



Introduction

Can Earthquakes Speak?

I grew up in the shadow of the earthquake. The city where I was born, Messina, lies in one of the planet's seismic hotspots, and a long time ago, a destructive earthquake wiped it out and killed many of its inhabitants. Strangely enough, I never felt a tremor during the eighteen years I spent there. The earthquake, however, was a constant presence in my life and in the lives of those around me. My parents experienced a strong earthquake before I was born, and one of their favorite tales was about my father reaching out for my mother during that seventies' night. When the story invariably led to my question about the possibility of another one, they recalled the reassuring faith of my grandfather, an engineer, in the virtues of reinforced concrete. The earthquake's influence, apart from that, was all over the city, in the very few traces of historic architecture as well as in the poor shantytowns hidden in too many corners. As our elders taught my friends and me, the beautiful city that Messina had once been was gone forever. The shanties remained as a shadow of the earthquake's misery, almost one hundred years after its tragic visit.

This book tells the story of the earthquake in my city, the 1908 Messina earthquake, and the story of the one that hit the valley of the Belice River, Sicily, exactly sixty years later. These are two of the biggest seismic disasters in the history of modern Italy, and two equally tragic and fascinating stories of destruction and rebirth. In both places, two brand new environments materialized from the ruins of the earthquake. Each of these environments epitomized a pivotal moment in the history of urbanization in Italy—the modernization of historic cities between the nineteenth and the twentieth century and the urbanization of the countryside in the second half of the twentieth century, respectively. These post-quake environments, at the same time, exaggerated the characteristics of those two key moments as in a distorting mirror, due to the exceptional context from which they emerged.

A fundamental curiosity drives this book: Can earthquakes speak,¹ or are they just background noise in the historic landscape? What role do earthquakes play in the history of built environments and of the communities that inhabit them? Are they really drivers of change? What do they actually trans-

form, and how? Can geological fault lines translate into historical ones? Questions like these have a lot to do with my experience with earthquakes and their effects, perhaps even more than the choice of the case studies. Yet these questions, in a sense so personal, may also speak to a broader audience and intersect with questions and curiosities arising from other places, experiences, and contexts, about other fault lines, real and metaphorical. To understand whether earthquakes can speak is, in effect, to tackle the broader question of the role of natural hazards in modern urban environments, and of nonhuman forces and features in history. I will now discuss those issues, and the significance they have for the stories I shall tell you. First, however, let me introduce the main character of this book: the earthquake.

The Voice of the Earthquake

In 1807, the German romantic writer Heinrich von Kleist published a short story titled “Das Erdbeben in Chili” (The Earthquake in Chile). The story narrates fictional events that take place during a real historic occurrence: the earthquake that devastated Santiago, capital of the Spanish Kingdom of Chile, in 1647. So reads the blazing incipit of the story:

In Santiago, the capital of the kingdom of Chile, at the moment of the great earthquake of 1647 in which many thousands lost their lives, a young Spaniard called Jeronimo Rugera was standing beside one of the pillars in the prison to which he had been committed on a criminal charge, and was about to hang himself.²

In this artfully crafted paragraph, Kleist introduces at once the context and the main character, and propels us right into the middle of the action: at the very moment of the earthquake, a man in prison is about to commit suicide. As we discover later, the man was in prison for a love affair that had turned into a major city scandal, and, knowing that his lover and their son were about to be executed, he had decided to kill himself. He had irrevocably made his decision and was about to end his life, when, all of a sudden, the ground started to shake furiously. Suddenly, his will started to crumble together with the prison’s wall, and instead of embracing death, he sought to survive by any means possible. The story goes on to recount how Jeronimo Rugera wandered through a devastated Santiago, the reasons for him being in prison, the fortuitous encounter with his lover and their child, and the adventures that lead to a breathtaking finale.

Kleist’s story is a brilliant and gripping attempt to articulate a narrative of the earthquake. The earthquake shapes the setting of the story, destroying San-

tiago and creating a new order of possibilities. It even changes the characters' intentions radically, as in the case of Jerome's suicide attempt. It disrupts social relations and the ruling order, producing both the extreme poles of classless fraternity and brutal mob violence. The earthquake, in sum, speaks resoundingly throughout the entire narrative, becoming its principal, albeit unconventional character. My book, very much like Kleist's short story, is a narrative of the earthquake. The transformative power of the earthquake, however, will be the interrogative of a historical inquiry, rather than the main device of a fictional plot. As we shall see, in history, earthquakes do not necessarily speak the language of change, and often other voices and characters conceal or confound their voice.

Kleist's short story is just another example of the fascination that earthquakes have exerted on human cultures across time and space. Earthquakes have given rise to beautiful and vivid mythologies such as the *Namazu*, Japan's earth-shaker catfish, philosophical meditations by Seneca and Voltaire, among others, and countless scientific theories. Nowadays, the scientific study of earthquakes is deeply entrenched in the theory of plate tectonics. In short, plate tectonics postulates that the Earth's crust is made of giant plates of solid rock, floating on a thick layer of magma. The encounters between these plates are responsible for mountains, volcanism, and earthquakes. Tectonics theory, which was accepted by the global scientific community in the 1960s, is today virtually uncontested.³

