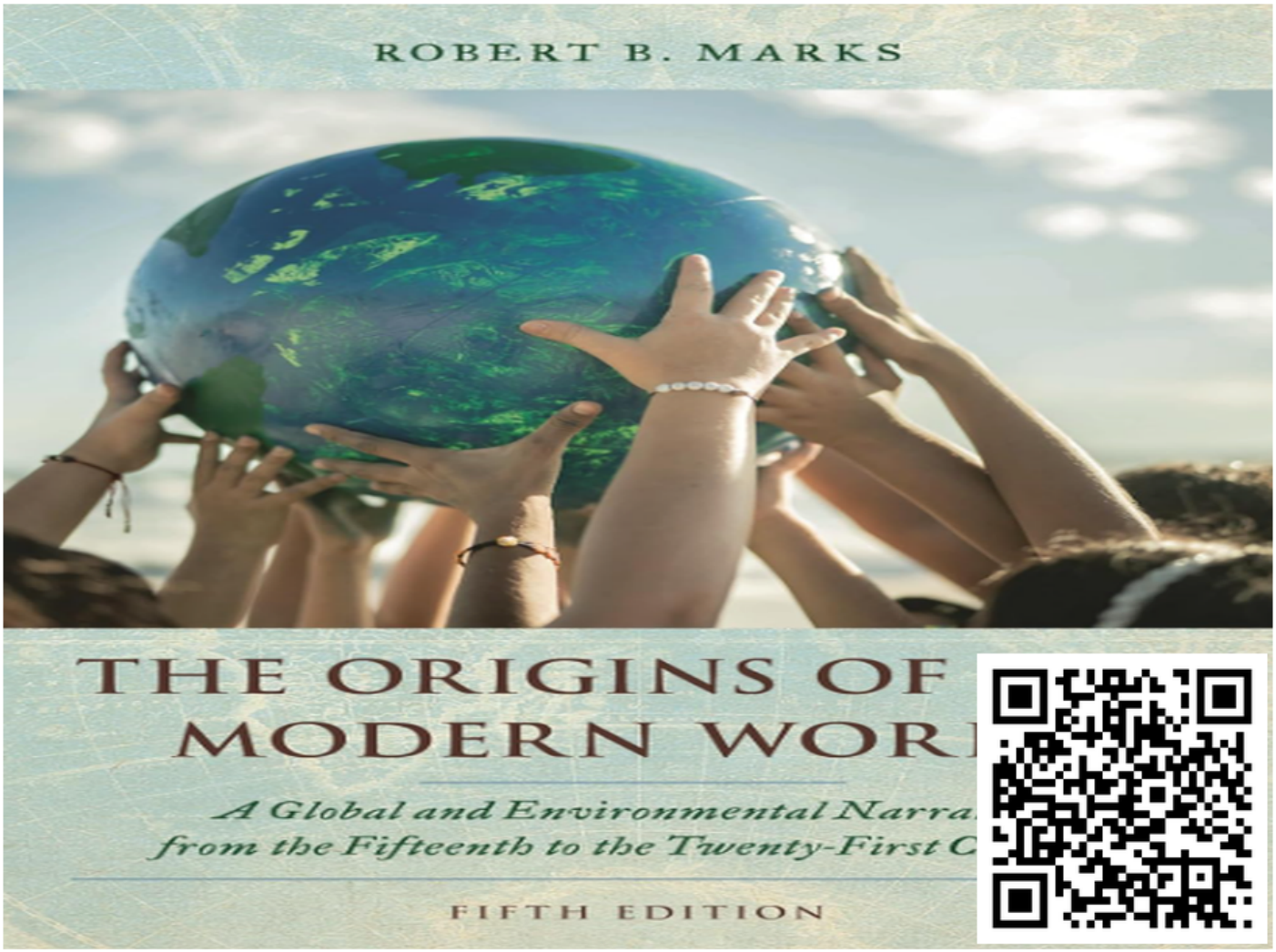

ROBERT B. MARKS

THE ORIGINS OF THE MODERN WORLD

A Global and Environmental Narrative from the Fifteenth to the Twenty-First Century

FIFTH EDITION

The Origins of the Modern World

A Global and Environmental Narrative from the Fifteenth to the Twenty-First Century

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Why a Fifth Edition?

The past may not change, but our history of it does. History—the narratives that historians write—is relevant to us because historians are influenced in their selection of what and how to write about the past by their engagement with issues and problems that confront us today.

As I was working on the first edition of this book in the year 2000, environmental historian J. R. McNeill published *Something New under the Sun: An Environmental History of the Twentieth Century*. In that book, McNeill observed that he thought that a hundred years hence, at the end of the twenty-first century, historians and others looking back at the twentieth century would be struck by the significance, not of the two massive world wars, the rise and fall of fascism and communism, the explosive growth of the human population, or the women's movement, but of the changed relationship of humans to Earth's natural environment. As an environmental historian myself, I found that observation compelling and incorporated an ecological theme in my narrative. The world holds many surprises, but one has to be how much faster McNeill's prediction has arrived. It hasn't taken a century, but just a few years, for the importance of the change in our relationship to the environment to thrust itself to the forefront of our

understanding of the recent past, and to give the epoch in Earth history we are now in a new name—the Anthropocene.

When I first wrote this book, I did so because a new body of scholarship on Asia to which I contributed had made it possible to reconsider the usual answer to the question of the origins of the modern world: "The Rise of the West." The new scholarship on Asia—which Jack Goldstone dubbed "The California School" because so many of us lived, worked, or published in California—raised questions about how and why the modern world came to have its essential characteristics: politically organized into nation-states and economically centered around industrial capitalism. Our findings that Asian societies had many of the characteristics others had seen as exclusively European and thus "causes" of the "European miracle" led us to argue that similarities cannot cause differences and to look for alternative explanations for how and why the world came to be the way it is. Andre Gunder Frank and Kenneth Pomeranz pulled this scholarship into two important books that changed the way we now understand how the world works, decentering Eurocentric explanations of history. One of the contributions of the first two editions of this book (2002 and 2006) was to bring to students and teachers a fresh narrative of the origins of the modern world that incorporated this new body of scholarship.

That continued to be the case with the third edition (2015), which, in addition, placed the environmental story line into an ever more prominent position in the book's narrative. It was only in the 1980s that climatologists had begun to understand El Niño events and, in the 1990s, that rising levels of carbon dioxide coming from industry and tailpipes might cause the global climate to warm. From that initial realization that humans are forcing global climate change, we have now come to understand that humans are changing, overwhelming, or displacing other global processes of nature as well, on scales never before seen in human history. Readers or instructors familiar with earlier editions will notice sections on environmental issues throughout the book, as well as others highlighting Africa and income inequality. Those additions, combined with the placement of all notes at the end of the book, necessitated new pagination and a new index in the third edition.

In the late 2010s, new developments prompted me to offer a revised, fourth edition of this book (2020). The fallout from the financial crisis of 2008, known as "The Great Recession," shook the faith of many around the

world in the workings of the post–World War II global economy. Especially affected were those whose jobs vanished as factories closed or relocated to countries with lower wages and environmental protections, or residents of rural areas where farm incomes dropped and employment opportunities for young people eroded and many migrated to urban areas, fueling a sense of unfairness and anger toward those who allowed those downward pressures to continue to build. In many places around the world, the globalized economy and its easy flows of capital and labor have destabilized people's lives, stoking opposition to the globalized world and to the elites assumed to be running it. Often these resentments come together in particular individuals who come to power as authoritarian nationalists (such as President Donald J. Trump in the United States and others in Brazil, Hungary, and Poland), and in movements such as Brexit in the United Kingdom, where a slim majority of citizens voted to leave the European Union.

Since then, earthshaking events, including the COVID-19 epidemic (2019–2023), Russia's 2022 invasion of Ukraine, and the latest assessments of the growing dangers of global warming, led me to conclude that a new edition was necessary to place those developments into the long-term global context of *Origins*. Doing so also led me to re-envision much of parts III and IV of chapter 6, those addressing the post–World War II era. In addition to new sections on COVID and Ukraine, I have added new sections on the China Shock; the financial crisis of 2008 and the ensuing great recession; deaths of despair; opposition to globalization, deglobalization and re-nationalization; and "a conjuncture." The conclusion to chapter 6 is new.

