaped historical thinking, ensnaring it in redundant representations. In seeking to understand the waters of Venice and the relation between its people and their environment, I therefore begin by examining the unavoidable image that has long stood as an impene-

trable screen, namely, that Venice is built upon the sea and that its environment is a positive space, a sort of protective cocoon that sustains and defends its very existence.

Our story begins with Giovanni Diacono's reconstruction of the Venetian past, the first account of how the site by the lagoon was settled.⁷ On the mainland the Lombard invasion marked a veritable turning point, the end of an era. People unwilling to submit to barbarian domination fled into the lagoons with relics and treasures from their churches. They were free men, and they fled in order to preserve their freedom in a watery realm not subject to anyone's rule. Being religious, they also fled to protect the Christian religion from the Lombard invaders. This account of the original migration, which established once and for all the basic outlines of the city's history—antiquity, liberty, faith in God⁸—also established an image of the waters around Venice that for centuries remained equally inviolable. Because the inhospitable marshes and mud flats of the lagoon basin were never described, the area came to be seen as an auspicious shelter, a tranquil setting wherein a blessed history was free to begin, or, rather, begin again. In this connection the fact that some versions of the *Origo* gave incompatible accounts of the original situation makes no difference, for all dramatized the refugees' march toward the lagoon and thus hinted at a miraculous aspect to the founding of a city amid marshes where heavenly signs and apparitions were already numerous.⁹

Giovanni Diacono chose to keep silent about the difficulties of settlement, the precarious beginnings, in order to portray a lagoon subsequently dotted with fortifications and cities, as if churches and houses, which already composed an admirable ensemble, had sprung up spontaneously.¹⁰ The repeated use of words such as *urbs* and *civitas* was intended to create an image of a landscape that from the beginning looked like a city. We are a long way from the earliest description of the lagoons, left by Cassiodorus, as a place where shelter was cobbled together out of reeds and the land was perpetually in danger of inundation by rivers and tides.¹¹ By contrast, certain fragments of the *Origo* depict a more laborious inception, a progressive colonization of the territory. Still, the first history of Venice demonstrated that from the beginning the city was constructed as a place of order, beauty, and urbanity. And all subsequent histories—histories of the miracle in stone that is Venice—were shaped by the nature of the city's origins. In later texts, however, what was extraordinary about the urbanization of the lagoons was dramatized by contrasting it with the fragility of the early settlements. This rhetorical device soon became a standard feature of the local narrative tradition. In the fifteenth century, Bernardo

Giustinian invoked it once more when he portrayed the ancient lagoon as a place populated by a race of sailors who owed their very lives to the water.¹²

Whatever differences separate these various accounts of early Venetian life, the same assumption underlies them all: that the lagoons, where God entered into a pact with the community, had been designated by Providence as the place where the destiny of Venice would be fulfilled. This theme of Venetian predestination found its ultimate expression, of course, in Saint Mark's dream as preserved in the chronicles of the thirteenth and fourteenth centuries.¹³ But even before the embrace of this legend marked the final reconstruction of the city's early history, other fictions, less polished yet no less rich in symbolism, were composed to demonstrate the divine election of the lagoons and Rialto. In a territory designated by God began a history willed by God, according to both the legend of San Magno and the forged document that supposedly was the city's founding charter.¹⁴ Furthermore, even though the legend of Saint Mark was jettisoned at the end of the Middle Ages, the history of Venice continued to be interpreted in providentialist terms. Echoes of the providentialist conception still reverberate through the major political texts of the fifteenth century, following a pattern allegedly laid down in speeches by Doge Tommaso Mocenigo as well as in the most routine legislative pronouncements of the councils.¹⁵ Venice was a city from which God had never withdrawn his protection; his benevolence could not be forfeited. The pact concluded with God could not be broken.

Symbolism of this sort had profound implications for the writing of history. To begin with, the history that began, once the *duplicatio* was complete, within the protective embrace of the lagoons was said to be an absolutely new history, totally without precedent (even if the chronicles stated this as a mere postulate). All the texts agree that refugees from Altino, Padua, Treviso, and Oderzo fled to the islands and barrier beaches and thereafter ceased further communication with the cities of the terraferma, soon to be leveled by the new conquerors. What came into being then was a new society of the lagoons, a sovereign society not beholden to any of the forces contending for power on the peninsula.¹⁶ A mission was thus ascribed to the waters: that of putting distance between the settlers and the vagaries of Continental affairs. Thanks to this barrier, to this supposedly impenetrable frontier, the fate of the lagoon was totally divorced from that of the Continent. Out of this came the fundamental axiom that Venetians by their very nature shunned the mainland. The divorce between the two worlds was supposed to be ontological, and of course it had to be maintained if Venetian history was to preserve its coherence and deeper

meaning. These notions proved durable, as we have seen, to the point that they became veritable stereotypes. They explain the inveterate orientations of Venetian historiography and tell us why the links between Venice and the terraferma were ignored for so long. Because the myth, which came into being even as the history was being formulated, celebrated the lagoons as a sanctuary, it necessarily denied the existence of countless essential exchanges between the city on the water and a vast hinterland, just as it denied the economic penetration of the mainland that began centuries before the territorial conquest. It wiped out all memory of the way Venetian land acquisitions had very early given rise to a *contado invisibile* and of how people, goods, and capital had circulated almost constantly.¹⁷ It was even responsible for distorting the realities of the lagoon's morphology, for it said nothing about the existence, in the ambiguous extremities of the basin near Torcello to the north and the Brenta delta to the south, of an amphibious world in which water, land, and marsh merged and people came and went.¹⁸

In the mythology of Venice the lagoons were thus the cornerstone of the city's independence and future power. The protective waters opened onto other spaces, which were soon explored and tamed: the shelter of the lagoons permitted the adventure on the high seas. If the people of Venice naturally ignored the mainland, the sea was their legacy. It was their duty to cultivate that heritage for the sake of their wealth and glory. And when they were not sailing on the waters of the lagoon or the sea, they expanded the horizons of their early commerce simply by sailing up the rivers that emptied into their basin.¹⁹ To be sure, the community on the lagoon, lacking any agricultural base of its own, had no choice but to take to the sea and rivers in search of what it needed to survive. As the chronicles told the tale, however, this imperious necessity became the fulfillment of a destiny, if not the realization of a design. These early analytic choices have proved to be remarkably tenacious.

In short, for the Venetians as well as for their historians of the distant and not so distant past, the prefect Cassiodorus had said it all. Here men worked not with scythes and other tools for cultivating the earth but with ships and the cylinders that were used in the beginning to exploit the salt marshes. The Venetians did not wield the swing plow, and from the first they were sailors. Within a few centuries their flimsy reed dwellings were transformed into a city of stone. The Venetians became rich, but still they shunned the plow; they went to sea instead. The myth, in other words, continued to be a source of fiction for many, many years.

The perennially refurbished myth of Venice's origins transformed a harsh,

hostile environment of mud and water into the most promising and admirable of sites for founding a city. From the first, Venice was insular, that is, free and unique, and soon she became rich and powerful as well. Her insularity enabled her to deny the possibility of decline while maintaining her strength and independence. Listen to Girolamo Priuli in June 1509. With “ultramontane” troops camped nearby, Venice was in the grip of fear, and the memoirist described the preparations for the city’s defense. What did he see? The storing of provisions, of course, as well as the construction of bastions at river mouths and gaps in the barrier beaches. But above all he saw that the city was protected by its waters, which were abundant and deep and could not be crossed by any enemy, according to experts on the lagoon’s hydraulics. This gave Priuli hope: the turmoil of the outside world would end on the *ripe salse*. As always, the community took refuge in its *aque maritime et salse* in order to survive. The war made the lagoon’s ancient boundaries valid once again. The Venetians would make their stand at Santa Marta, Lizzafusina, or Chioggia.²⁰

Subsequent events would gratify Priuli’s hopes and reinforce what historians were writing before Agnadello and even more assertively afterward, namely, that Venice, protected by water as impregnable as any wall, would always remain safe. But for anyone who knows the texts, the *ripe salse* so lavishly praised by the chronicler are more evocative than the aphorism about the “holy walls of the fatherland.”²¹ In the shelter of its lagoon the Venetian community matured until it was ready to fulfill its unique destiny. In time of peril, delivered from the *terraferma*, the city rediscovered the uniqueness of its past. Thus the much-vaunted isolation of Venice was more than just geographical: it was the source of all of the city’s other distinctive traits.