Earthquakes, however, still represent a frontier of science and a slippery and multiform object of knowledge. This intriguing status is due to several factors. One is, without a doubt, their resistance to visual scrutiny. Paradoxically, even though technology allows us to look into molecules and atoms, into outer space and, to a certain extent, beneath the deep ocean, the earth's crust remains impenetrable. Our ideas about what lies underneath are largely based on evidence from the surface, such as volcanic rocks and seismic wave propagation.⁴ This resistance to visual scrutiny mirrors the earthquake's resistance to prediction. Despite all efforts, prediction, which rules most contemporary sciences, does not apply to earthquakes. The study of earthquakes, then, necessarily involves disparate practices and knowledge systems, spanning from archival research and archeology to geology and chemistry. It is structurally transdisciplinary, and therefore difficult to put in one of our reassuring epistemological boxes.⁵

With the significant but isolated exception of historical seismology, historians have rarely investigated earthquakes.⁶ This is perhaps due to their contradictory status as historical fact. An earthquake occurs in a precise point in time and space that is more or less precisely mappable. At the same time, each earthquake is also a consequence of plate tectonics, whose encounters and collisions happen on a planetary scale. Despite its very short duration, an

earthquake is the point of intersection of a process measurable in hundreds or thousands or even millions of years in the geological history of planet Earth. This meeting of timescales has rendered earthquakes problematic to incorporate into historical narratives. Their exact and unique localization in time and space is incompatible with the project of generalization typical of the discipline of history. On the other hand, the temporality and spatiality of geological processes exceed the span of usual historical accounts.

Despite these difficulties, historians have recently started to turn their attention towards earthquakes. This turn has been part of a general burst of attention in the social sciences and humanities focused on so-called disasters. Pioneering work by human geographers such as Kenneth Hewitt and Pierce Blaikie argued that these events cannot be seen as purely “natural” occurrences, for they are rooted in the economically and socially determined vulnerability of a given population.⁷ According to anthropologist Anthony Oliver-Smith, disasters should be seen as “processes” rather than “events,” for they are rooted in the long term interplay between the features of a human settlement and society and its biogeophysical environment.⁸ Historians have started to follow this path of inquiry. In his historical study of notable modern disasters in the United States of America, Ted Steinberg has stressed how the popular notion of “acts of God” belies the anthropogenic, socially conditioned character of these events and their consequences.⁹ Greg Bankoff, in turn, has made the case for analyzing the interactions between hazards and society over a longer time frame, considering various forms of cultural and social adaptation.¹⁰ Notions of adaptation and resilience are very much central to the recent work of historical geographer Craig Colten, who has highlighted the importance of looking into historical patterns of institutional response to and “social memory” of hazardous events.¹¹

These perspectives apply compellingly to seismic disasters. Seismic disasters, indeed, are always the product of the historical interplay between geophysical forces and features—the magnitude and duration of an earthquake, but also the composition of the soil, and the characteristics of a built environment and community—and building techniques and materials, but also the social and economic resources of the population.¹² Examinations of historical processes are thus crucial to understand the occurrence and impact of earthquakes. Building on this common insight, literature on earthquakes in history has developed along two interrelated lines that largely reproduce parallel developments in the historical study of other hazardous events.

One significant trend is the investigation into disaster repetition. Typically, these studies recount the evolution of knowledge, institutional practices, and coping strategies related to a succession of hazards in a given time and space. Each single episode from this vantage point assumes its historical significance as part of a series. The responses of communities and institutions and the de-

velopment of new understanding and practices show the influence of earthquakes on human affairs. This approach underpins the compelling study of earthquake-related knowledge and practices in twentieth-century California by Carl-Henry Geshwind, as well as Gregory Quenet's account of the emergence of the notion of risk in early modern France.¹³ Similarly, long-term perspectives on earthquake repetition and societal change underlay Gregory Clancey's informed analysis of the connections between seismic science and national identity in modern Japan and Deborah Coen's transnational account of the transition from sensorial observations to instrumental earthquake science.¹⁴

The other significant trend consists of analyzing a single earthquake and its consequences. The earthquake, in these studies, is the point of departure: scholarly studies narrate its impact, the opportunities it created, and the transformations it rendered necessary. Depending on the focus of each narrative, the impact, opportunities, and transformations examined may concern culture and politics, economy, or architecture. All these studies, however, consider earthquakes as significant opportunities to investigate features of historical processes, rather than significant moments of historical change in their own right. In a pioneering monograph, Augusto Placanica analyzed the multilayered cultural reverberations of 1783 Calabrian earthquakes, an investigative trend later followed by other scholars of modern Italy.¹⁵ Charles Walker utilized the 1743 Lima earthquake as a window through which to examine colonial relationships in eighteenth-century Chile.¹⁶ Mark Healey, contributing to the emerging scholarship on earthquakes and political change in Latin America, repositioned the origins of Peronism in the aftermath of the 1944 San Juan earthquake in Argentina.¹⁷ Conevery Bolton Valencius has proved the significant environmental, cultural, and social impact of the 1812 New Madrid earthquakes, while exploring the causes of the paradoxical oblivion that followed.¹⁸

This book belongs decidedly to this second family of studies. It investigates the way earthquakes may be entrenched within historical change, and how the earthquake's voice resounds in the history of built environments and communities. However, there are some significant differences with my approach. When I started researching this project, I assumed that I would focus on the aftermath of the two events, as most existing studies do. Later on, I realized this is not enough. As I will argue throughout this book, earthquakes speak at multiple levels with very different consequences. At some levels, they may speak clearly and unmistakably about rupture. At other levels, the earthquake's voice is the object of mutable and contested translations. Sometimes, then, earthquakes do not speak at all, or their voice fails to reverberate. The historical outcome of an earthquake is a blend of ruptures and continuities, sometimes very evident, sometimes more subtly dispersed in the tapestry of

historical facts. Historians should unravel these different threads if they want to let earthquakes speak in their stories. To read the traces of earthquakes in the complex text of historical change, what happened before the earthquakes is just as important as the aftermath. For that reason, this book is not just about what happened after the earthquake. It is a book about how the voice of the earthquake resounds in the history of places. It is about geological fault lines and historical ones.