Elsewhere in the book, I have clarified my prose where needed, corrected a few errors, and added and discussed new scholarship on the Black Plague at the end of chapter 1, on the Indian Ocean world in chapters 2 and 3, on Native Americans in chapter 5, and on the 1920s in chapter 6.

My reason for recounting this story of the changing circumstances of this book is not to provide a rationale for another edition. Rather, it is to point out that history is living and relevant to current concerns, not the "dead hand of the past," as some might see it. Both new scholarship and new issues and problems can prompt us to re-examine the past and to rewrite history to take account of changes in both. That way the stories we tell about the past continue to be relevant and helpful to us in the present. For if they weren't, what would be the point? We need all the help we can

get, and historical perspective is an essential aid to living in and through the present to a better future.

In addition to the intellectual debt I owe to Andre Gunder Frank, Kenneth Pomeranz, and John R. McNeill, I want to thank them for their personal involvement with the first edition of this book. Others who were instrumental in conceptualizing that project include Dennis O. Flynn and Arturo Giraldez, whose work following the silver trail around the world opened new vistas for me and other scholars and who organized the 1998 Pacific Centuries Conference at the University of the Pacific in Stockton, California, where we thrashed out ideas over lunches and dinners, and where the idea for this book originated. Others who read and commented on the first edition include my Whittier College colleagues José Orozco and Dick Archer; Steve Davidson, professor of history at Southwestern University; and the editor of the Rowman & Littlefield series World Social Change, Mark Selden. Erik Ching, Bradley Davis, Kathryn Davis, Peter Lavelle, Ray Patton, and David Pizzo provided helpful comments and offered important suggestions for adding clarity and helping students navigate *Origins*. For comments on this fifth edition, I thank Brad Davis and Xiaofei Gao. My dissertation advisor, Maurice Meisner, who was himself an intellectual historian, supported and encouraged me when I first made the turn to social and economic history, and then to environmental history.

For their response to the ideas in the book and the book itself, I want to acknowledge the first- and second-year students who have taken History 101, Introduction to World History, and read and commented on prior editions of *Origins*, and to thank my colleagues, Professors Elizabeth Sage, José Orozco, and José Ortega, who team-taught the course with me and from whom I learned much about the history of Latin America, Europe, and the Atlantic world. Like their predecessors, the history majors in History 480, Capstone Seminar, read widely and deeply on topics that found their way into this book, exploring environmental history (Spring 2010), the early modern world (Spring 2012), Eric Hobsbawm (Spring 2013), "the seventeenth-century global crisis" (Spring 2014), the Columbian Exchange (Spring 2015), the twentieth century in global, ecological, and historical perspective (Spring 2016), the environmental history of the early modern world (Spring 2017), and empire and environment in the modern world (Spring 2018). I especially want to thank the members of the Capstone

Seminar (Spring 2019). These students read and critiqued the third edition and many of the draft revisions for the fourth edition. I found their comments and critiques invaluable. I say “thank you” to these students: Michael Atwood, Trent Beauchamp-Sanchez, Koren Dalipe, Brianna Drakopulos, Carlos Gonzalez, Madeline Kirkwood, Mikaela Malsy, Alicia Pennypacker, Jonathan Ramirez, Kelsey Sherman, Carly Stevens, Daniela Vega, Astra Yatroussis, and Jourdan Zelaya. Special thanks also go to Professor Kenneth Curtis, who invited me to meet with the members of his graduate seminar at California State University–Long Beach. They engaged me in a wonderful discussion of the ideas that draft revisions of this book sparked.

Since the fourth edition was published, I have retired after forty-one years of teaching at Whittier College. Although I no longer have students with whom to try out ideas and draft revisions, I do remain an active scholar. I am especially grateful to Professor Ling Zhang who organized a March 2023 gathering of scholars at Harvard University to recognize my role in founding the field of Chinese environmental history. Many of those present also attested to the importance of *The Origins of the Modern World* to their teaching and scholarship. I continue to work on environmental history, and my attention has turned to the Mono Basin in the Sierra Nevada Mountains of eastern California where I now live.

A grant from the National Endowment for the Humanities (FB-36592) supported the composition of the first edition. Philippe Beaujard kindly (and promptly) gave me permission to use one of his maps (see map 2.2). At Rowman & Littlefield, executive editor Susan McEachern was instrumental in bringing the first four editions to print, kept me apprised of feedback from students and faculty who read and used *Origins*, and encouraged me to get working on the fourth edition. Her work as my editor has now been taken over by Ashley Dodge and her assistant, Laney Ackley, and I thank them for all they have done to bring this fifth edition to completion. For their attention to detail, I want to thank Professor Robert Entenman and Yuhin Ng for pointing out errors in the second edition that needed correction, and to Scott Kistler for pointing out an error in the fourth edition. Any errors that remain in this edition are mine. Without my family, I would not be the scholar I am. My mother and father, neither of whom graduated high school, nonetheless loved reading and talking, and together they gave me the support and encouragement to follow my dreams out of a

small town in northern Wisconsin to the University of Wisconsin. My son Robert received his degree in environmental sciences, is a professional freshwater resource geologist, and reads and critiques my drafts. Joyce Kaufman continues to offer companionship, love, and support, knowing what it means to be a publishing scholar at a college that values teaching effectiveness first and foremost. And as did our faithful and beloved dog companions Budd, Rembrandt, and Stanton, Seger now reminds me to look forward to each new day.

INTRODUCTION

The Rise of the West?

1.5° Celsius. Or a little less than 3° Fahrenheit above preindustrial levels. That is the amount of global warming scientists tell us the world can accommodate without tipping into uncharted and dangerous territory for the stability of human societies.[1] Over the past two decades global temperatures have steadily increased (twenty of the hottest years on record are in the past twenty-two years),[2] with discernable effects on weather patterns—hotter and drier summers in some places, wetter and wilder ones in others. And sea level increases are already worrying the leaders and citizens of oceanic countries. Stronger hurricanes and typhoons as well as longer and more intensive droughts are increasingly likely, leading to the loss of food security for affected peoples and the social and political disruption that follows. We know that global warming is caused by human activities, mostly the burning of fossil fuels that release carbon dioxide (CO_2) into the atmosphere, but also by methane (CH_4) released from rice paddies and the guts of dairy and beef cattle.

Already the amount of carbon dioxide in the atmosphere has surpassed the safety level of 350 parts per million (ppm) and is now (in 2023) over 420 ppm and continuing to rise. The global average temperature is already

1.1° C higher than it was in 1870.[3] Because carbon dioxide is a greenhouse gas, projections are that Earth is heading for warmer global temperatures and serious challenges faster than had been expected. In the view of James Hansen, until 2013 head of the NASA Goddard Institute for Space Studies, this is a matter of concern because most of what we have called human civilization has developed in a temperate global climate with atmospheric carbon dioxide around 280 ppm. More than that, though, Hansen and other climatologists have concluded that the cause of the increase in atmospheric carbon dioxide is human action arising from industrialization over the past two centuries, and especially in just the past sixty years since the middle of the twentieth century.[4] Young people around the world certainly "get it" (see cover photo) about the challenges posed by global warming and to the safety and security of the world that they and their children will inhabit, and they have been demonstrating and pressing their elders to "take action now!"[5]

The story of how the world got to the point where human actions could affect global environmental processes is complex but not mysterious. The tools of history can help us understand how and why the world we live in—the modern world—got to be the way it is. That understanding can be helpful as we search for ways to make the world a better, safer, more sustainable, and more equitable place for all people. But we need to take a long-term view to fully understand the past and its relationship to the present, and to envision alternatives for the future.[6]

Mostly, the story of the modern world revolves around the historical unfolding of five interrelated themes. The first involves the question of when, how, and why some parts of the world first industrialized, and how those processes were then picked up and used by people in other parts of the world. That story line is still unfolding, and it gets intertwined with another, that of the emergence of nation-states as the principal way people over the past two centuries have organized themselves politically. Industry initially gave some states in western Europe and North America increasing wealth and power—so much so that a large and growing gap emerged between the wealthiest and poorest parts of the world. The story of that "gap" and its consequences is the third of the themes taken up in this book.