EVEN AS MAJOR REVISIONS were being made in virtually every area of Venetian historiography, the city—buildings and their arrangement, the site wherein groups, networks, and activities flourished, the theater that served as an essential setting for action both routine and extraordinary, the framework within which the community elaborated its system of signs—tended to remain, as in the images described above, miraculously suspended between earth and water, as if the *forma urbis* constituted a neutral and invariable datum. Yet the history of this city was that of a living organism. Its planning and construction were arduous; its parts were not all built, inhabited, or embellished simultaneously. The lengthy construction process involved work on any number of difficult, intractable sites. And how can one reconstitute the life of this urban community—the lives of its people and of the places where they built and

rebuilt—without touching on a wider area, one that includes the lagoons? The Venetians did not sever the ties between the built-up areas and the surrounding waters.²² They knew that the very survival of their city depended heavily on the natural environment, whose history we propose to reconstruct precisely because that environment was no more static than the city itself. By the fifteenth century the problems of the environment had become central and exerted a powerful influence on Venetian actions as well as representations.

Any scholar who wishes to do justice to the early centuries of Venetian history, which for want of sources remain shrouded in darkness, must try to imagine an endless series of public and private works. In order to survive, people had to shore up banks, drain swamps, and build, at first with flimsy materials but later with brick and stone brought from the *terraferma*. The settlement at Rialto marked the beginning of a long period during which a city was created where before there had been nothing but fetid marshes. In Venice, time became space: as the city took shape, grew, and made itself beautiful, it also extended the very ground on which it stood. At first, apart from a few rocky outcroppings, such as Dorsoduro, and a few more solid islands on which people settled and built homes and churches, the land itself did not exist. This in itself is a strikingly singular fact about Venice. In the absence of any preexisting ancient site, any organizing central kernel, any inherited plan, the urban fabric was gradually knitted together out of scraps, scarce bits of land that loomed up out of the water. Then, little by little, as the city began to take control of space, as each islet drained and parceled out its land, the fabric grew. As a result, the relation between land and water was constantly changing. The boundary between these two elements defined the city’s limits. This brings us to another distinctive fact about Venice. Everywhere else in the Middle Ages, cities built and vigilantly defended walls, enclosures that were repeatedly enlarged. In most places the building of new walls largely determined the pace of urbanization. In the lagoon the only confining obstacle was water. Venice erected its only defenses at the outer limits of its territory, a tower in Mestre in the days before Venetian forces sallied forth to conquer the *terraferma* and some small bastions at San Nicolò on the *lido* to defend the major inlets on the barrier beaches that protected Venice from the sea.

The indispensable first step in expanding the city was therefore to create land on which to build. Forays were made into the lagoon and interior ponds; new territory was conquered by dredging, draining, driving pilings, making various other improvements, and linking isolated bits of land.²³ These activities coincided with continuing settlement. Over the years the wave of improve-

ments swelled and became a formidable tide; settlement sites proliferated, and new islands emerged. As for the network of canals, if one excepts the Grand Canal, which defined the overall shape of the city, and the broad channel of the Giudecca, canals were no more stable a part of the landscape than was land. In other words, the canal network was not a fixed feature of the environment as a river might have been in another place. Many old canals were drained eventually, while new ones were created by dredging. The entire system was continually reshaped.

Elsewhere, the city, in order to grow, eliminated vegetation and swallowed up fields and gardens. We should bear in mind that what was being colonized was water and mud.²⁴ Terms such as *rio terrà* and *piscina* remind anyone who strolls through Venice today of these landfilling operations of the past. And many of the few straight streets that cut through the maze of byways follow the traces of drained canals whose memory would otherwise be lost.

Of course this brief essay cannot possibly bring to life all the projects, great and small, that were undertaken over the centuries, interrupted only by outbreaks of plague and periods of demographic or economic recession.²⁵ Initially expansion was spearheaded by large secular and, above all, ecclesiastical landowners, who led improvement projects in individual parishes. In this continuous process of creation the religious orders actually played a leading role for many years. The Benedictines, for example, were very active in the Dorsoduro district. In the thirteenth century they launched a major improvement project around the monastery of San Gregorio, between the Grand Canal and the Giudecca. By the end of the century the entire area was divided into lots. Houses were built of brick and often roofed with tile. New land-communication routes (*calli*) were added to the existing aquatic network, which was reorganized. Later the founding of the mendicant orders had a major impact on urban development. The Franciscans lent support to developments already under way in the vicinity of San Tomà by building their first church there. A noble family from the district, the Badoers, had already launched an attack on the extensive swamps and backwaters that were limiting the city's growth. On the north side, at Santi Giovanni e Paolo, the Dominicans moved into veritable frontier territory. The pioneering efforts of the Carmelites and the Augustinians also deserve mention. On the city's shifting fringes, subject to perpetual redefinition, the role of the religious orders persisted for many years.²⁶

In the last decades of the thirteenth century, however, things began to change. The political authorities began to take control of and even organize the collective project of urban development. The government reasserted its do-

minion over water and marshland. In exchange for a "water rent," it granted concessions on pools and ponds, marshes and putrid wastelands—on any expanse or enclave that disrupted the urban fabric and inhibited progress. The commune even commissioned certain major improvement projects directly. Of these the most spectacular was the plan to create a new island, the Giudecca Nuova, between San Giorgio Maggiore and the Giudecca; this goal was achieved when a new island did indeed emerge from the water and mud in the first decades of the fourteenth century.²⁷ More often, however, the communal authorities acted through magistracies (primarily the Piovego) to oversee drainage projects in the various parishes.²⁸ Landowners large and small, together with their neighbors in the *contrade*, set out to conquer new land. They attacked the interior swamps and ponds as well as the fringes of the lagoon. As swamp after swamp was drained and land and buildings slowly but steadily took the place of water, a city began to emerge.

Growth accelerated throughout the thirteenth century and continued at a particularly rapid pace until the early 1340s.²⁹ The first demographic reverses, attested for the years 1307 and 1320, still had little effect on this remarkable growth despite the undoubted number of victims; the head of steam already built up was simply too great. We must therefore imagine this as a period of intense activity. On the fringes of Venice, on the outer edges of hundreds of gardens on the Giudecca, in Santa Croce, and in Cannaregio, stakes were driven into the ground every day and a few square yards of spongy earth were enclosed with boards. Here landlords dumped waste matter along with a little earth and mud. Slowly the swamp was chipped away. Meanwhile, flotillas of boats circulated from one quarter to another. Mud dredged from the canals, construction rubble, and garbage swept up from markets and streets all served as fill. Anything was good enough to fill in yet another pond, to consolidate yet another parcel of land. Construction did not begin to slow until just before the shock of the Black Plague. By 1343 the slowdown in communal concessions was noticeable. Then the plague hit, and it was not until 1385 that the conquest of new land showed signs of resuming. Although the worst plague years in the fifteenth century also witnessed a slowing of construction, expansion resumed on several fronts, albeit without the formidable strength and vitality of the early fourteenth century.