A Tale of Two Earthquakes

This book looks at the earthquake's role in history with a precise focus, namely the making of urban environments in modern times. The history of modern urbanism has greatly benefitted from the fresh approaches brought about by environmental scholarship. The production of built environments, from the perspective of this environmental history, is never a purely human enterprise. On the contrary, historians of urban infrastructure and pollution, such as Joel Tarr, Martin Melosi, and others, have demonstrated that it involves the (often problematic) mobilization of resources and ecosystems.¹⁹ Environmental historian Bill Cronon, on the other hand, has pointed out how processes of urban growth rest upon the large-scale and often radical transformation of natural sites.²⁰ In their making, cities have reshaped the ecological features of large regions and have modified hydrological cycles, tamed rivers, and concreted over large areas of soil. Yet their very existence stands upon those same environmental forces and features they seek to harness.²¹ Emphasizing this mutuality, Verena Winiwarter and Martin Schmid have claimed that we should see cities as "socio-natural sites," sites where social and natural processes blend almost indistinguishably, rather than sites from which nature has been expelled.²² Urban environmental scholarship, while stressing the importance of looking at urbanization as environmental transformation, has brought into focus the human side of the process. "Socio-natural" perspectives put forward by recent scholarship invite us to look at the other side of the coin. Sometimes nonhuman forces and features shape cities as much as humans do, and we should regard them as important drivers in the making of urban environments.²³ Earthquakes are one of those forces.

By exploring the role of earthquakes in the making of urban environments, this book aims to strengthen a conception of urbanization as a process of reciprocal, rather than unidirectional, influence between human and nonhuman forces and features. Over the years, a handful of scholars have touched upon the consequences of hazards on cities, maintaining their varied influence on urban developments.²⁴ Earthquakes are a particularly compelling example of urban hazards. In a few seconds, an earthquake can flatten cities that hu-

mans took centuries to build—often the destruction unleashed was increased due to poor choices made by generations of city builders or to unbridled urban developments. Earthquake destruction generally creates opportunities to rethink the features of a settlement and can result in transformative changes that mitigate the risk of future disasters, or even the abandonment and/or relocation of the settlement. Moreover, earthquake destruction can facilitate long-debated improvements by removing the physical, social, and economic obstacles to their realization.²⁵ An earthquake can also trigger processes that have a profound impact on a settlement, such as migration, new investment, or the redistribution of property and income. Not all of these forms of influence have the same weight, nor are they necessarily all present together. In every case, however, the voice of the earthquake translates into the text of urbanism, just as much as the human voices do.

This book tries to understand this voice—its sound, its translations, and its echoes—in two fascinating histories. The 1908 Messina earthquake was one of the worst seismic disasters in European history. On 28 December, a devastating 7.1 earthquake-tsunami hit the cities of Messina and Reggio Calabria, and dozens of towns and villages on both sides of the strait that divides Sicily from continental Italy. Messina was the most prominent urban center of the region and home to 140,000 residents, and there almost nine buildings out of ten were turned to rubble, killing as much as half of the resident population. The 1968 Belice earthquake was not as deadly, but its physical impact was just as ruinous. Between 14 and 15 January, a series of five increasingly powerful tremors hit a rural region in southwestern Sicily known as the Belice Valley. The towns of Gibellina, Salaparuta, Montevago, and Poggioreale were completely destroyed; ten other towns lost up to 80 percent of their buildings and dozens more registered severe damages. Overall, despite the absence of a prominent urban center in the region, the earthquakes affected a population of some 100,000 inhabitants.

The 1908 Messina earthquake and the 1968 Belice earthquake were two of the most destructive quakes in the history of modern Italy. The story of destruction, however, is not the only similarity they share. After both earthquakes, survivors and authorities rebuilt the devastated settlements in a completely new fashion. To avoid new disasters, Messina's planners and builders followed a new building and planning code and adopted the earthquake-resistant technology of reinforced concrete. In addition, the new Messina had a transformed street pattern designed to improve circulation and networks; it extended over double the original surface area, incorporating former agricultural areas into the urban space. The reconstruction provided the city with a comprehensive sanitation infrastructure. Similarly, after 1968, planners redesigned the Belice Valley as a modern urbanized region. For a combination of geological and economic reasons, the authorities imposed the abandonment

of fourteen settlements and relocated the population to new towns. In sharp contrast to the abandoned settlements, the new towns were equipped with suburban-style housing, modern urban infrastructure, and an interconnecting road network that favored car-centered mobility. In both cases, the reconstruction was in fact a radical transformation of the settlements, in line with contemporary ideals about urban modernization and improvement and combined with risk mitigation strategies.