The fourth theme explores the interrelationship between the environmental context in which those elements of the modern world emerged and the ways people and their actions in turn changed and continue

to change the environment. The imprint of humans on our Earth's ecosystems has become so great that some scholars argue that we are entering a new geologic era—the Anthropocene—in which "humankind . . . has become so large and active that it now rivals some of the great forces of Nature in its impact on the functioning of the Earth system."[7]

And because each of those first four themes needs to be understood in a global context, a fifth significant theme is the long-term process of globalization.

Just 250 years ago, the human population of the world was less than one billion people, and two Asian countries—India and China—accounted for two-thirds of the world's economic output. In the brief span of history since then, global population has grown to over eight billion people (on our way to nine billion plus by 2050), and the world saw a great reversal of fortune: where once Asians held most of the economic cards, for the past two centuries, it has been primarily Western countries and Japan. In just the past thirty years, China has risen to be the second largest economy in the world, and its assertions of regional and global leadership have been challenging the U.S. and its views of how the global order should be structured. The question centers on how that great reversal happened, and how China has subsequently risen once again. How did industry and European-style countries called nation-states—rather than highly developed agrarian empires like China and India—come to define our world? Are the last two centuries of European and American economic and political domination a relatively brief aberration? And is China's (or all of Asia's) recent rise a return to the previous world order? Or to a newly reorganized global economy? Russia's invasion of Ukraine in 2022 raises a similar question about the stability of the system of sovereign states.

Thus, to understand our world, we have to understand not just how nation-states and industry came to shape the modern world, but how and why those European ways of organizing the world came to dominate the globe. Explanations abound, but for most of the past two centuries, the predominant explanation in the West, the United States included, has been "the rise of the West." As we will see, recent research has shown that that explanation is no longer persuasive, but because it is probably the one most readers may be familiar with, I will take some time exploring it and providing the basis for constructing an alternative explanation.

The Rise of the West

The concept of the rise of the West provides both a rationale and a story line that purports to explain not just the modern world, but why it is defined by primarily European features. The idea behind it is fairly simple and began to emerge shortly after the Spanish conquest of the Americas, during the Italian Renaissance of the sixteenth century. Europeans were quite astounded to see hundreds of Spanish conquistadors vanquish huge and very wealthy American civilizations, in particular the Aztecs and the Incas. Being ignorant of the germ theory of disease and the cause of the "Great Dying" in Mexico, where nearly 90 percent of the central Mexican population of twenty-five million succumbed to European diseases such as smallpox and influenza, Europeans first attributed their superiority to their Christian religion. Later, during the Enlightenment of the seventeenth and eighteenth centuries, they attributed their superiority to a Greek heritage of secular, rationalistic, and scientific thought.

In the late 1700s, this story line continues. The French Revolution of 1789 reinforced the awareness in European minds not just that Europeans were different from the rest of the world, but also that Europeans were "progressing" rapidly while the rest of the world appeared to be stagnating, that Europeans were somehow exceptional—better, even—than the rest. Nineteenth-century European historians, impressed with what many considered to be the universal appeal of the ideals of the French Revolution —*egalité*, *liberté*, *fraternité* (equality, liberty, and brotherhood)—looked back to the ancient Greeks, their institutions of democracy and republics, and their rationalistic bent toward understanding the natural world in scientific, not religious, terms. In this early telling of the "rise of the West," the story is somewhat like a relay race, with the ideas of democracy that arose in Greece passed off to the Romans, who dropped the baton (the fall of the Roman empire followed by the so-called Dark Ages), but Christianity was then on the scene to pick it up and run with it, creating a distinctive European culture during feudal times. The ancient Greek heritage was rediscovered in the Renaissance ("renewal"), elaborated during the Enlightenment, and ultimately fulfilled in the French and American revolutions and "the rise of the West."

If the West was "rising" during the eighteenth century, during the nineteenth its ascent was completed. As the Industrial Revolution of the late

eighteenth and early nineteenth centuries was just beginning, the classical British political economists—Adam Smith, Thomas Malthus, David Ricardo, and their followers—developed another strand to be woven into the story of the rise of the West: the ideas of capitalist industrial development as "progress," the West as "progressive," and Asia (and by implication, Africa and Latin America, too) as "backward" and "despotic." To be sure, contrasts between the virtues of the West and the flaws of the East—the Orient—may have dated back to the Greeks, but eighteenth-century Europeans had been impressed with the wealth and governance of Asian countries, especially China. As the pace of economic change accelerated in nineteenth-century Europe, while much of Asia was in internal decline, European social theorists came to view the West as dynamic, forward looking, progressive, and free, and Asia as stagnating, backward, and despotic.

Even Karl Marx and Friedrich Engels, the most powerful critics of the new capitalist world order, believed that nineteenth-century European expansionism was bringing "progress" to the rest of the world. As they wrote in *The Communist Manifesto*, published in 1848:

> The [European] bourgeoisie, by the rapid improvement of all instruments of production, by the immensely facilitated means of communication, draws all, even the most backward, nations into civilization. The cheap prices of its commodities are the heavy artillery with which it batters down all Chinese walls, with which it forces the underdeveloped nations' intensely obstinate hatred of foreigners to capitulate. It compels all nations, on pain of extinction, to adopt the bourgeois mode of production; it compels them to introduce what it calls civilization into their midst, i.e., to become bourgeois themselves. In one word, it creates a world in its own image.[8]

Of more importance for Western conceptualizations of their own history, though, has been Max Weber, a German sociologist who wrote around the turn of the twentieth century. Where Weber shared with Marx a fascination with explaining how and why capitalism developed in Europe—and only Europe—Weber parted with Marx in his explanation. Instead of focusing as Marx had on "materialist" explanations, Weber looked to those aspects of Western values and culture, in particular the rationalism and work ethic that he associated with Protestantism, as being crucial to the rise of capitalism. But rather than basing his ideas about the rise of the West solely on studies of the West, Weber actually investigated Chinese and Indian societies, compared them with Europe, and concluded that those two societies at least, and by implication all other non-European societies,

lacked the cultural values necessary for capitalism. Nonetheless, they too could "modernize," Weber thought, but only by going through a painful process of cultural change, getting rid of their cultural "obstacles" to capitalist development.

"The Gap" and Its Explanations

Since the mid-nineteenth century, then, European social theorists have been aware of a growing gap between the industrialized countries and the rest of the world. Believing both that western Europeans—and they alone—had unlocked the secret of modernization,[9] and that others too could learn, twentieth-century followers of Smith, Marx, and Weber have propounded a "diffusionist" theory of how world history has unfolded. That theory goes like this: Europeans found out how to get rich first by industrializing. Japan and a few other places learned from the Europeans and caught up, and eventually every other place on the globe will too (as the story of "China's rise" since the 1990s appears to show), as long as they identify and eliminate the local institutions and cultural traits that prevent them from becoming modern.

By the end of the twentieth century, these ideas appeared to have been vindicated when the Soviet Union collapsed and Communist China began adopting market reforms and sanctioning the ownership of private property. "The end of history," political theorist Francis Fukuyama declared in 1992 under the assumption that the values and institutions of the West had triumphed globally.[10] The spread of the global free trade, the proponents of "globalization" argued, would bring the benefits of economic development to even the poorest people and nations in the world, everyone would benefit, and world peace would prevail. To that extent, history would end.

Viewed now in the third decade of the twenty-first century, these ideas appear to be quite unconvincing in light of the facts that the gap between the wealthiest and poorest parts of the world continues to grow and the environmental consequences of industrialization are coming home to roost. However, the fact that eighteenth-and nineteenth-century European theorists —Smith, Malthus, Ricardo, Marx, and Weber—all accepted the idea of European exceptionalism and sought, as one of their primary intellectual goals, to explain it, is important.

These men were the founders of modern social science theory, and in the twentieth century virtually all of the social sciences, in particular

sociology and economics, incorporated the idea of European exceptionalism into their basic assumptions. As historians sought to become more "scientific" in the twentieth century by adopting and adapting the insights of this social science to historical inquiry, they too became captivated by the search for the origins and causes of European exceptionalism. But as we will see, Europeans were not exceptional, and one of the most important points about the history of the world until about 1800 is the broad comparability of Asia with Europe, showing more surprising similarities than meaningful differences. Nevertheless, the search for answers to *why* Europeans were perceived as exceptional and hence ultimately superior continues among historians today, even though many now think it is the wrong question to be asking.