Meanwhile, other changes, similarly encouraged or guided by the government through its designated magistrates, also affected the shape of the emerging city.³⁰ New streets were created and existing ones enlarged. Space was cleared for a few major thoroughfares that linked the various sections of the

city. These streets, the first to be paved with stones, carried traffic from the welter of secondary streets that fanned out into individual parishes.³¹ Quays were built, shored up, and repaired when the water eroded them. Bridges were built and rebuilt, at first of wood and then, in the fifteenth century, of stone. Now traffic could flow from quarter to quarter. Indeed, in the last centuries of the Middle Ages the original network of canals was already backed up by a network of land routes. The result was a veritable revolution that transformed the traffic flow in Venice.³² Different functions were assigned to the two systems of communication. People were now inclined to follow the *calli* unless forced by the absence of a bridge over a waterway to take a ferry. Merchandise and other heavier cargoes went by canal from port to marketplace, from the Arsenal to the basin of San Marco, or from one warehouse to another.

Locating one of the largest cities in the Medieval West in the middle of a lagoon thus required unremitting labor, organization, and imaginative use of technology. For centuries the history of Venice, a city perpetually under construction, was one of energetic activity. Here I am not allowing myself to be misled by the reconstructions of the chronicles, which boldly assert that from the moment the duchy moved its seat to Rialto in 810 the government assumed responsibility for all hydraulic improvements and never relinquished it thereafter. The facts speak for themselves. Countless cartons full of documents—Great Council deliberations, notarized acts, court documents, monastic charters—tell us how day after day the city increased and organized its space. Further evidence of Venetian energy can be found in speeches, which tirelessly detailed and celebrated the city's irrepressible progress. The vocabulary of public documents up to the fourteenth century is one of a young, active, conquering city. Despite the technical difficulties, the occasional failures, and the financial burden, which was onerous for public and private treasuries alike, the texts that governed urban policy remained optimistic. Expressing faith in steady progress, they describe a formidable spirit: the swamps were receding, the lakes were shrinking, and the territorial gains in every area of improvement were considerable. *Pallificare et allevare, facere palos, serrare de tolle, proicere, ampliare, atterare, elongare, extendere, fabricare, aptare, levare, hedicare, domos facere*—whether in Latin or the vernacular, all of these verbs refer to the drainage and apportionment of new land. Repeated in hundreds of documents, they mark the successive phases of lengthy projects. They report on the mobilization of forces. For centuries the people of the city gave unstintingly of their creative energy. Indeed, as the sources make clear, even if improvement did provoke conflict, encourage speculation, and make some people rich, there was nevertheless

strong solidarity in the face of a hostile environment. The *vicini* of the parish societies led an effort that, if not always collective, was at least concerted.³³ The community came together in a perpetual battle against the water, a battle in which the city's very survival was at stake. From council decisions alluding to what was extraordinary about the city the people of Venice had created in the midst of the salt marshes one gets the impression that the pride expressed by the council members was shared not just by the ruling elite but by large numbers of ordinary people as well.³⁴

In the fifteenth century, however, this optimism evidently faltered. Since the first settlement at Rialto the land had been all-conquering; now the water began to threaten. The vocabulary changed, and Venice began to describe itself as imperiled by water, by the very environment in which it had grown up. Its history became that of a place that people had providentially built for themselves to live in but that now found itself under attack by a deadly force. Defending the city from this new danger required unrelenting effort. One by one, the rhetorical mechanisms of an endangered city were put into place.

One reflection of the new thinking about hydraulics and the growing awareness of the problems of the site is the first treatise on the lagoon, written in the second half of the century.³⁵ It was a product of the elite who had taken charge of the most important offices in the Venetian state's new bureaucracy. Its author, Marco Corner, the man who for a time was in charge of wood procurement for the city, in his official capacity had made a systematic inspection of the rivers by which wood arrived either floating on the surface of the water or carried as cargo by various vessels. Later he was twice elected *savio alle acque*, and as such it was his duty to oversee a new project that had just recently gotten under way, the diversion of the Brenta.³⁶ In other words, here was a man whose official responsibilities had led him to develop a certain technical competence.

This noble, who became a specialist in hydrographic affairs, then wrote a history of the lagoon in which he proposed a series of emergency measures to deal with what he saw as a grave threat to the lagoon's well-being. Knowledge of the past, Corner observed, helps us to understand the future. His treatise begins with a description of the Adriatic coast as it looked many centuries earlier. He describes a sort of lost paradise, a vast, primitive lagoon that stretched from Ravenna to Aquileia. In those halcyon days, Concordia, Altino, and Oderzo were touched by the sea. But as the land expanded, the sea receded. At this point in his narrative Corner links historical time to recent events and deplores the fact that even as he writes the same phenomena can be observed in the marshes of the Venetian basin. The ancient sites of Cittanova and Jesolo, sur-

rounded by marshland that had become unhealthy, were abandoned. Only a handful of survivors remained on the barrier beaches of Lio Maggiore, which could boast of as many as seven churches.³⁷ Ruin after ruin, abandoned settlement after abandoned settlement, dereliction after dereliction, he charts the progress of an ecological disaster. In each case Corner explicitly points a finger of guilt at the Sile and Piave Rivers. All of the woes that he describes can be traced to a single cause: the discharge of fresh water into the lagoon and the consequent deposit of silt.

Everywhere in the basin, according to Corner, the same destructive process was at work: the lagoons were shrinking irreversibly. This posed a direct threat to the city of Venice, since even there a shortage of water threatened the very artery on which the life and prosperity of the city depended: the Grand Canal. In the face of all these threats something had to be done about the rivers.³⁸ Despite this dramatic presentation, however, Corner's rescue plan was not adopted. One of his central proposals—to divert the Brenta in the vicinity of Stra and channel it by way of the Canal delle Bebbe to the port of Brondolo, far from Venice—is known to have been rejected. In order to maintain navigation on the river and protect various industries situated along its banks, a less radical diversion was chosen instead. The water from the Brenta was redirected toward Malamocco. This did nothing to halt the flow of fresh water into the Venice basin and simply shifted the sedimentation problem to a new location. Corner's second proposal—to divert the Sile from the lagoon toward Lio Maggiore—was also dismissed.³⁹

For all its qualities, Corner's treatise was a polemical text that needs to be placed in its original context if it is to be fully understood. The conquest of the *terraferma* and the constitution of a Venetian territorial state changed the dimensions of the problem of the lagoon. In the first place, it was finally possible for the Venetians to take direct action to alter the course of the rivers that emptied into their lagoon. In the fifteenth and sixteenth centuries, therefore, many of the Senate's debates and on-the-spot inspections, as well as much of the hydrographic literature, were taken up with the question of diverting rivers. And some of the major projects that were adopted attacked this very problem with varying degrees of success.

In addition, *terraferma* expansion had an impact on the economic equilibrium of Venice. To the Signoria now fell the difficult task of reconciling the interests of a city whose fortunes rested on commerce with those of a mainland state dependent on agriculture and crafts.⁴⁰ Diverting rivers gave rise to difficulties and conflicts precisely because it was impossible to satisfy the contradic-

tory demands of these two constituencies. The hydrographic question thus became a durable bone of contention between, broadly speaking, a party of the port and the lagoon and a party of the land. Not surprisingly, governmental action was hindered, slowed, and at times subverted as a result of the many pressures to which it was subject and frequent changes of course. As for Corner, it hardly needs stating that he was in the lagoon camp.

Nevertheless, his passion is not the end of the story. The public record contains a rather bleak picture. Corner deplored the silting of the lido inlets and the steady expansion of salt marsh and stagnant water. Official councils and magistrates described the same dangers. We know now, of course, that the fragile, unstable lagoon environment was and is being transformed by contrary forces all but impossible for human beings to control. Attentive care and unremitting effort are required. The record of fifteenth-century public deliberations shows that people at that time were aware of the growing dangers.