These solutions were the outcome of two exceptional situations. Nevertheless, in many aspects they epitomize two key moments in the history of modern urbanization in Italy. Between 1880 and 1930, most historic cities in Italy underwent profound transformation. In most cases, these transformations went under the banner of *risanamento*, sanitation. City engineers and municipal authorities demolished old walls and neighborhoods, and replaced tortuous labyrinths of medieval alleys with wider and straighter boulevards. They planned and built aqueducts and sewage pipes, power lines, and promoted the construction of railroad stations, tramway lines, and street lighting. Each time, these transformations translated into a substantial revision of the relationship between the urban environment and the ecosystems of larger surrounding areas. The transformation experienced by Messina after the earthquake therefore resonates loudly with contemporary developments in Milan, Rome, Naples, and dozens of other Italian cities, in which the urban environmental configuration of the modern city was replacing the medieval and renaissance city.²⁶

Whereas Messina epitomizes the modernization of historic Italian cities, the Belice Valley is representative of another major turning point. The wave of modern urbanism, once it had washed over the historic cities of the peninsula and changed them profoundly, began to lap at the countryside. Anticipated to a certain extent by reclamation policies in the 1920s and 1930s, the modernization of rural areas characterized most of the second half of the twentieth century. Electrification, road networks and cars, aqueducts and sewage works—bit by bit, they arrived in every settlement in the Italian countryside, transforming everyday habits and ecologies irreversibly. Knowledge, practices, and material arrangements that were centuries old disappeared, and the gap between rural and urban life diminished dramatically. This transformation had different drivers in Southern and Northern Italy: sprawling industrial suburbs met coalescing hinterlands in the North, state investments for economic development and civil infrastructure afforded momentum in the South. Everywhere it brought about the end of rural life as a contrast to the city, and the almost ubiquitous affirmation of the urbanized countryside. The transformation of the Belice Valley after the earthquake is a clear example of this widespread process.²⁷

Other European and American countries have experienced similar transformations. Albeit with differences in periodization and under different con-

ditions, the biggest European and American cities underwent changes largely comparable to those in Italian cities between 1880 and 1930. The demolition of old medieval neighborhoods and the creation of large boulevards in Paris during the Second Empire are representative of a general trend throughout much of nineteenth-century Europe. The installation of energy and transport networks was a powerful driver of urban transformation as well, and contributed to the global emergence of the modern city. Almost everywhere, the creation of new aqueducts and sewage systems was an important part of this process, with significant environmental and social consequences. In the midst of these processes, cities revised their ecological relationship with the large hinterland in profound ways, forged new hierarchies and powers, and transformed the life of their inhabitants deeply.²⁸

The urbanization of the Italian countryside also has equivalents in other countries. An influential view is that which originates from Cronon's study of Chicago, with its notorious claim of the deep interconnection between urban growth of the metropolis and ecological transformation of the countryside.²⁹ Alongside this insightful perspective, scholars have investigated other dimensions and drivers of urban-rural blending. In urban-industrial regions, metropolitan growth and suburbanization have often resulted in the physical metamorphosis of the countryside, a phenomenon that mass motorization has also contributed to enormously. In many parts of the developed world, the progressive expansion of sanitation, electrification, and motorization to rural settlements has happened even without the presence of big industrial cities. Although the pace, drivers, and effects of this latter process have been far less thoroughly investigated than in larger urban centers, old rural ecologies and settlement patterns have disappeared or shrunk considerably almost everywhere in the developed world during the second half of the twentieth century.³⁰

As much as Messina and the Belice Valley can be placed within with these two key phases of modern urbanization, they still stand visibly apart. One can find many examples of sanitation and urban reform between the nineteenth and the twentieth century; but sanitation is generally coupled with the persistence of other forms, structures, and functions from past ages, at least in Europe. In Messina, on the contrary, modernization was realized in a radical rupture with the urban past, a past that was virtually erased from the cityscape. Similarly, one can find many cases of modernization and urbanization of the countryside in the second half of the twentieth century. Even in those cases, however, this transformation merged with the enduring features of a rural past. The intermingling of new and old is evident in many aspects of today's Italian countryside, such as the shape and architecture of rural towns and in patterns of land use, the historical significance of which led environmental historian Mauro Agnoletti to call for the creation of a national register of his-

torical rural landscapes.³¹ In post-earthquake Belice Valley, on the other hand, modernization and urbanization were predicated upon the almost complete eradication of the past, and the radical reshaping of settlements and landscape was projected onto an empty canvas. The purpose of this book is to understand how strongly the earthquake's voice spoke in the peculiar urbanism of Messina and the Belice Valley, and how much of their story is, on the contrary, representative of more general processes of urban change.

The Structure of This Book

In order to accomplish the purpose, this book adopts a rather unusual approach that should be considered integral to its methodology. As anticipated, instead of recounting mainly what happened after the two earthquakes, this book incorporates a broader historical view that embraces the pre-earthquake period as much as the aftermath. The tales this book will tell thus start almost thirty years before the earthquakes and end some thirty years after. This, I believe, is one of the most original features of this book's approach, and one that I hope will offer new insights into the ways in which earthquakes are part of the making of modern urban environments. By looking at key elements of urban life before the earthquakes, the changes that followed them can be picked out more clearly, and shown alongside the continuities with the pre-earthquake contexts, debates, and plans.

The structure of the book follows this historical approach. The book consists of two distinct sections: section one is concerned with the story of Messina, and section two recounts the story of the Belice Valley. Each section has a tripartite narrative structure. The first chapter of each section propels us into the middle of the action, recounting the earthquake and its immediate consequences. The following chapters trace the pre-earthquake and the post-earthquake history of the place, building narrative continuity between before and after, through which the earthquake's voice can resonate more clearly. At the end of the two sections, a concluding chapter summarizes both narratives and explores some final ideas.