In the post–World War II era, this new historical search has produced an impressive body of scholarship looking for the key to what one economic historian has called "the European miracle."[11] These scholars begin with what they see as the fact of the rise of the West but propose differing solutions to the questions of when and why the "rise" or the "miracle" began. The question of when will be discussed first, since in many ways it is relevant to considerations of why.

Adam Smith saw 1492 and 1498 (the voyages of Columbus to the Americas and of Vasco da Gama around Africa to India, respectively) as the most significant years in history. As Smith wrote in *The Wealth of Nations* (1776): "The discovery of America, and that of the passage to the East Indies by the Cape of Good Hope, are the two greatest events recorded in the history of mankind." Marx, too, saw these two dates as crucial, as have several twentieth-century scholars working in a Marxist tradition who have pointed to the subsequent European colonialism, slavery, and exploitation of colonies in the Americas and Asia as the primary explanations for the rise of the West. Many non-Marxists have contested the idea that Europe's rise was a result of the exploitation of others,[12] an inconvenient and awkward fact if true, and instead have turned their attention to those aspects of European culture that predate European colonialism, beginning with the Spanish conquest of the New World.

To avoid the possible embarrassment of attributing the rise of the West to its colonial ventures, and not its inherent virtues, much post–World War II scholarship on the origins of the rise of the West has looked farther back in European history, in some cases as far back as the Middle Ages in the

eleventh and twelfth centuries, or yet earlier to the ancient Greeks, for factors that could be attributed only to Europe's own exceptional development. Factors that have been identified, in addition to the cultural values discussed by Weber, include environmental ones (temperate climates promote hard work, or poor soils stimulate agricultural innovation), technological ones (plows, stirrups, or reading glasses), political-military ones (feudalism leading to absolute monarchs and then nation-states and the evolving technology of war), demographic ones (small families promote capital accumulation), and in the minds of several historians, combinations of all or some of these.[13]

The implication of this body of scholarship is that Europe possessed some unique characteristics that allowed it—and only it—to modernize first, and hence gave it the moral authority and the power to diffuse "modernity" around the globe where cultural, political, or economic "obstacles" prevented modern development from occurring indigenously. Hence, this story line purports to explain, justify, and defend the rise of the West to global dominance. Just how wrongheaded this theory is will become clearer as the industrial superiority of much of Asia to Europe, at least prior to about 1750, is revealed in the course of this book.

In addition to the recent scholarship on Asia that is changing our understanding of how and why the modern world developed, another perspective is changing our views of the consequences of that development —environmental history. Broadly conceived, environmental history looks at the mutual interactions of humans with our environment—the ways environments conditioned human societies, the ways humans in turn changed their environments to meet human needs, and then the ways those environmental impacts created new sets of problems for humans to confront. This new field emerged around 1970 as mounting environmental problems such as industrial pollution of the air, water, and soil in the United States and Europe prompted historians to ask how and why that had happened. More recently, as the impact of humans on global ecological processes such as the carbon and nitrogen cycles has become apparent, environmental historians have adopted increasingly global views.[14]

Before turning to the question of why all this matters, let me first say a few words about geographic units used in this book. Earlier I mentioned a comparison between "Asia" and "Europe," implying both that these units are comparable and that they have some kind of unity that distinguishes

each one from the other. That assumption is problematic, mostly for Asia, because of the immense variety of societies it includes, ranging from China and Japan in East Asia, through the pastoral nomads of Central Asia, to India in the south and the Muslim-dominated West Asia (Middle East). Even Europe has little coherence if it is taken to include everything from Portugal to Russia. Moreover, until very late in our story (at least until 1850 or so), Asia contained about two-thirds of the world's population and was larger than Europe in virtually every respect. To that extent, Europe and Asia were not comparable. Furthermore, one of the most important points I make in this book is that understanding the origins of the modern world requires taking a global view, first of how the vast continent of Eurasia, coupled with Africa, interrelated, and then after 1500, how the New World fit into the story. Finally, even the geographic terms "China," "India," and "England" or "France" conceal much variation within their borders—different peoples, many languages or dialects, and vast differences in wealth and power. Nevertheless, I will use these geographic terms to begin locating the story, but readers should be aware that generalizations based on large geographic units will not be true at all times and places within the places named, and that in reality what was truly comparable occurred in *parts* of China, *parts* of England or the Netherlands, and *parts* of India.

Readers may be wondering why the issue of the rise of the West matters. Indeed, why even study history? The brief response is because our understandings of the past—who we are, where we came from, why we are here—inform our definitions of who we are in the present and have real implications and applicability for actions taken by us or in our name to shape the future. And for that, taking a long-term view of the past—what the late French historian Fernand Braudel called the *longue-durée*—will be helpful for placing into context and critiquing explanations about how the world got to be the way it is.[15] The ideas developed by the story of "the rise of the West" to explain the nature of the world we live in, especially the values of marketplace capitalism and democratic institutions, are thought to have originated uniquely within Western civilization, yet to have universal applicability—to be "good," not just for the West, but for everybody. Following that assumption, the solution to virtually all problems in the world today, at least according to some U.S. and European political leaders, is the adoption of private property and free markets.[16] Thus, to Russia after the collapse of the Soviet Union, to the communist leaders of China, to the

leaders of Mexico, Nigeria, and Indonesia, Western leaders have said that the answer to any and all problems they face is "more democracy and free markets." The idea is that the institutions and values that supposedly propelled the rise of the West are universal and can—indeed, must—be adopted throughout a globalized world. That is a political agenda.

But what if this way of looking at the making of the modern world—the rise of the West and the spread of its system on the basis of its supposed cultural superiority to the rest of the world—is wrong? That is the possibility raised by a new body of scholarship, especially over the past forty years.

No longer do all historians picture the world as merely a continuation of universal and necessary trends that began centuries ago in Europe. What many are seeing instead is a world in which population, industry, and agricultural productivity were centered in Asia until around 1750–1800. The European world of industrial capitalism and nation-states is thus both quite recent and a reversal—for how long, though, remains a big question—of long-standing historical trends favoring Asia.[17] Europeans may have painted a picture of the rise of the West over this original one, but the patterns of Asian strength and economic vitality are beginning to show through once again. Artists call this concept of one painting showing through an original painting or parts of it *pentimento*. As this book intends to show, the more we look at the world and its past through a new light, the more the pictures painted in our minds by the rise of the West will reveal another, and rather different pattern, underlying. To see it, though, we will have to begin shedding our Eurocentric perspectives.[18]

Eurocentrism

One critic has said that the idea that "the West has some unique historical advantage, some special quality of race or culture or environment or mind or spirit, which gave this human community a permanent superiority over all other communities" is a myth—the myth of Eurocentrism.[19] Another has seen Eurocentrism as an ideology, or a distortion of the truth, used by the West to mask its global dominance,[20] and still another deems it a "theoretical model," one explanation among several for how the world works.[21] In this section, we will examine two aspects of what critics call

Eurocentrism: first, what it is; and second, the extent to which it can be seen as wrong, a myth, an ideology, a theory, or a master narrative.

The essence of Eurocentrism, according to the critics, is not merely that it views history from a European point of view (the "centrism" part). An ethnocentric perspective recognizes that there are many different peoples and cultures in the world, but that mine is better *because* it arises from my people and culture. Eurocentrism also emphasizes the superiority of Western culture—all that is good, progressive, and innovative starts only in Europe—but it also sees that package as having universal applicability: it is not peculiar and limited to Europe, but spread to encompass much of the globe by the twentieth century.

Going a bit deeper, critics say, Eurocentric views of the world see Europe as being the only active shaper of world history, its "fountainhead," if you will. Europe acts; the rest of the world responds. Europe has "agency"; the rest of the world is passive. Europe makes history; the rest of the world has none until it is brought into contact with Europe. Europe is the center; the rest of the world is its periphery. Europeans alone are capable of initiating change or modernization; the rest of the world is not.