Take the situation of the port, for example. The environment of the estuary closest to Venice, that of San Nicolò, had always been harsh. As early as the fourteenth century a number of projects had attempted to increase the depth and flow rate of the port channel, but the methods selected were at cross-purposes with one another.⁴¹ By the second half of the fifteenth century project followed project without interruption. By limiting the width of the inlet at Malamocco and submerging a number of wooden caissons and rafts, the experts hoped to increase the flow of water into San Nicolò. But the work accomplished nothing. "To the great peril of ships and galleys, the port is filling with sand, and water is lacking."⁴² "Over the past few years the sand bar not only has moved closer to the shore but has progressed to the point where, when the winds are unfavorable, ships must wait in order to enter the port."⁴³ "The situation of our port is getting worse because the water now is too low virtually around the clock."⁴⁴ In these circumstances the usual remedies, such as using lighters to load and unload ships riding at anchor, were no longer sufficient. High-tonnage ships were often diverted toward the Malamocco inlet, a little farther down the coast.

Silted beds also threatened the system of urban canals. There was not enough water. The muddy canals gave off a fetid, unhealthy stench. Corruption stalked the city. The danger, according to the sources, was twofold. Swamps and reeds laid siege to Venice, eating away at the lagoon and moving toward populated areas. But within the city proper, grass was growing in the canals, and Venice was in great danger of drying up. The same words occur over and over: *mud, sludge, filth, foulness, corruption*.⁴⁵ Yet the canals were indispensable to the life of

Venice. They constituted a communications network, and they still provided water for many household and workshop needs. Above all, they kept the city clean and pure.

At this point the basin began to shrink and tidal flows diminished. Senators proclaimed that not only the canals but the city itself was at risk.⁴⁶ Venice began flushing its whole system of canals at regular intervals.⁴⁷ Most of this work was still done by hand, with shovels, after each canal was blocked off and drained. On the Grand Canal, however, machines were used. The justification for all this work and for the use of innovative technology was simple: the rate of silt accumulation was rising inexorably. Judging by the countless inspections carried out by commissions responsible for rivers, beaches, and lagoons, the degradation of the ecosystem must have been serious and widespread. The commissions' notes and reports invariably stress the inadequacy of the work being done and the growing magnitude of the problems faced.

Corner's description of changes in the northern lagoon is also confirmed by a number of other sources. Indeed, an abundance of documents enables us to follow almost step by step the changes in the aspect of the northern basin, especially the terrible devastation around Torcello. Until the fourteenth century the muddy area extending out from the *terraferma* was limited in size. The silt deposited by the Sile to the north and the Zero and Dese to the south had had only a limited impact. Then something happened that changed things dramatically: the Dese altered its course.⁴⁸ Its sedimentation rate increased. With the influx of fresh water and mud, the number of halophilic plants also increased. Little by little, swamps invaded the northern lagoon, and with them came anopheles mosquitoes. Death cut a swathe through the region. The archipelago of Costanziaca was the first to feel its effects: life there was wiped out in the early fifteenth century. Then the Amiana Islands were affected. Mud swallowed up ancient pastures and orchards. Campaniles collapsed, and a landscape of only ruins and a few huts remained amid the swamps. Next it was the turn of the islets of Torcello, already devastated by an earlier demographic depression and various structural economic difficulties.⁴⁹

It thus appears that the lagoon became a fragile place during these decades. No doubt it had always been so. But the environment was transformed, and the changes, as the sources agree with unmistakable unanimity, caused unstable equilibria to break down and made the situation more precarious than ever. The triumphant community of Venice, which for centuries had been caught up in the process of conquering territory and creating an urban order, was candid about its fears. Behind the image of a beautiful city protected by its lovely

aquatic setting we find problems and anxieties. The aquatic equilibria had to be maintained. And yet, as we know from repeated declarations by councils and magistrates, countless obstacles stood in the way of this essential project.

HOW ARE WE to interpret these dramatic changes? One must begin, of course, by taking note of the very real ecological factors affecting the type of environment in which Venice developed. Even today it is not easy to maintain the equilibrium of the lagoon.⁵⁰ The environment evolves according to a vast chronology of its own, upon which the humans who live there impose their shorter-term chronology.⁵¹ Although we still know far too little about the history of the environment, in order to understand the history of Venice we also need to understand the history of the site, and in the case of Venice that history was one of constant change. Some scholars argue that the very geography of the basin underwent a major transformation during the Middle Ages.⁵² But that hypothetical possibility aside, it remains true that the lagoons were and are in constant flux. Nature is unusually active here, and to enumerate all the changes that frequently conflicting natural forces have wrought in the region would be an endless task; land has been submerged, sediment has been deposited, bays have been reshaped, and the boundary between flowing and stagnant water has shifted constantly. In the fifteenth century, as we have seen, the basin shrank and became unhealthy. Even if some public documents of the time overstated the problem, surviving engineering reports confirm that for ten or twenty years the expansion of mud flats and silting of channels were important issues.⁵³

Of course the Venetians soon tried to control the complex environmental factors involved. Their efforts to channel currents and rivers and protect beaches were not without effect, but every attempt to dam or divert a stream or to close or reopen one of the inlets through the barrier beaches affected a whole range of equilibria of whose very existence the people involved had only the vaguest inkling. In the long history of managing the environment some things were more important than others. The hydrographic problem was surely paramount. And until Venice actually conquered an empire on the *terraferma* Venetians could do nothing about river silt and were at the mercy of various decisions taken by their neighbors.⁵⁴

The state of technology also imposed limits on what could be attempted. Take the reinforcement of the beaches, for example. Until the great sea walls, the *murazzi*, were completed in 1782, this was an ongoing struggle, and the whole project is indicative of the willingness of governments from the four-

teenth to the eighteenth century to persevere in a monumental undertaking as well as to spend substantial sums of money. The archives of the magistracy in charge of this project in the fifteenth century yield a virtually unbroken record of what the effort entailed. A storm had opened a breach in the coastal defenses, which had to be repaired at once. The long-term goal was to build up, restore, and reinforce the beach. To that end, an earthen embankment was put in place, and over time its height was increased. Later, a stone causeway was erected in front of this earthen embankment to absorb the brunt of the waves. In a carefully orchestrated ballet vessels laden with blocks of stone for this defensive wall were dispatched from the Dalmatian coast. Elsewhere, palisades built upon a double or triple row of pilings were used to stabilize the sandbar. In the second half of the century a series of contracts were awarded; these tell us a great deal about the steady flow of cash from public coffers into the pockets of entrepreneurs and skilled workers to pay for the construction of this defensive bulwark.⁵⁵ Yet the same records also prove that however dogged the government was in carrying on the fight, it was also obliged, at least until the murazzi were completed, to repair sea walls, which succumbed with troubling regularity to the battering waves.

It should also be noted that when it came time to make decisions, many factors that had nothing to do with preserving the environment naturally came into play. I have already alluded to the debates that arose over the issue of hydrographic regulation.⁵⁶ The authorities were repeatedly obliged to accept compromises, take half-measures, and make choices. How could the needs of a populous and industrious city be reconciled with the protection of the lagoon? Decision makers often were torn between laxity and severity. The management of the urban canals illustrates these dilemmas to perfection. Filth from the sewers, pollution from tanneries and dye shops, debris from construction sites, trimmings from the marketplace, waste from lime and brick ovens—all of this ended up in the canals, just as, in other cities, it ended up in the river. The canals were not stagnant, to be sure, and the tides helped to clean them out and sweep pollution out of the basin. But the silting of channels was compounded by the abundance of waste. The excess of human and artisanal discharge made it necessary to flush the canals with increasing frequency. Countless ordinances were adopted to protect the water. Yet violators often avoided paying the price or received pardons because commerce and production still took precedence.