Chapter 1, the opening of the first section, brings us directly to 28 December 1908, when an earthquake-tsunami devastated Messina, a city of 140,000, killing thousands of people and leaving behind 1 million cubic meters of rubble. The future of the city itself seemed in doubt. Local authorities and other public figures were convinced that the location and site of Messina would guarantee the rebirth of the city and its future prosperity. Earthquake scientists and engineers, on the other hand, stressed that the city was located on a hazard-prone site. If the city was to be rebuilt where it had stood before, adaptation strategies were required. The ultimate solution was a new building and planning code

to reduce the vulnerability of the city to future earthquakes. The code would prevent the city from being reconstructed along the same lines as before. But how was the city before?

Chapter 2 answers that question, and moves back to the pre-earthquake decades in Messina. As many cities at that time, late nineteenth-century Messina was entering an age of changes and starting to plan major transformations. Much of these transformations revolved around urban sanitation: the demolition of working class neighborhoods, the creation of new roads, and the installation of a new urban water cycle using comprehensive aqueducts, sewage pipes, and rainwater drainage. On the eve of the earthquake, however, much of the planned urban changes remained unachieved. While issues such as the port renewal and peri-urban reforestation expanded the urban reform debate, minor earthquakes struck the city in 1895, 1905, and 1907. Surprisingly, those earthquakes did not provoke any response by the authorities, despite the persistent memory of past disasters. The lack of effective measures after those earthquakes contributed largely to the extent of destruction in 1908.

Chapter 3 examines how the pre-earthquake agenda interacted with the post-earthquake situation. While the authorities established two huge hut camps on the outskirts of the city, municipal engineer Borzì drew up a master plan for rebuilding. The earthquake building code imposed of necessity a new shape on the city. Borzì took this opportunity to introduce, along with measures to ensure seismic safety, most of the innovations planned before the quake, but on a larger and more ambitious scale. Unprecedented flows of public money, inward migration, and difficulties in clearing the camps of huts, however, scattered many assumptions of the master plan and prevented the realization of some of its features. On the eve of World War II, a new city had materialized, but the new Messina was a paradoxical blend of urban modernity and shantytowns: partly due to pre-earthquake debates and plans, but also largely an outcome of the 1908 earthquake and of its direct and indirect effects.

Chapter 4 introduces the second section and is devoted to the 1968 Belice earthquake. On January 1968, the combination of five increasingly strong earthquakes destroyed fourteen towns and affected a population of 100,000 residents. The earthquake was given extensive coverage by the media, and most commentators deemed the “backwardness” of the region directly responsible for the disaster, singling out the poor housing and economic poverty of its inhabitants in particular. Legislators shared the view that the disaster was linked to underdevelopment, and established special socioeconomic development policies to accompany the rebuilding of the destroyed towns. In addition, they considered the permanent relocation of some of the communities to safer sites. Rebuilding was thus to correspond to a comprehensive redevelopment of the entire area. But what was the true condition of the area before the earthquakes?

Chapter 5 answers that question. Among the poorest and driest areas in Sicily, homeland of the early rural Mafia and a symbol of the “backward” *Mezzogiorno*, after World War I the Belice Valley became the target of a number of special improvement programs. In the late 1920s, under the auspices of advantageous national policies, local landowners created a “Reclamation Consortium,” aimed at boosting agriculture by transforming the valley’s biogeophysical environment. Before and after World War II, colonization of large estates, agrarian reform, and development funding were brought in, but in the 1950s not much had been accomplished. Faced with mass emigration and failure of improvement schemes, in the early 1960s a network of activists formed local committees for community-based development. Over the years, the committees researched and expounded their own development ideas, and they had just put forward a new comprehensive plan for development when the earthquake hit the valley.

Chapter 6 explains how much of these plans outlived the earthquake. Disregarding the grassroots movement, the authorities entrusted a national institute for social housing with a plan for complete redevelopment of the valley. The planners sought to redevelop the valley into “city-territory:” a network of modern towns that would function as a single urban unit based on an industrial economy. Actual reconstruction work did not go as planned, and despite the fact that urban infrastructure had been created and towns relocated, the absence of industrialization prevented much of the plan from being effective. Unprecedented flows of public money and the completion of a long-awaited reservoir on the Belice River, however, encouraged the growth of a modern agricultural economy. Today’s Belice Valley is a landscape of suburban settlements in a deeply transformed but still rural countryside: the paradoxical outcome of pre-1968 plans, post-disaster redevelopment, and a combination of the direct and indirect consequences of the earthquakes.

The concluding chapter wraps up and compares the two narratives, retracing the voices of the earthquakes in the text of continuities, discontinuities, and unintended consequences that underlay the urban development of Messina and the Belice Valley. By placing these histories in the long and dense history of disastrous earthquakes in Italy, I suggest that earthquakes have been a powerful force in urbanization throughout the country. If we broaden our view to take in other countries and continents, the role of earthquakes in the making of modern urban environments is just as significant. From California to Japan, from Chile to Portugal, earthquakes have been a powerful force in transforming urban environments, by stimulating conscious adaptation strategies, facilitating plans for reform, or triggering unexpected social processes. Earthquakes are not exceptional in this regard. Natural hazards are a permanent feature of our world, and our urban environments are the always-

provisional outcome of their continuous influence on human intentions, actions, and cultures. Earthquakes can speak. We just need to listen.