On a deeper level yet, according to critics, Eurocentrism is not just a belief in the past or present superiority of Europe but also is "a matter of . . . scholarship" (i.e., of established "fact").[22] It is not a "bias," but a way of establishing what is true and what is false. To that extent, Eurocentrism is a way of knowing that establishes the criteria for what its practitioners deem to be "the facts." It is thus a *paradigm*, a set of assumptions about how the world works, that generates questions that can then be answered by ferreting out "the facts."[23]

Finally, Eurocentric ideas about the world and how it came to be the way it is are deeply held by Americans. Indeed, American history is often presented as the pinnacle, the purest and best expression, of Western civilization. European and even world history are most often presented from a Eurocentric point of view, whether or not students or teachers recognize it. Mostly, it is assumed to be "true." Simply collecting more facts would not suffice to dispel the Eurocentric viewpoint, since all the facts on the inside tend to confirm the reality, the truth, of the matrix one is in.[24] Some facts that are collected might not fit, but mostly those are simply discarded or ignored as being anomalous—accidents, if you will. The same is true of Eurocentrism. If Eurocentric ideas about the rise of the West are wrong,

how would we know it? The way to know is by getting outside of that way of explaining how the world came to be the way it is and thinking about other ways of understanding the big changes that have shaped our world.

Readers may sense a paradox here. On the one hand, I started by pointing out that key features of the modern world are European in origin and that I think a historical approach can explain how and why industry, the nation-state, the gap between the wealthy and the poor, and mounting human impacts on the global environment came to define our world. On the other hand, I have just rejected the usual Eurocentric explanations of the origins of the modern world. How can there be a non-Eurocentric explanation of a world that has European features? In short, we can find that by broadening the story line to include parts of the world that have thus far been excluded or overlooked—we can begin and end the story elsewhere.[25] When we do that, we will see that only a new, global story line —one not centered on Europe—will suffice to explain the origins of the modern world.

Stories and Historical Narratives

For historians, constructing a narrative—a story with a beginning, a middle, and an end—is central to how we know what we know, how we determine what is true about the past.[26] The rise of the West is a story—to be sure, a story at the core of Eurocentrism—that provides the criteria for selecting what is and what is not relevant to that story. But because the rise of the West informs all the other historical scholarship mentioned above, it is more than just another story or narrative; it is a "master narrative," "a grand schema for organizing the interpretation and writing of history," "sweeping stories about origins," as historians Appleby, Hunt, and Jacob put it.[27]

So the only way to determine if the story of "the rise of the West" is wrong is to construct an alternative narrative of how the world came to be the way it is: we have to get outside of the rise-of-the-West matrix. Doing so will accomplish three things. First, it will provide an independent way to tell which parts, if any, of the rise-of-the-West paradigm can be kept and which need to be rejected. Second, it will help readers to examine critically their own assumptions about how the world works. And third, it will raise the more general issue of how we know what we know about the world and

its history. That is the task of this brief history. In the remainder of this introduction, I want to sketch out the elements of that alternative narrative.

I need first to introduce three additional concepts: those of historical contingency, of accident, and of conjuncture. We start with the idea of *contingency*. One very powerful implication of the story line of the rise of the West, though it is seldom made explicit, is that the way the world turned out was the only way possible. Because of the historical advantages enjoyed by Europeans, possibly since the fall of the Roman empire or even as far back as the Greeks or to the source of European genetics, this interpretation implies that the rise of the West was *inevitable*. It might have taken some twists and turns, had some fits and starts, but sooner or later the West would rise above all other parts of the world.

Although we will also have to deal with the political, economic, and military dominance of Europe and its offshoots (e.g., the United States) for the past 200 years, there is no reason to think that that dominance was inevitable or, for that matter, that it will continue. Indeed, it appears inevitable only because that story line was centered on Europe. But once a broader, global perspective is adopted, the dominance of the West not only happens later in time, probably as late as 1750–1800 and perhaps not until the early nineteenth century, but it also becomes clearer that it was *contingent* on other developments that happened independently elsewhere in the world.

Most important, the economic engine driving global trade—and with it exchanges of ideas, new food crops, and manufactured goods—was in Asia. As early as 1000 CE, China's economic and population growth stimulated the entire Eurasian continent; another surge came after about 1400 and lasted until 1800 or so. Asia was the source of a huge demand for silver to keep the economies of China and India growing and also the world's greatest source of manufactured goods (especially textiles and porcelain) and spices. Also very significant in our narrative will be the beginning of Islam and the expansion, from the seventh to the seventeenth centuries, of Islamic empires westward into the Mediterranean Sea and eastward into the Indian Ocean as far as Indonesia. Where Asia attracted the attention and interest of traders from all over Eurasia, Islamic empires blocked direct European access to the riches of Asia, stimulating a desire among Europeans to find new sea routes to the Indian Ocean and China.

Even Columbus's "discovery" of the Americas and Vasco da Gama's sailing around Africa to get to the Indian Ocean would not have done much for European fortunes had they not found both vast quantities of silver in the New World with which to buy Asian goods and a supply of African slaves to work New World plantations after European diseases killed off most of the Native American population. As we will see, the creation of the institutions and sources of wealth and power in a few advanced parts of Europe, enabling these areas to establish dominance over the rest of the world, was *contingent* upon these, and other, global developments.

As late as 1750, as parts of Europe approached the levels of development reached in key areas of Asia, all of these most developed parts of Eurasia—parts of Europe as well as Asia—began butting up against environmental limits to further growth, except in England, where easily accessible coal deposits enabled the British to escape these constraints by industrialization based on the new source of steam power. In the early 1800s this new power source was put to military use, and then—and only then—did the scale tip against Asians, and Europeans, led first by the British, moved toward establishing clear global dominance. The point is that the rise of the West was not inevitable but was highly contingent. The world we live in might have been different; there is nothing in the past—unless you adopt the rise-of-the-West construct—that indicates that the world had to become one dominated by Western institutions.

Moreover, if the rise of the West were not inevitable but instead contingent, that would mean that the future too is contingent, and that is why it matters what our view of the past is. If nothing anybody could have done would have changed the outcome of history, then nothing we can do *now* can shape our future: we are trapped in a further elaboration and extension of that which exists in the present, unless some huge accident of history such as a pandemic or a world war pushes us in a different direction. On the one hand, if history—and our view of it—is contingent, then the actions that we take in the here and now do indeed have the possibility of changing the world. We are not trapped, but rather we (and I take that to mean all the peoples in the world, not just Americans or those in the West) can have agency. If the past could have been different, so too can the future. As environmental historians and climate scientists have argued, to see the future as a continuation of "business as usual" is to court disaster: the world needs to take action now to change past trends to avoid the worst impacts of

global warming. To understand that, though, we need to take a long-term view of the past—that is why this book constructs a narrative that spans six centuries. Being "contingent," on the other hand, does not mean that European dominance of the world for the past 200 years was an accident, for there were causes for that development, as this book will make clear.[28]

That does not mean that historical *accidents* do not happen, for they do. Let me give two examples that will be discussed later in the book. In agricultural societies, which is what most of the world was until very recently, climate changes could have a major impact on the size of the harvest, not just in one year but over decades. More favorable conditions could produce larger harvests, lowering the price of food for everyone and stimulating the growth of the economy. Poor climatic conditions, such as happened in large parts of the world during the seventeenth-century "Little Ice Age," put whole economies under severe pressure and led to serious, worldwide crises, as we will see in chapter 3. Although our current climate problems have human causes and thus, in principle, are amenable to amelioration by human action, past climate shifts were accidents in the dual sense of being unpredictable and beyond human control.

Another "accident" is important to the story of coal and its relationship to industrialization. Coal deposits were laid down hundreds of millions of years ago by geologic processes, and where they were in terms of where people lived is purely accidental, as is the case with the main fossil fuel used over the last hundred years, petroleum (and with all other minerals too). Some coal deposits turned out to be near to where people both needed and knew how to use them, and some were far away and hence unusable. The Dutch, for example, had peat, but not coal. This was one reason that their economic growth in the eighteenth century slowed while that of Britain, which just happened to be sitting on huge, close, easily worked coal deposits, accelerated. The distribution of coal deposits thus is accidental as far as human history is concerned, but it certainly had a dramatic impact on which countries industrialized and which did not.