Furthermore, knowledge of the environment and its many problems came slowly. It was not until the fifteenth century that people began to investigate the issues in any systematic way. The authorities began to call upon the experi-

ence and expertise of pilots, fishermen, and elderly men.⁵⁷ Interest in the problems of the lagoon was awakened in some of the nobles who were called upon to fill various positions and to take part in commissions to inspect dikes, ports, and canals or to conduct investigations and write reports. A substantial amount of information was gathered. Reports, notes, and drawings were preserved. Archives were created to store records of earlier measures for dealing with hydrographic matters and problems of the lagoon.⁵⁸ And in the last third of the fifteenth century, as elections of *savii alle acque* became more regular, a staff of technical experts began to be assembled, men upon whose services the magistrates could call as needed. The new office in charge of the environment had a budget from which it could pay its own staff of engineers.⁵⁹

This was how things stood at the end of the fifteenth century. The Signoria by this point had the means to act. It could call on the services of a stable of competent engineers as well as on a group of entrepreneurs with experience in hydraulic projects. A pragmatic culture had developed. Yet debate remained bitter, and the proposed solutions were contradictory. Worst of all were the repeated assertions that the environment was steadily going downhill. Does this mean that all the efforts came to naught, that public action was of no avail, and that the new technology was a waste? Do the failures imply that man is incapable of dominating his environment and must submit to its vicissitudes? And does man's feeling of helplessness explain why the fear of seeing the elements destroy the Venetian creation recurs in the texts with such plaintive regularity? The challenge of Venice—to build a city in a swamp—was of course extreme. It could succeed, or so the texts insisted again and again, only with the blessing of Providence. And for a long time it had succeeded, but now man's triumph over the environment seemed about to turn to defeat. The rebellious environment could no longer be subjugated, the authorities maintained. The image of the chosen city hung in the balance. The most powerful city-state in the West thus discovered that its relation to the ecosystem clearly limited its ability to launch and succeed at new undertakings. Behind the myth of the lagoon as protector lay certain inescapable obsessions and a complex relationship between the community and its environment.

How are we to make sense of this? There can be no doubt that Venice's problems were real and that they became more severe than ever in the fifteenth century. As we have seen, the history of the lagoon environment followed its own chronology, and our knowledge of its evolution remains imperfect. Furthermore, human intervention was in some cases ineffective or even counter-productive. Finally, the population had a major impact on the site. A number of

indicators suggest that when demographic growth resumed, this impact continued to be felt. Coastal farmland was dearly coveted. Excessive exploitation of the lagoon's resources unbalanced the environment. Within the city, people became more acutely aware of noxious pollution and other problems. But there can also be no doubt that the crisis and the anxiety began to be dramatized in the fifteenth century in the ideological discourse of the Venetian state. The relation between words and things is not determined solely by changes in the way people look at their world. Semantic evolution, I want to argue, was also used by the Venetian state, which, because it wanted to be the unique arbiter of meaning for those who inhabited its territory, seized upon the lagoon as a way of declaring itself to be the sole sovereign power. To be sure, according to the texts of decisions that dealt with highly technical problems in highly technical terms, the community always maintained its trust in Providence. The city continued to believe that it had been chosen by God to carry out his designs. Nevertheless, the new discourse of danger, which coexisted with this older rhetoric, marked a crucial change in both the political history and the mythology of Venice. It helped to desacralize the Venetian mentality by presenting the state, its magistrates, and their courses of action as capable of preserving the city and ensuring the survival of its inhabitants.

The discourse of danger served a number of purposes at once. It legitimated increased governmental intervention in resource management and preservation of the ecosystem and justified the resulting costs and encroachments on private initiative. It legitimated the establishment of a new bureaucracy as new offices were created to replace the medieval magistrates, whose role diminished. It also sought to strengthen solidarity among the members of the lagoon community at a time when, owing to the completion of urban construction, it might otherwise have declined. Finally, and most important, it bestowed upon the political authorities of Venice the supreme responsibility of ensuring the city's survival. In the face of innumerable perils, of countless new dangers, it was up to the state to triumph over adversity and deal with whatever hazards arose. By turning the environment and its problems into a target of instrumental action by the state, the state affirmed its own role as the indispensable ruler of time and space.

Thus began a new phase of Venetian history. To be sure, fifteenth-century hydraulic projects had their ups and downs. Firmness often gave way to declarations of helplessness and half-measures that were either contradictory, useless, or ill-advised. State action had many weaknesses. In the first half of the sixteenth century, however, more clearly defined principles of hydraulic pol-

icy began to emerge. Finally, in the seventeenth century various "macro-hydraulic" projects put an end to the threat from the rivers and made it possible to devise a rational policy for saving the basin, whose present-day contours are a result of that effort.⁶⁰

Throughout the history of Venice, then, there have been periods when community spirit was focused and utilized in the name of what was presented as the common good. In this way, moreover, the political authorities defused various tensions and conflicts for their own benefit. First, there was the heroic age of progress during which a city was built on land reclaimed from the swamps. Later, from the fifteenth century on, came what I want to call the age of water, during which active measures were required to save the city. As projects multiplied, as the need for action was described as ever more urgent and imperative, state control increased.⁶¹

The community's own interpretations of its history thus mesh nicely. If we forget about the original image of a Venice protected by the sanctuary of its lagoon, we discover an image of more recent origin but no less tenacious: that of a marvelous city determined to survive in an impossible location. As Venetians describe the fragility of the site and the crisis of the ecosystem, they make the very existence of their city seem that much more miraculous. Seen in this light, the history of Venice is supposed to be a microcosm of man's relation to the environment. It exemplifies, we are told, the slow, arduous process of learning to deal with the elements of nature. But we are also told that because Venice overcame all obstacles and survived, the battle was on the whole victorious. Once again the city is seen as miraculously suspended between land and water. Inevitably, whoever writes the history of Venice seems condemned to write the history of its myths.

Translation by Arthur Goldhammer

NOTES

1. This is the way the geography of the lagoon was represented in 1500 by Jacopo de' Barbari, whose great map depicts some of the land masses around the Rialto archipelago. However, because of its extensive development and density, as well as its central position, the city of Venice dominates the map and is without doubt the focus of attention. The lagoon's islets, including those in the northern part of the basin, are clearly portrayed as modest satellites of the imposing Venetian ensemble. It has been shown that Barbari's model influenced how Venice was seen for a very long time

afterward. Take, for instance, the map by Ignazio Danti (1536–86), which can be seen in the Vatican's Gallerie delle Carte Geografiche (see J. Schulz, "Jacopo de' Barbari's View of Venice: Map Making, City Views, and Moralized Geography before the Year 1500," *Art Bulletin* 60, no. 3 [1978]: 425–74. See also G. Mazzariol and T. Pignatti, *La pianta prospettica di Venezia del 1500 disegnata da Jacopo de Barbari* [Venice, 1962]; T. Pignatti, "La pianta di Venezia di Jacopo de Barbari," *Bollettino dei Musei Civici Veneziani* 1–2 [1954]: 9–49; and G. Cassini, *Piante e vedute prospettiche di Venezia (1479–1855)* [Venice, 1971]. For an analysis of various cartographic representations, see also G. D. Romanelli, "Venezia tra l'oscurità degli inchiostri: Cinque secoli di cartografia," introduction to the catalog *Venezia, piante e vedute*, ed. S. Biadene [Venice, 1982]; and J. Schulz, "Maps As Metaphors: Mural Map Cycles in the Italian Renaissance," in *Art and Cartography: Six Historical Essays*, ed. D. Woodward [Chicago, 1987], 97–122, 223–29. Finally, one other work that is indispensable for the history of iconographic representation is D. Rosand, "Venezia Figurata: The Iconography of a Myth," in *Interpretazioni veneziane: Studi di storia dell'arte in onore di Michelangelo Muraro*, ed. D. Rosand [Venice, 1984], 177–96).