Addendum

All authors have some personal ties with their stories, and in the beginning of this introduction, I tried to identify my own. Historians, however, are bound to past facts, and that is the difference between history and other narrative genres. Sources and documents are the currency by which we acknowledge our bond. This book relies upon a number of primary sources from several libraries and archival collections, some unknown or underexploited. I provide a detailed list at the end of this book, but I would like to offer an overview here. The first section on Messina draws in particular on the rich miscellany in the collection of the *Biblioteca Regionale di Messina*, and on archival material from the *Archivio di Stato di Messina* and the *Archivio Centrale dello Stato* in Rome. The second section on the Belice Valley relies on grey literature mainly from the *Biblioteca Regionale di Palermo* and the *Biblioteca del Senato della Repubblica*, and on archival material from the *Archivio Centrale dello Stato* in Rome, the *Archivio Storico del Parlamento Siciliano* in Palermo, the *Archivio Dolci-Barbera* in Gibellina, and the *Archivio Storico della Protezione Civile* in Rome. The second section also makes use of oral testimonies from the collection of the CRESM Gibellina. I use these testimonies only sparsely to integrate information or points of view on the events and processes discussed in the book. These testimonies, and many others that are still awaiting collection, could be used to explore the voice of the earthquake in the survivors' lives—I suspect with extremely interesting results. Such an endeavor, however, falls outside the purpose and scope of this book: I can only hope that the analytical perspective put forward here might stimulate others to undertake it. Finally, this book has benefitted from the wisdom and information of a number of secondary sources in various languages, all conscientiously cited in the relevant notes and in the bibliography. Although I believe I am offering a fresh perspective, I would have found this book much more difficult to write without the work of the many fellow scholars who are as fascinated or as haunted by earthquakes as I am.

Notes

1. This formulation is inspired by Timothy Mitchell, who asked in the first chapter of his book *Rule of Experts*, “Can the mosquito speak?” See Timothy Mitchell, *Rule of Experts: Egypt, Technopolitics, Modernity* (Berkeley, 2002), 19–53. Mitchell was trying

- to advance a critique of the human-nature divide and the traditional view of human agency with which this book is largely sympathetic.
2. Heinrich von Kleist, *The Marquise of O—And Other Stories* (Harmondsworth, 1978), 51.
 3. Tectonics, however, is not entirely capable of explaining so-called “intraplate earthquakes,” of which one of the most notorious case is the New Madrid earthquakes in 1812. See Conevery Bolton Valencius, *The Lost History of the New Madrid Earthquakes* (Chicago, 2013).
 4. Kent C. Condie, “Crustal Composition and Recycling,” *The Oxford Companion to the Earth*, ed. Paul L. Hancock and Brian J. Skinner (Oxford, 2000), 192–95.
 5. On the epistemological status of earthquakes, see Deborah Coen, “Witness to Disaster: Comparative Histories of Earthquake Science and Response,” *Science in Context* 25 (2012): 1–15.
 6. Historical seismology applies the methods of historical research to the identification of past earthquakes. It has developed as an autonomous branch. Its impact has been much more substantial on seismology and earthquake science at large than on historiography. It is indeed of pivotal importance in determining the seismic risk of a certain area, but is largely underrepresented in history departments. For a state-of-the-art overview of this discipline, see Emanuela Guidoboni and John E. Ebel, *Earthquakes and Tsunamis in the Past: A Guide to Techniques in Historical Seismology* (Cambridge, 2009).
 7. Sociologists have studied disasters for several decades, producing a rich literature on the social response to disruptive events. See Havidán Rodríguez, Enrico L. Quarantelli, and Russell R. Dynes, eds., *Handbook of Disaster Research* (New York, 2006). Starting in the 1980s, a more politically and socially aware strain of literature in human geography has shifted attention toward issues of resource access and social and economic inequalities, and introduced notions of risk and vulnerability. See Kenneth Hewitt, ed., *Interpretations of Calamity: From the Viewpoint of Human Ecology* (Boston, 1983); Ben Wisner, Piers Blaikie, Terry Cannon, and Ian Davis, eds. *At Risk: Natural Hazards, People’s Vulnerability and Disasters* (London, 2004).
 8. Anthony Oliver-Smith, “Theorizing Disasters. Nature, Power, and Culture,” in *Catastrophe and Culture: The Anthropology of Disaster*, ed. Susanna Hoffman and Anthony Oliver-Smith (Oxford, 2002).
 9. Theodor Steinberg, *Acts of God: The Unnatural History of Natural Disasters in America* (New York, 2006).
 10. Greg Bankoff, *Cultures of Disaster: Society and Natural Hazards in the Philippines* (London and New York, 2003). See also Greg Bankoff, “Time is of the Essence: Disasters, Vulnerability, and History,” *International Journal of Mass Emergencies and Disasters* 22, no. 3 (2004): 23–42. Along a similar vein, a growing literature has developed in the last decades. A rich collection of case studies from around the globe is in Christof Mauch and Christian Pfister, eds., *Natural Disasters, Cultural Responses: Case Studies toward a Global Environmental History* (Lanham, 2009).
 11. Craig E. Colten, *Perilous Place, Powerful Storms: Hurricane Protection in Coastal Louisiana* (Jackson, 2009). Over recent years, the concept of “resilience” has driven most new research on natural hazards and society in geography. See for example Neil W. Adger, “Social and Ecological Resilience: Are They Related?” *Progress in Human Geography* 24 (2000): 347–64.