Next is the idea of *conjuncture*. A conjuncture happens when several otherwise independent developments come together in ways that interact with one another, creating a unique historical moment. For our purposes, one way to think about this is to consider the world as having had several regions that were more or less independent of one another, thus having their own histories. In China, for example, the decision in the early 1400s by the

government to use silver as the basis for their monetary system arose out of circumstances particular to Chinese history. But this Chinese decision had a global impact in the sixteenth and seventeenth centuries when Europeans discovered both huge supplies of silver in the New World and an even larger Chinese demand for it. As a result, silver flowed into China (and India), and Asian silks, spices, and porcelains flowed into Europe and the New World, inaugurating the first age of globalization.[29] That was a conjuncture: strings or strands of things happening in different parts of the world for reasons having to do with local circumstances that then became woven together to become globally important.

Conjunctures can also occur within a given region when several otherwise independent developments reach critical points and interact with one another. For instance, the development of nation-states as the dominant form of political organization in Europe happened for reasons quite independent of those leading to industrialization. Nonetheless, when the two converged in the nineteenth century—came together to produce a conjuncture—a very powerful global force developed, particularly when the two provided the basis for European military preeminence. As I will argue in chapter 6, the world may well be at a conjuncture now.

The attention we give to contingency, accident, and conjuncture means that our explanation of major developments in the making of the modern world will involve several causes, not just one. Monocausal explanations are too simple to take account of the complexity of people, societies, and historical change. We should not look for "the" cause of the Industrial Revolution, for it will not be there. Instead, we will find a complex of factors that go a long way toward explaining the Industrial Revolution. I say "a long way" because we have to leave open the possibility that as we learn more or as our perspective changes, we might see the shortcomings of the explanation offered here.[30]

So the narrative in this book about how the modern world came to be—the world of industrial capitalism, a system of nation-states and interstate wars, globalized interconnections, a growing gap between the richest and the poorest in our world, and mounting human impacts on the environment—will be one that has contingency, accidents, and conjunctures. The world could have been a very different place. Until about 200 years ago, the most successful way people found to organize themselves and to promote the growth of their numbers was in large land-based empires in Asia, Africa, the

Middle East, and the Americas. But if not for a series of contingencies, accidents, and conjunctures, we might still be living in a world of agrarian empires.

Besides a plot, or a story line, though, a narrative has a beginning, a middle, and an end, the choices of which significantly affect the story that is told. We have chosen to begin our story with how the modern world came to be around 1400. The reason for beginning around 1400 is that it predates the circumnavigation of the globe in the early 1500s and hence allows us to examine the world and its dynamics prior to the first time a truly globally connected world became possible. The middle of the story revolves around the beginning of the Industrial Revolution in 1750–1800 with an explanation of why the most decisive events happened first in Britain and not elsewhere in the world. In the first edition of this book, the story ended around 1900 because that is when industrial capitalism and nation-states became fully elaborated on a global scale. The third and fourth editions continued the story into the twenty-first century. More recently, the COVID-19 pandemic, the increasingly obvious downsides to a globalized world economy, and Russia's invasion of Ukraine mean we must take a fresh look at the past and try to figure out where the world needs to go from here and how to get there. The world may not be at "the end of history" but at a conjuncture where it emerges with different and environmentally needed dynamics.

This narrative of world history thus strives to be an environmentally grounded *non-Eurocentric narrative*, that is, to provide an alternative to the story line developed around the existing master narrative of the rise of the West. But does it matter? Why should we care about constructing a new, non-Eurocentric narrative of the making of the modern world? That question can be answered on a number of levels. First, the overall story of the rise of the West may be misleading or wrong in fundamental ways, even though parts of it may be correct. For example, one of the most powerful of recent answers to the question of what caused "the European miracle" concerns families and the number of children each family had. The argument goes something like this: After the Black Death of the mid-fourteenth century, various economic and environmental pressures prompted European families to marry late, thereby reducing family size. Fewer children meant farming families could begin to accumulate capital, thus sending Europe on its way to an "industrious revolution." "By delaying

marriage," according to a recent history, "European peasants set a course that separated them from the rest of the world's inhabitants."[31]

Although it may be true that West European peasants did behave that way, thereby freeing themselves from "instinctive patterns of behavior" (i.e., unregulated childbearing) that supposedly condemned other peoples to overpopulation and poverty, it simply is not true that European peasants were unique in this behavior. Scholarship on China shows that rural families there too—and probably for a lot longer—limited family size, although the methods used differed.[32] In this instance alone, one prop has been removed from underneath the claim of the uniqueness of Europeans and the reasons for their "rise." Indeed, scholars have shown that virtually every factor that its proponents have identified with the "European miracle" can be found in other parts of the world;[33] that is, they were *not* unique to Europe, and hence cannot be invoked to explain the rise of the West.

This narrative also is non-Eurocentric because much of it will be devoted to showing the ways other parts of the world were either more advanced or at least equivalent to the most developed parts of Europe, over many centuries, at least until about 1800. This book could not have been written without the vast amount of new scholarship published in English on Asia, Africa, and Latin America, which provides the basis for a non-Eurocentric narrative. We are thus fortunate to no longer be dependent for our understanding of the world on the accident that most of what has been written in the past 200 years has been by and about Europeans exploring their own history. As one critic put it, until recently historians have been like the drunk under the streetlight trying to find his lost car keys: when asked by a police officer why he was looking there, he said, "Because this is where the light is." Fortunately, scholars recently have begun to shine a lot of light on other parts of the world, so we do not have to fumble around in the dark. We now know enough about the rest of the world to question the master narrative of the rise of the West and to begin constructing another, non-Eurocentric narrative.

If the concept of the rise of the West cannot adequately explain why the West and its institutions became the dominant force in the world over the past 200 years, still less the sustained rise of East Asia over the past four decades,[34] then continued use of it does indeed perpetuate a mythology. Some mythologies may well be harmless, at least when they are recognized as such, as when we find Greek or Native American stories about the

constellations charming. But when a mythology perpetuates the idea that one group of people is superior, has been for centuries if not millennia, and that all others are thus in various ways inferior, as the ideas inherent in the rise of the West do, then the mythology does violence to others and should be abandoned.

The Elements of an Environmentally Grounded Non-Eurocentric Narrative

First, we have to take the entire world as our unit of analysis, rather than particular countries or even regions (e.g., "Europe," "East Asia").[35] We will have the opportunity to discuss developments in particular nations and empires, but always in a global context. For instance, we will see that while the Industrial Revolution started in Britain (and even there, in just a part), it was not because of English pluck, inventiveness, or politics, but rather because of global developments that included India, China, and the New World colonies. Moreover, nearly all of the world's most advanced preindustrial economies were reaching significant environmental constraints to further growth. In other words, the Industrial Revolution was historically contingent on global forces, and indeed might never have happened at all.

However, taking a global perspective does not imply that the world has always been interconnected with a single center from which development and progress spread to less-developed regions. Instead, it makes much more sense to think of the world in 1400 as having been composed of several regional systems, or in other words to have been "polycentric,"[36] each with densely populated and industrially advanced cores supplied from their own peripheries. Although trade and cultural exchanges did mean that most of the world regions interacted, or overlapped, on the margins (with the exception of the regional systems in the Americas, which interacted with one another, but not until 1492 with Eurasia-Africa), what happened in these regions was more a result of dynamics specific to that place.

The assumptions that the world in 1400 was polycentric and large parts of Eurasia were broadly comparable in terms of levels of development and environmental constraints help us understand how a much more integrated world came about, and how and why Westerners ultimately came to

dominate it. The implication of the Eurocentric model is that development and progress originated in Europe and spread outward from there to encompass the rest of the world: Europeans acted, and the rest of the world was passive or stagnant (until having to react to Europe).[37]

In the narrative in this book, by contrast, we will see that China and India in particular play significant roles, and that we cannot understand how and why the world came to be the way it is without understanding developments in Asia. We will learn how and why China developed such a huge appetite for silver that it created a global demand, drawing silver from around the world to China and flooding the world market with Chinese manufactures. We will also investigate other commodities and their global supply and demand as well, especially for sugar, slaves (unfortunately, human beings were commodities), and cotton textiles, all of which were first produced (and produced more efficiently) in parts of the world other than Europe. Ecology mattered.