2. This representation underscores what a number of recent historical works have finally shown, namely, that the Venetian basin was strongly linked to both the sea and the mainland. Hence it bears comparison with the more explicit representations of the lion, the symbol of Venice's patron saint, showing the well-known lion in the "andante" position—in profile, with one front paw resting on the Gospel, the other on the ground, while the two hind paws are in the water. The lion is looking toward the land, however. In 1516 Carpaccio was commissioned to do a painting with this theme. But as early as 1415, in the years following Venice's expansion into the *terraferma*, Jacobello del Fiore was the first to paint an "andante" lion (see M. Pozza, "I proprietari fondiari in Terraferma," in *Storia di Venezia: Dalle origini alla caduta della Serenissima*, 12 vols. [Rome, 1992–98], vol. 2, *L'età del Comune*, ed. G. Cracco and G. Ortalli, 661–80).

3. For the Venetians' complex and ambivalent attitude toward the sea, see A. Tenenti, "Il senso del mare," in *Storia di Venezia*, vol. 12, *Il Mare*, ed. A. Tenenti and U. Tucci; and idem, "The Sense of Space and Time in the Venetian World of the Fifteenth and Sixteenth Centuries," in *Renaissance Venice*, ed. J. R. Hale (London, 1973).

4. See E. Crouzet-Pavan, "Récits, images et mythes: Venise dans l'iter hierosolymitain," *Mélanges de l'École française de Rome* 96, no. 1 (1984): 489–535, reprinted in idem, *Venise: Une invention de la ville, XIIIe–XVe siècle* (Seyssel, France, 1997), 256–72. Note, however, that some early modern maps depict both the city and its lagoons, whereas others depict the city alone. Over time maps of the second type became increasingly common.

5. The bibliography is impressive but uneven in quality. Among the earliest works are G. Rompiasio, *Metodo in pratica di sommario o sua compilazione delle leggi, terminazioni ed ordini appartenenti agli Ill. ed Ecc. Collegio e Magistrato alle Acque* (1771; reprint, Venice, 1988); C. Tentori, *Della legislazione veneziana sulla preservazione della laguna, Dissertazione storico-filosofico-critica* (Venice, 1792); B. Zandrini, *Memorie storiche dello stato antico e moderno delle lagune di Venezia e de quei fiumi che restarono divertiti per la conservazione delle medesime* (Padua, 1811); C. Vacani di Forteolivolo, *Della laguna di Venezia e dei fiumi nelle*

attigue provincie: Memorie (Florence, 1867); and A. Averone, *Saggio sull'antica idrografia veneta* (Mantua, 1911). Various historiographic approaches are illustrated by several more recent works, including *Mostra storica della laguna veneta* (Venice, 1970), in particular in that work B. Lanfranchi and L. Lanfranchi, "La laguna dal secolo VI al XIV" (74–84), M. F. Tiepolo, "Difesa a mare" (133–38), P. Selmi, "Politica lagunare della Veneta Repubblica dal secolo XIV al secolo XVIII" (105–15), and G. A. Ravalli Modoni, "Scrittori tecnici di problemi lagunari" (169–73); Ministero dei Lavori Pubblici, *Magistrato alle acque, Venezia, Convegno di studi, Laguna, fiumi, lidi: Cinque secoli di gestione delle acque nelle Venezie* (Venice, 1983); Archivio di Stato, Venice (ASV), *Laguna, lidi, fiumi: Cinque secoli di gestione delle acque* (Venice, 1983); S. Ciriaco, "Scrittori d'idraulica e politica delle acque," in *Storia della cultura veneta*, ed. Girolamo Arnaldi and Manlio Pastore Stocchi, 6 vols. (Vicenza, 1976–86), 3, pt. 2: 491–512; and finally, culminating recent methodological developments, the monumental and stimulating study by W. Dorigo, *Venezia: Origini: Fondamenti, ipotesi, metodi*, 2 vols. (Milan, 1983). The following works are still quite useful: G. Pavanello, "Di un'antica laguna scomparsa (La laguna eracliana)," *Archivio Veneto-Tridentino* 3 (1923): 263–307; idem, *La Laguna veneta (Note illustrative e breve sommario storico)* (Rome, 1931); idem, "Della caduta dell'Impero romano alla costituzione de nuovi centri politici e della laguna veneta propriamente detta," in G. Brunelli, G. Magrini, et al., eds., *La laguna di Venezia*, pt. 3, *La storia della laguna fino al 1140* (Venice, 1935), 53–73; R. Cessi, "Il problema della Brenta dal secolo XII al secolo XV," in *ibid.*, vol. 2, pt. 4, tome 7 (Venice, 1943), 81–100; idem, "Evoluzione storica del problema lagunare," in *Atti del convegno per la conservazione e difesa della laguna e città di Venezia* (Venice, 1960), 23–64.

6. On the causes of this forgetfulness, see E. Crouzet-Pavan, *La mort lente de Torcello: Histoire d'une cité disparue* (Paris, 1995). A number of more recent works representing a variety of approaches attest to a new interest in the history of the lagoon's communities, among them E. Concina, *Chioggia, saggio di storia urbanistica dalla formazione al 1870* (Treviso, 1977); J. C. Hocquet, *Le sel et la fortune de Venise: Production et monopole*, 2d ed., 2 vols. (Lille, 1982), and, by the same author, several articles reprinted in his *Chioggia capitale del sale nel Medioevo* (Sottomarina, Italy, 1991); and R. J. Goy, *Chioggia and the Villages of the Venetian Lagoon* (Cambridge, 1985).

7. See G. B. Monticolo, ed., *Cronache veneziane antichissime* (Rome, 1890); and Giovanni Diacono, *La cronaca veneziana*, ed. M. de Biasi, 2 vols. (Venice, 1988). Scholars now believe that the *Chronica de singulis patriarchis Novae Aquileiae*, published in *Cronache veneziane antichissime*, was written between 1045 and 1053. The earliest Venetian narrative source is therefore Diacono's chronicle.

8. Owing to the *duplucatio*, the Venice of the lagoon was, according to the narrative, basically a repetition of the first, mainland Venice and therefore already endowed with a lengthy history. This theme not only compensated for the newness of the island societies, however; it also invented a past, which became Venice's. The chronicler laid claim to a heritage because, he said, the Lombard invasion had introduced a discontinuity into the history of the *terraferma*. A civilization ended on the mainland and survived only in the lagoon, where Venice was at the same time called upon to forge a new history (see A. Carile, "Le origini di Venezia nella tradizione storiografica," in Arnaldi

and Stocchi, *Storia della cultura veneta*, 1:135–66; and A. Carile and G. Fedalto, *Le origini di Venezia* [Bologna, 1978].

9. R. Cessi, ed., *Origo civitatum Italiae seu Venetiarum* (Rome, 1933), 30–35.

10. G. Fasoli, “I fondamenti della storiografia veneziana,” in *La storiografia veneziana fino al secolo XVI: Aspetti e problemi*, ed. A. Pertusi (Florence, 1970), 11–44, reprinted in Fasoli, *Scritti di storia medievale*, ed. F. Bocchi, A. Carile, and A. I. Pini (Bologna, 1974); Crouzet-Pavan, *La mort lente de Torcello*, 36–41.

11. Magnus Aurelius Cassiodorus, *Variarum libri XII*, ed. A. J. Fridh, *Corpus Christianorum*, Latin Series, 96 (Turnhout, Belgium, 1973), 492.

12. Bernardo Giustinian, *De origine urbis Venetiarum*, in J. G. Graevius, *Thesaurus antiquitatum et historiarum Italiae*, vol. 5, pt. 1 (Leiden, 1722).

13. Carile and Fedalto, *Le origini di Venezia*, 32–33. The vast bibliography on Saint Mark’s dream is cited in Crouzet-Pavan, *La mort lente de Torcello*, 69–71.