12. On the specific dimensions attached to earthquake hazards in comparison to other types of hazards, see Wisner et al. *At Risk*, 239–41.
13. Carl H. Geschwind, *California Earthquakes: Science, Risk, and the Politics of Hazard Mitigation* (Baltimore, 2001). Gregory Quenet, *Les tremblements de terre aux XVIIe et XVIIIe siècles: la naissance d'un risque* (Champ Vallon, 2005).
14. Gregory Clancey, *Earthquake Nation: The Cultural Politics of Japanese Seismicity, 1868–1930* (Berkeley, 2006); Deborah Coen, *The Earthquake Observers: Disaster Science from Lisbon to Richter* (Chicago, 2013).
15. Augusto Placanica. *Il filosofo e la catastrofe: un terremoto del Settecento* (Turin, 1985). See John Dickie, John Foot, and Frank M. Snowden, eds., *Disastro! Disasters in Italy Since 1860: Culture, Politics, Society* (New York and Basingstoke, 2002); and John Dickie, *La catastrofe patriottica: il terremoto di Messina* (Rome and Bari, 2008).
16. Charles Walker, *Shaky Colonialism: The 1746 Earthquake-Tsunami in Lima, Peru, and Its Long Aftermath* (Durham, 2008).
17. Mark Healey, *The Ruins of the New Argentina: Peronism and the Remaking of San Juan after the 1944 Earthquake* (Durham, 2011). For the emerging scholarship on Latin American, see Jürgen Buchenau and Lyman L Johnson, eds., *Aftershocks: Earthquakes and Popular Politics in Latin America* (Albuquerque, 2009).
18. Valencius, *The Lost History of the New Madrid Earthquakes*.
19. Martin V. Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment 1880–1980* (College Station and London, 2005). Joel Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, 1996). For a European view, see also Dieter Schott, “Resources of the City: Toward a European Urban Environmental History,” *Resources of the City: Contribution to an Environmental History of Modern Europe*, ed. Dieter Schott, Bill Luckin, and Geneviève Massard-Guilbaud (Aldershot, 2005).
20. William Cronon, *Nature’s Metropolis: Chicago and the Great West* (New York and London, 1991). Studies on the ecological relationship between cities and hinterlands are growing. See for example the contributions collected by Gilles Billen, Josette Garnier, and Sabine Barles, eds., “History of the Urban Environmental Imprint,” special issue, *Regional Environmental Change* 12, no. 2 (2012).
21. Craig E. Colten, *An Unnatural Metropolis: Wrestling New Orleans from Nature* (Baton Rouge, 2005).
22. On the concept of the “socio-natural site” in urban environmental history, see Verena Winiwarter, Martin Schmid, and Gert Dressel, “Looking at Half a Millennium of Co-Existence: The Danube in Vienna as a Socio-Natural Site,” *Water History* 5, no. 2 (2013): 101–19.
23. Perspectives on cities as sites of interplay and blending of natural and social have dominated urban environmental scholarship from the mid-2000s, in both geography and history. See Bruce Braun, “Environmental Issues: Writing a More-Than-Human Urban Geography,” *Progress in Human Geography* 29, no. 5 (2005): 635–50. Nik Heynen, Maria Kaika, and Eric Swigendouw, “Urban Political Ecology: Politicizing the Production of Urban Natures,” in *The Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism*, ed. Nik Heynen, Maria Kaika, and Eric Swigendouw (London and New York, 2006). Simon Gunn and Alaistar Owens, “Nature, Technology and the Modern City: An Introduction,” *Cultural Geography*, 13 (2006): 291–96. Matthew

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24. One pioneering example is Christine Rosen Meisner, *The Limits of Power: Great Fires and the Process of City Growth in America* (Cambridge, 1986). Another important contribution is the collection by Geneviève Massard-Guilbau, Dieter Schott, and Harold L. Platt, eds., *Cities and Catastrophes: Coping with Emergency in European History / Villes et catastrophes: Réaction face à l'urgence dans l'histoire européenne* (Frankfurt am Main, 2002). More recently another edited volume specifically centered on fires has been published: Greg Bankoff, Uwe Lübken, and Jordan Sand, eds., *Flammable Cities: Urban Conflagration and the Making of the Modern World* (Madison, 2012).
 25. Geneviève Massard-Guilbaud, "The Urban Catastrophe: A Challenge to the Social, Economic and Cultural Order of the City," in Massard-Guilbaud, Platt, and Schott, *Cities and Catastrophes*, 9–42. See also Piero Bevilacqua, *Tra natura e storia: ambiente, economia, risorse in Italia* (Rome, 2005): 73–112. See also Giuseppe Giarrizzo, "Lo storico e il terremoto," in *La Sicilia dei terremoti: Lunga durata e dinamiche sociali*, ed. Giuseppe Giarrizzo (Catania, 1996), 439–41.
 26. Literature on this is abundant. Guido Zucconi, *La città contesa: dagli ingegneri sanitari agli urbanisti (1885–1942)* (Milan, 1999). Giovanna Vicarelli, *Alle origini della politica sanitaria in Italia: società e salute da Crispi al fascismo* (Bologna, 1997). Simone Neri Serneri, *Incorporare la natura: Storie ambientali del Novecento* (Rome, 2005). Simone Neri Serneri, "The Construction of the Modern City and the Management of Water Resources in Italy, 1880–1920," *Journal of Urban History* 33, no. 5 (2007): 814–15. Annalucia Forti Messina, "L'Italia dell'Ottocento di fronte al colera," *Storia d'Italia, Annali 7: Malattia e Medicina*, ed. Franco Della Peruta (Turin, 1984), 431–94. Roberto Ferretti, "The Formation of a Bureaucratic Group Between Center and Periphery: Engineers and Local Government in Italy from the Liberal Period to Fascism (1861–1939)," in *Municipal Services and Employees in the Modern City: New Historic Approaches*, ed. Michèle Dagenais, Pierre-Yves Saunier, and Irene Maver (Aldershot, 2003), 66–83. Denis Bocquet and Samuel Fettah, eds. *Réseaux techniques et conflits de pouvoir: Les dynamiques historiques des villes contemporaines* (Rome, 2007). Salvatore Adorno and Filippo De Pieri, eds. "Burocrazie tecniche," special issue, *Città e storia* 5 (2011). On Syracuse, see Salvatore Adorno, "Luce e acque: conflitti e risorse nella modernizzazione di una periferia meridionale; Il caso di Siracusa," in Bocquet and Fettah, *Réseaux techniques et conflits*, 103–36. On Naples, see Frank M. Snowden, *Naples in the Time of Cholera, 1884–1911* (Cambridge, 1995). On Rome, Denis Bocquet, *Rome, ville technique (1870–1925): une modernisation conflictuelle de l'espace urbain* (Rome, 2007).
 27. Giuseppe De Matteis, "Le trasformazioni territoriali e ambientali," *Storia dell'Italia repubblicana*, vol. 2, *La trasformazione dell'Italia*, part 1, *Politica, economia società*, ed. Francesco Barbagnano (Turin, 1994): 661–709. Giuseppe Gamba, Giuliano Martignetti, "Ambiente e territorio," in *Guida all'Italia Contemporanea 1861–1997*, vol. 1,