This book will emphasize historical contingencies and conjunctures; China and India; and silver, sugar, slaves, and cotton as we develop an environmentally grounded, non-Eurocentric picture of how the world came to be the way it is. I hope that this narrative will allow us to contemplate whether the world is at a conjuncture of forces set in motion by a pandemic, global inequality, a war in Europe, a breakdown of Western-led globalization, global warming, and a fraught relationship with our environment, and to help us envision a more sustainable path forward.

CHAPTER ONE

The Material and Trading Worlds, circa 1400

We are born and raised under circumstances neither of our own choosing nor of our own making, and those include both the human and natural worlds. The human world we confront is composed of social, economic, political, and cultural *structures*. These large structures usually change very slowly, seldom as a result of conscious action on the part of a single person, and mostly only as a result of huge processes that are hardly detectable, by large and sustained social movements, or, as we will see, during historical conjunctures. Moreover, the world in 1400 consisted of a biosphere that contained life on Earth, humans included, extracting sufficient energy and nutrients from their environment not just to survive but, if possible, to increase their numbers, thereby changing and increasingly humanizing the environment.

To understand the vast changes that accompanied the origins of the modern world, we thus need to start with some of the natural and human structures into which people in 1400 were born, lived, and died. Of course, we cannot possibly examine every facet of human life at that time, so we must be quite selective. What I have chosen to emphasize are but two of the major structural aspects of the world in 1400: first, the material and natural conditions under which most people lived, an overwhelmingly agricultural

world, or what can be called "the biological old regime," and second, the trading networks that connected most of the Old World together. This chapter thus introduces two kinds of worlds: the material and environmental one in which most people lived quite restricted lives, and the trading or commercial world, which brought the parts of the world into increasingly greater contact. To show how these are interrelated, the chapter concludes with an examination of the causes and consequences of the mid-fourteenth-century Black Death—one of the great catastrophes to befall human society—in western Europe and East Asia.

This chapter also introduces key concepts that will be used throughout the book. Most of this chapter focuses on the material world, in particular the size of the human population and the economic, social, and environmental conditions under which most people lived. The concepts that will be introduced in this chapter include the rise of *civilization* and the *agricultural revolution*, the relationships between towns or *cities* and the countryside, between *ruling elites* and *peasants*, also called *agriculturalists* or *villagers*, between civilizations and *nomadic pastoralists*, and between people and the *environment*. Taken together, these relationships constitute the *biological old regime*, the working out of which is examined in the Black Death of the mid-fourteenth century.

We will also examine the *world system* as it existed around 1400. Today, there is much talk about the benefits and dangers of *globalization*. In this context, many people apparently consider globalization to be a new phenomenon, whether or not they think its impact is on the whole beneficial or harmful. However, I hope readers will take away from reading this book the idea that "globalization" is hardly new: it has been unfolding for a very long time. Key concepts in this chapter will include *polycentric* (to describe a world system with many centers) and *core* and *periphery*, whether applied to a single or a polycentric world system.

Another major point about the fifteenth-century world is that most of its people—regardless of where they lived, their civilization, or even their various folk customs—shared a basically similar material world. The reason is that people had to eat, and after the transition to farming between 11,000 and 4,000 years ago, the way most people have obtained their living has been from agriculture. To be sure, whether the main crop was wheat, rye, or rice mattered, but all of the agriculturists faced similar challenges in dealing with nature, the ruling elites, and one another. For this reason, much of this

chapter will deal with the social, economic, and political structures and environmental constraints essential to understanding the material world from about 1400 to 1800. The following chapters then take up the story of what happened after 1400; in this chapter we establish a baseline in terms of material life against which changes in the world can be assessed.

The Biological Old Regime

The number of people on Earth is an important indicator of the relative success humans have had in creating the material conditions under which the human population can either increase or decline. Of course, there are tremendous variations in time and place of population dynamics, and we will consider some of them here. As a first approximation, though, we can start with simple global totals.[1]

The Weight of Numbers

Here we look at the weight of numbers[2] to get an overall picture. Today, there are over eight billion people on Earth. Six hundred years ago, in 1400, humankind was just 5 percent of that, or about 380 million people, slightly more than the 2020 population of the United States of 330 million. By 1800, the world population had more than doubled, to 950 million.[3] Moreover, in that 400-year period from 1400 to 1800, as much as 80 percent of that population was farming peasants, people who lived on the land and were the direct producers of food for themselves and the non-farming population. The world was overwhelmingly rural, and the availability of land and nutrients to produce food was a constant constraint on the number of people alive at any given moment. For most of that period, the population rose and fell in great waves lasting for centuries, even if the very long-term trend was very slightly upward and the declines came sharply and swiftly. In very broad terms, we can see three great waves of population increase and decrease over the past one thousand years. Beginning about 900–1000 CE (probably simultaneously in China and Europe), the population rose until about 1300, crashing precipitously around 1350 as a result of the Black Death. Another period of increase began about 1400 and lasted until a mid-seventeenth-century decline. The

third advance, beginning around 1700, has yet to halt, although population experts expect it to top out by about 2050 at 9 to 9.5 billion people.

Climate Change

It now appears that climate change was a general cause of the premodern population increases around the world. Given the interest in our current problem of global warming, historians and climatologists have reconstructed past climates and have indeed found significant variations in temperatures and rainfall.[4] The connections between climate change and human population dynamics are complex, but the major linkage, especially in a world where 80 to 90 percent of the population made their living from the land, had to do with food production. Variations in temperature, radiation, and rainfall affect all growing things, trees as well as wheat or rice. Warmer climatic conditions improved harvests, while cold- or drought-induced harvest failures could spell disaster. Long-term cooling trends could thus seriously shrink the food supply and, hence, the ability of a society to sustain a given population, leading to population declines. On the other hand, generally warming conditions could mean larger harvests and a growing human population.[5] As we will see, though, climatic changes count less for population growth in the period since 1700, when New World resources and industrialization began to ease prior constraints on population growth.

Population Density and Civilization

The 380 million people living in 1400 were not uniformly distributed across the face of the Earth but rather clustered in very few pockets of much higher density. Indeed, of the sixty million square miles of dry land on Earth, most people lived on just 4.25 million square miles, or barely 7 percent of the dry land. The reason, of course, is that that land was the most suitable for agriculture, the rest being covered by wetlands, steppe, desert, or ice.

Moreover, those densely populated regions of Earth corresponded to just fifteen highly developed civilizations, the most notable being (from east to west) Japan, Korea, China, Indonesia, Indochina, India, Islamic West Asia, Europe (both Mediterranean and West), Aztec, and Inca. Surprisingly, nearly all of the 380 million people alive in 1400 lived in a handful of

civilizations occupying a very small proportion of the Earth's surface. Even more surprising, that still holds true today: 70 percent of the world's eight billion people live on those same 4.25 million square miles.[6]

With the exception of the pre-Columbian Americas, which, as we will see in chapter 3, had very large population centers before 1492, the densest concentrations of human population by 1600 were (and still are, for the most part) on the Eurasian continent: China in the east, Europe in the west, and India in the south, with the populations of China and Europe about equal over large periods of historical time. So large are those three populations relative to the rest of the world that China alone represented 25 to 40 percent of the world's population (the latter percentage attained in the 1700s), Europe was 25 percent, and India was perhaps 20 percent. In other words, those three centers alone accounted for about 70 percent of the population of the world in 1400, increasing to perhaps 80 percent by 1800. Those amazing figures go a long way toward explaining why what happened in China, India, and Europe plays such an important role in this book.

The fifteen densely populated and highly developed civilizations shared several features, the most important of which was the relationship between those who lived in the countryside producing the food supply and those living in the cities consuming surpluses from that food production, even though the elites in the cities may have devised different means by which to ensure that food produced in the countryside made its way to the cities. This extractive relationship between town and countryside has a long history, going back to the emergence of farming.