14. On the composition of the legend of San Magno and its analysis and use by certain Venetian chroniclers, see Crouzet-Pavan, *La mort lente de Torcello*, 61–65. The basic reference on the supposed charter is still V. Lazzarini, “Il preteso documento della fondazione di Venezia e la cronaca del medico Jacopo Dondi,” *Atti dell’Istituto Veneto di Scienze, Lettere ed Arti* 75, pt. 2 (1915–16): 1263–81. For an analysis of minor forgeries that added complexity to the principal founding myth of 421, see Crouzet-Pavan, *La mort lente de Torcello*, 65–69.

15. The providentialist theme is particularly clear in Mocenigo’s speech of 1421 (see Marin Sanuto, *Vitae ducum venetorum*, ed. Ludovico A. Muratori, *Rerum Italicarum Scriptores*, 22 [Milan, 1733], cols. 949–58). Regarding legislative pronouncements, I am thinking in particular of repressive legislation in regard to morals (see, e.g., E. Crouzet-Pavan, “*Sopra le acque salse*”: *Espaces, pouvoir, et société à Venise à la fin du Moyen Age*, 2 vols. [Rome, 1992], 2:845–46; and idem, “Une fleur du mal? Les jeunes dans l’Italie médiévale (XIIIe–XVe siècle),” in *Histoire des jeunes en occident de l’antiquité à l’époque moderne*, ed. G. Levi and J.-C. Schmitt [Paris, 1996], 209–11).

16. To a large extent the independence of Venice from ties with the mainland explains the surprisingly durable legend according to which new episcopal sees were established in the lagoon at the time of the great migration, as the bishops of the terraferma one by one abandoned their old sees in favor of new ones. In reality, it took some time for the duchy to establish a stable religious system.

17. On the *contado invisibile*, see S. Bortolami, “L’agricoltura,” in *Storia di Venezia*, vol. 2, *L’età del Comune*, 461–90.

18. The myth implied that the territorial state was at best a useless appendage to the Republic, at worst a damaging one, and in any case of little interest to historians because unconnected with its political and economic realities. As a result, knowledge about the Venetian terraferma for a long time remained superficial and vague. Distant traffic and convoys were analyzed; Romagna and the constitution of the Empire were scrutinized; and the effects of the Turkish incursion and, later, of the presumably catastrophic (for Venice) era of discovery were described. Apart from the study of military exploits associated with the conquest and reconquest of the mainland territory, the *stato di terra* was neglected. Over the past three or four decades, however, the

perspective has shifted dramatically. A vast inquiry is under way, begun by two pioneering works, M. Berengo’s *La società veneta alla fine del Settecento: Ricerche storiche* (Florence, 1956) and A. Ventura’s *Nobiltà e popolo nella società veneta del ’400 e ’500*, 2d ed. (Milan, 1993). Many subsequent monographs reflecting various points of view have deepened our knowledge.

19. Interestingly, according to the official historiography, from the beginning Venetians clashed with Paduans for control of the mouths of these rivers (see P. Morosini, *Historia della città e repubblica di Venezia* [Venice, 1637], 3–4).

20. Girolamo Priuli, *I diarii di Girolamo Priuli [AA. 1499–1512]*, ed. Roberto Cessi, *Rerum Italicarum Scriptores*, 24, pt. 3, vol. 4 (Bologna, 1938), 19–24, 30–31.

21. The humanist Giovanni Battista Egnazio wrote the following very explicit verses for the *magistrato alle acque*:

Venetorum urbs divina disponente
 Providentia aquis fundata
 Aquarum abitu circumseptata
 Aquis pro muro munitur
 Quisquis igitur quoquo modo
 Publicis aquis inferre detrimentum
 Ausus fuerit Hostis Patriae iudicetur

(quoted in P. Selmi, “Politica lagunare della veneta Repubblica,” 108–9). The formula, repeated endlessly, occurs in countless treatises on the lagoon, official histories of the Republic, and many compilations. To cite a few other references from a wealth of similar ones, see the dedication to Antonio Piscina in ASV, Archivio Proprio Giovanni Poleni, reg. 27; ASV, Archivio Proprio Trevisan, reg. 4, bk. 1; Luigi Cornaro, *Trattato di acque* (Padua, 1560), 1–3; and Bernardo Trevisan, *Trattato della laguna* (Venice, 1715).

22. Here we touch on the whole complex and evolving problem of the political, legal, economic, and cultural relations between the capital city and the duchy, with its land, water, and people living in a space that was more than just an occupied territory. For more on this view of the matter, see Crouzet-Pavan, *La mort lente de Torcello*.

23. Here I am briefly summarizing the findings of Crouzet-Pavan, “*Sopra le acque salse*,” 1:57–139. For a brief overview, see G. Bellavitis and G. D. Romanelli, *Le città nella storia d’Italia: Venezia* (Rome, 1985).

24. See the suggestive remarks in B. Cecchetti, “La vita dei veneziani nel 1300: Parte 1, La città, la laguna,” *Archivio Veneto* 27 (1884): 5–54, 321–37; 28 (1884): 5–29, 267–96; and 29 (1885): 9–48, reprinted in Cecchetti, *La vita dei Veneziani nel 1300* (Bologna, 1980).

25. Crouzet-Pavan, “*Sopra le acque salse*,” 1:116–25.

26. *Ibid.*, 97–116.

27. *Ibid.*, 72–96.

28. On the various bodies of magistrates that successively ran the city and their respective jurisdictions, see *ibid.*, 267–87.

29. The growth of Venice, despite some characteristics that make it unique, needs to be seen in a wider context and compared with that of other Italian cities expanding at

about the same time. For examples, see F. Sznura, *L'espansione urbana di Firenze nel Dugento* (Florence, 1975); M. Fanti, "Le lottizzazioni monastiche e lo sviluppo urbano di Bologna nel Duecento," *Atti e memorie della Deputazione di Storia Patria per la Romagna*, n.s., no. 27 (1976): 121–43; F. Bocchi, "Suburbi e fasce suburbane nella città dell'Italia medievale," *Storia della Città*, no. 4 (1977): 1–33; E. Hubert, *Espace urbain et habitat à Rome du Xe siècle à la fin du XIIIe siècle* (Rome, 1990), 134–40; G. Andenna, "Il monastero e l'evoluzione urbanistica di Brescia tra XI e XII secolo," in S. Giulia di Brescia: *Archeologia, arte, storia di un monastero regio dai Longobardi al Barbarossa*, ed. C. Stella and G. Brentegani (Brescia, 1992), 93–118; E. Guidoni, "Un monumento della tecnica urbanistica duecentesca: L'espansione di Brescia del 1237," in *La Lombardia: Il territorio, l'ambiente, il paesaggio*, ed. C. Pirovano, vol. 1 (Milan, 1981), 127–36; and G. M. Varanini, "L'espansione urbana di Verona in età comunale: Dati e problemi," in *Spazio, società, potere dell'Italia dei Comuni*, ed. G. Rossetti (Naples, 1986), 1–26. And for a brief overview of public and private initiatives in the construction of medieval cities, see E. Crouzet-Pavan, "Entre collaboration et affrontement: Le public et le privé dans les grands travaux urbains," in *Tecnologia y sociedad: Las grandes obras publicas en la Europa medieval* (Pamplona, 1996), 363–80.

30. Crouzet-Pavan, "Sopra le acque salse," 1:265–85.

31. *Ibid.*, 212–14. See also G. Mazzi, "Note per una definizione della funzione viaria a Venezia," *Archivio Veneto*, 5th ser., 99 (1973): 6–29.