- Risorse e strutture economiche*, ed. Massimo Firpo, Nicola Tranfaglia, and Pier Giorgio Zunino (Milan, 1998), 1–87. Simone Neri Serneri, “Urbanizzazione, territorio e ambiente nell’Italia contemporanea, 1950–1970,” *I Frutti di Demetra* 6 (2005): 33–39. Salvatore Adorno and Simone Neri Serneri *Industria, ambiente e territorio: Per una storia delle aree industriali in Italia* (Bologna, 2009). Piero Bevilacqua and Manlio Rossi-Doria, “Lineamenti per una storia delle bonifiche in Italia dal XVIII al XX secolo,” in *Le bonifiche in Italia dal ‘700 ad oggi*, ed. Piero Bevilacqua, Manlio Rossi-Doria (Rome and Bari, 1984), 5–78. Giuseppe Barone, *Mezzogiorno e modernizzazione: Elettività, irrigazione e bonifica nell’Italia contemporanea* (Turin, 1986). Giuseppe Barone, “Stato e Mezzogiorno: Il primo tempo dell’intervento straordinario (1943–1960),” *Storia dell’Italia repubblicana*, vol. 1, *La costruzione della democrazia*, ed. Francesco Barbagnano (Turin, 1994), 293–409.
28. On urban transformations and the birth of urban planning: Anthony Sutcliffe, *Towards the Planned City: Germany, Britain, the United States, and France, 1780–1914* (New York, 1981). For a more recent account on European cities, see Andrew Lees and Lynn H. Lees, *Cities and the Making of Modern Europe, 1750–1914* (Cambridge and New York, 2007). On the role of environmental infrastructure in urban modernization see: Joel A. Tarr and Gabriel Dupuy, eds., *Technology and the Rise of the Networked City in Europe and America* (Philadelphia, 1988). Martin V. Melosi, *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore, 2000). Schott, Luckin, and Massard-Guilbaud, *Resources of the City*. “Cities, Environment and European History,” special issue, *Journal of Urban History* 33, no. 5 (2007): 691–847.
 29. Cronon, *Nature’s Metropolis*, esp. xiii–xv.
 30. Claims about the increasingly blurred boundary between the city and country have a long tradition within rural and urban sociology. The issue has been recently revived in urban studies by considering networks and coalescing hinterlands over the last decades. See Edward W. Soja, *Postmetropolis: Critical Studies of Cities and Regions* (Malden, MA, 2000) and Soja, “Beyond Postmetropolis,” *Urban Geography* 32, no. 4 (2011): 451–69. Stephen Graham and Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (London and New York, 2001). Thomas Sieverts, *Cities without Cities: An Interpretation of the Zwischenstadt* (London and New York, 2003). See also Marc Antrop, “Changing Patterns in the Urbanized Countryside of Western Europe,” *Landscape Ecology* 15, (2000): 257–70, and Marc Antrop, “Landscape Change and the Urbanization Process in Europe,” *Landscape and Urban Planning* 67 (2004): 9–26. On urbanization in the countryside in environmental history, see Adam Rome, *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism* (Cambridge, 2001). On historical debates on sprawl and their cultural and political implications, see Robert Bruegmann, *Sprawl: A Compact History* (Chicago, 2005). On modernization and development in French countryside see Sarah B. Pritchard, “‘Paris et Le Désert Français’: Urban and Rural Development in Post-World War II France,” in *The Nature of Cities*, ed. Andrew C. Isenberg (Rochester, 2006), 175–91. To my knowledge, there are no historical studies that investigate in detail how the structural transformation experienced by major cities translated into small country settlements.
 31. Mauro Agnoletti, ed., *Italian Historical Rural Landscapes* (New York and Berlin, 2013).