32. Crouzet-Pavan, "Sopra le acque salse," 1:194–214.

33. Venetian statutes define a *vicinus* as one who owns land in the parish in which he resides: "vicini qui possessiones habent in parochia ubicunque habitarent" (*Volumen Statutorum legum ac iurium de venetorum . . . Statuta veneta cum correctionibus et additionibus novissimis*, ed. D. Rizzardo Griffò [Venice, 1681], bk. 6, ch. 3, fols. 87v–88r). Broadly speaking, the *vicini* bore much of the burden of urban policy. Whatever the project—widening, paving, or repairing a road, constructing or repairing a bridge, dredging a canal—the commune relied on landowners to pay for the work, and *estimi* of real-estate values, regularly updated, determined each property owner's share. In most cases only those who owned adjacent land were concerned. For larger projects the entire neighborhood bore the financial burden collectively. When a project benefited two parishes, they divided the cost. The commune itself participated financially only when it had a direct interest in the project, which was rare.

34. In the brief space available here I cannot take up the question of the doubtless disparate attitudes of the poorest citizens and recent immigrants. Spatial cultures and practices vary widely; they reveal differences of chronology, resistances, and contradictions. For some hints on these matters, see Crouzet-Pavan, "Sopra le acque salse," 2:739–98; and *idem*, *Venise*, 160–86.

35. M. Cornaro, *Scritture sulla laguna*, in *Antichi scrittori d'idraulica veneta*, ed. G. Pavanello, vol. 1 (Venice, 1919).

36. Giuseppe Gullino, "Marco Cornaro," in *Dizionario biografico degli italiani*, vol. 29 (Rome, 1983), 254–55.

37. Cornaro, *Scritture sulla laguna*, 75–78.

38. After Marco Corner, Paolo Sabbadino in the late fifteenth century suggested a

similar program of radical diversion of rivers, but it was his son, Cristoforo, whose discussion of the problems of the lagoon thoroughly explored the issues.

39. There was also a suggestion to divert the Piave so that "tra Lio Mazor e porto de Brondolo havesse a capitar tute aque" (see Cornaro, *Scritture sulla laguna*, 150).

40. Ciriaco, "Scrittori d'idraulica e politica delle acque."

41. Currents of sea water that enter the lagoon through one of the inlets in the barrier beaches do not mix with currents that enter through the other inlets. The lagoon is divided into basins of unequal size, and each inlet feeds its own basin. When the tide ebbs, the current reverses and water flows out through the same passage by which it entered. As a result, the volumetric ratio between the basins is not fixed. The flow rate of each current depends on the relationship between the size of the basin and the location of the mouth. The greater the surface area of the basin, the greater the flow rate (see Crouzet-Pavan, "Sopra le acque salse," 1:355–57).

42. ASV, Senato, Terra, reg. 5, fol. 81v.

43. *Ibid.*, reg. 7, fol. 37v.

44. *Ibid.*, reg. 9, fol. 151v.

45. ASV, Savi ed esecutori alle acque, busta 330, fols. 61v, 66r; ASV, Senato, Terra, reg. 9, fol. 121v, reg. 10, fol. 152r, and reg. 11, fol. 8r.

46. ASV, Senato, Terra, reg. 12, fol. 69r.

47. For further details, see Crouzet-Pavan, "Sopra le acque salse," 1:319–33.

48. R. Cessi, "Lo sviluppo dell'interramento nella laguna settentrionale e il problema della Piave e del Sile fino al secolo XV," in Brunelli, Magrini, et al., *La laguna di Venezia*, vol. 2, pt. 4, tome 7, pp. 81–100.

49. Crouzet-Pavan, *La mort lente de Torcello*, 326–35.

50. The Venetian basin is the largest series of lagoons on the northern Adriatic coast. Extensive stretches of salt or brackish water, the remains of a vast complex that once stretched from the Po to the Isonzo, are protected from the sea by a virtually unbroken series of sandy barrier beaches. But they are also fed by tidal flows, which enter through shifting channels or inlets. It was not until relatively late in the evolution of this system that the number of inlets was reduced to three: one at Chioggia, which opens to the south, and, closer to Venice, the Malamocco and Lido inlets. Various flat bits of land punctuate this almost unbroken seascape. The *barene* (shoals), which are covered with a distinctive vegetation, sit just a few inches above the water and are submerged only by the highest tides. There are also many islets and small archipelagos, probably formed by alluvial deposits from the rivers that empty into the basin; over time these have been shored up and expanded by human effort. This whole ecosystem was and is subject to continual transformation owing to the combined action of the sea, the rivers, and man. The Venetian lagoon today looks quite different from the way it looked at the end of the Middle Ages.

51. On the long-term evolution of the environment in contrast to the shorter time scale of human history, see E. Crouzet-Pavan and J. P. Poussou, "L'histoire de l'environnement: Un retour à la macrohistoire (Economie et écologie: ennemies ou alliées?)," in *XVIIIe Congrès des sciences historiques: Actes* (Montreal, 1995), 369–96.

52. In fact, according to one recent hypothesis, the lagoons did not exist in their

current form until the eleventh or twelfth century. W. Dorigo argues that the area around Venice was at first a series of *stagna*, areas periodically covered by water when the rivers flooded or, to a lesser extent, during very high tides. According to Dorigo, despite the hydrographic disorder caused by the deluges of the seventh century, and despite the first exceptional *acque alte* of the eighth century, the lagoon still had not formed by the end of the eighth century. Land, water, and marsh still coexisted in an unstable environment. In the late sixth century, however, in the northern part of the region, between Altino, Lio Piccolo, and Lio Maggiore, the diversion of the branch of the Piave that used to join with the Sile near Altino slowed the rate of alluvial deposit, which had ensured that the land would remain above the water. This led to an increase in the number of marshes and *stagna*. In the ninth century the old equilibrium between land and water, already disrupted by the earlier subsidence, was further compromised, initiating a series of changes that ultimately resulted in the formation of a virtually unbroken lagoon in the eleventh and twelfth centuries (see Dorigo, *Venezia: Origini*, 1:14–18, 76–205).

53. In 1505 the engineer Piero Sambo tried, for example, to measure the frightening progression of the *canneto* in sections where his father had earlier directed various hydraulic projects (primarily work on the course of the Brenta, which had been shifted from Lizzafusina to the Corbola canal) (see *La difesa idraulica della laguna veneta nel secolo XVI: Relazioni dei periti*, ed. R. Cessi and N. Spada, *Antichi Scrittori d'Idraulica Veneta*, 3 [Venice, 1952], 5–8). The *canneto* was a crucial element in the equilibrium of the lagoon environment. It was an area in which a dense vegetation of reeds and other marsh plants grew on a muddy bottom. The tidal flow had ceased to enter these built-up areas of mud; thus, the *canneto* was a precursor of the dead lagoon.

54. The Brenta issue therefore exacerbated conflict with Padua (see Cessi, “Il problema della Brenta dal secolo XII al secolo XV”). In particular, the Paduan effort to divert the river in 1142 increased the risk of sand buildup for the Venetians.

55. Crouzet-Pavan, “*Sopra le acque salse*,” 1:344–57.

56. Other important issues included the central problem of river navigation, securing a supply of fresh water for Venice, and pressure from mill owners and other industrial operators.

57. For examples of such inspections, see Crouzet-Pavan, “*Sopra le acque salse*,” 1:362–63.

58. The Senate decided to compile chancellery documents in 1405. Additional steps were taken in 1489. A notary was assigned to research legislation pertaining to the lagoon in the archives of the Great Council, the Senate, the Council of Forty, and the books of the Commemoriali.

59. See A. Favaro, “Notizie storiche sul magistrato veneto alle acque,” *Nuovo Archivio Veneto*, n.s., no. 9 (1905): 179–99.

60. S. Ciriaco, *Acque e agricoltura: Venezia, l'Olanda e la bonifica europea in età moderna* (Milan, 1994), 162–70.

61. Other phases, related to other projects and goals, also need to be identified. One key moment was obviously connected with the *renovatio urbis* instigated by Doge Andrea Gritti.