The Agricultural Revolution

After the last Ice Age ended about 11,000 years ago, first in the part of the world aptly called the "Fertile Crescent" (today's Iraq), people learned how to grow their own food and raise their own animals, thereby increasing the amount of food available. This change, from a hunting-and-gathering society to a sedentary agricultural society, occurred over long periods and independently in at least seven parts of the world: about 11,000 years ago in the Fertile Crescent along the Tigris and Euphrates Rivers, in northern China about 9,500 years ago, around 5,500 years ago in what is now Mexico in Mesoamerica, and around 4,500 years ago in what is now the eastern United States. It may have happened independently in parts of

Africa, Southeast Asia, and New Guinea as well, although it did not happen everywhere: grasslands suitable for animal pasture retained that character until well into the twentieth century.[7]

Although some have objected to the term "revolution" because the development of agriculture took such a long time even in the areas where it began,[8] it was nonetheless a revolutionary change in the way people lived, socialized, and died, for what agricultural advances made possible were ever-greater amounts of food than the direct producers could consume in any given year—in other words, an "agricultural surplus"—giving rise to social groups who did not have to produce their own food: priests, rulers, warriors, and outside raiders, usually nomadic people. The existence of this agricultural surplus meant that others could take it, either by force if necessary or more regularly as taxes. In either case, a major schism opened in society between the agriculturists and the non-producing ruling elite: the job of the agriculturists was to produce the food and the surplus, the role of the priests was to explain how and why the world had come to exist in the first place, and the role of the rulers was to protect the agricultural surplus from invading outsiders.

The agricultural revolution also gave rise to two additional defining characteristics of "civilization": cities and writing. Since priests and rulers did not have to produce their own food, they could live separate from the villagers, in their own compounds, as it were. Rulers also gathered around themselves artisans to produce needed clothing, weapons, and buildings, giving rise to the larger concentrations of people we have come to call "cities." From there, the elite could rule their lands while keeping track of the number of agriculturists, the amount of food they produced, and, in particular, the amount they owed the rulers in taxes, developing systems of accounting and writing. Besides keeping count of population and taxes, writing was also useful for priests to record their origin stories, to compute calendars for agricultural and ritual purposes, and to forecast the future.

A city and its surrounding agricultural area typically were not self-sufficient, so people traded with other cities or with nomads or other pastoralists for raw materials (e.g., metals such as copper and tin, the makings of bronze, or later iron ore) or animals (especially horses). If the required goods were also strategic—that is, related to military sources of power—ruling elites tended to distrust trade and wanted to secure the strategic materials by bringing the producing region under their control

through the use of force, if necessary. This dynamic gave rise, over time, to *empires*: geographically large political units ruled and controlled by a single ruling elite in which the subject population offered up their agricultural surplus to the ruler and the landowning elite, usually in the form of taxes and rents.

Towns and Cities in 1400

Although most of the world's population lived in the countryside, towns and cities of various sizes and functions did exist, and we can use the number and sizes of towns and cities as a very rough indicator of the overall wealth of a society (or to put it differently, of the ability of the peasantry to produce a surplus large enough to support those who did not grow their own food). A list of the twenty-five largest cities in the world in 1400 produces few surprises in that most remain large cities today, but the world's largest urban populations in 1400 amounted to little more than 1 percent of the world's population.[9] What may be surprising, however, is that nine of the world's largest cities, including the largest, Nanjing, were in China. The second-largest city was in south India (Vijayanagar), and the third was Cairo. Only when we get to the fourth-ranked city (Paris) do we get to Europe, which had five cities in the top twenty-five. Other large cities included Constantinople on the Mediterranean; Samarkand, the Central Asia link in east-west trade routes across Eurasia; Baghdad, likewise an important trading city; and Fez in Morocco, which played an important role in African trade routes. We now also know that the capital city of the Aztec empire, Tenochtitlán, had perhaps 250,000 people in 1500 (see chapter 3).

Of course, these largest cities in 1400 (which ranged in size from 80,000 people to nearly 500,000 at the top) represented but 1-plus percent of the world population, while another 9 percent or so (or thirty million people) lived in towns and cities ranging in size from 5,000 to 75,000 people. Not surprisingly, most of these, too, were in Asia, with China, Japan, and India accounting for the most. In Europe, by contrast, the largest city in Germany was Cologne, at just 20,000 people. The wealth of the world in 1400, as measured by the number and size of cities, was concentrated in Asia.

To villagers, these towns and cities were somewhat magical places where people with great wealth ate foods peasants could only dream of and wore clothing of such quality that it put their coarse cloth to shame, all without most of the elite doing any visible work. Of course, the taxes,

tithes, and rents the peasants paid supported these towns and cities, and the peasants knew it. This transfer of food from producing farms to consuming cities also had an environmental aspect: the nutrients taken up in the growing of crops were removed from the soil and, if not replaced, could result in the depletion of soils, the collapse of farming, and crisis for the humans in those societies. Some scholars have called this a "metabolic rift" between town and countryside, between consuming cities and farming villages.[10]

Nomadic Pastoralists

The agriculturally based civilizations occupied the best land for agriculture throughout the Eurasian continent. The great grassland known as the steppe, stretching east to west across the continent, as well as the deserts and wetlands, while not amenable to agriculture because of too little (or too much) water, were not uninhabited. On the steppe especially, groups of people obtained their living from the land by hunting and gathering and following their herds.[11] For these pastoral nomads, mobility on horses was a way of life, taking their herds of horses, sheep, cattle, and goats wherever the grass was green. Their way of life was not completely self-sufficient, for they needed things that cities had—salt, pots and pans, textiles, other manufactured goods—trading in return horses, meat, honey, or other products they could gather and that people in the cities prized. Civilizations and nomads across the Eurasian continent thus had a symbiotic relationship—they depended on each other.

The relations between the two groups were, for the most part, peaceful, but the nomads could constitute fearsome fighting forces. As hunters, they were expert horsemen and archers. And when climate changes desiccated their grazing lands and threatened their food supplies, they were not averse to raiding the food supplies stored by the civilizations, whether they were cities or empires. Of course, ruling elites of civilizations had armies—and a duty—to protect the food supplies from raiding nomads. To those within the centers of the civilization, these nomads appeared to be the opposite of civilized: they had no cities, were crude and illiterate, and were probably superstitious as well. In short, they were "barbarians." And when the civilizations themselves weakened, for various reasons, they became susceptible not just to nomadic raids but to invasion, destruction, or conquest, all of which happened. Notable examples include the fall of the

Roman and Han Chinese empires (300–600 CE; not discussed in this book) and, as we will see shortly, the Mongol invasions of China and Europe in the thirteenth century. Of course, when the centers of "civilization" weakened, rulers sometimes incorporated nomadic warriors into their frontier armies, further weakening the civilization and opening it to conquest from within by partially acculturated nomads.[12]

Nomads were not the only ones to challenge the civilizations. In the forests, wetlands, brush, and mountains, there were other groups, who, unlike nomads, were often quite self-sufficient and could obtain everything they needed from their environment. They did come into contact with the forces of civilization though, especially during periods of population growth when peasant farmers or the empire sought new land to accommodate the larger population. The Chinese, for example, had a long history of contact with these kinds of peoples and, in fact, had come to classify non-Chinese "barbarians" into two groups: the "cooked," or those willing to accept some of the trappings of Chinese civilization, and the "raw," or those who were not.[13]

Wildlife

Even though most of the weight of the world's population lived in just a few highly developed islands of civilization, the intervening expanses were inhabited by differently organized people to be sure, but people nonetheless. Indeed, by 1400, humans had migrated through or to virtually every place on the globe. Of course, the hunters and nomadic pastoralists who lived in the vast spaces outside the densely populated civilizations were very few and far between, leaving much room for wildlife of all kinds. Three examples will suffice.

Wolves roamed through most of Europe, as can be attested by *Grimm's Fairy Tales*. But even more grimly, when human populations declined or hard winters made food precious for both humans and wolves, packs of wolves could—and would—enter the cities, as they did in Paris in 1420 and 1438, and even as late as the 1700s, when the French went on a campaign to annihilate the species there "as they did in England six hundred years ago," according to a contemporary writing in about 1779.[14] In China, tigers at one time inhabited most of the region and periodically attacked Chinese villages and cities, carrying away piglets and babies alike when humans disrupted their ecosystem by cutting away the forests that provided them with their

favored game, deer or wild boar. Tigers remained so plentiful in Manchuria that the emperor's hunting expedition could bag sixty in one day, in addition to a thousand stags, and reports of tiger attacks on south China villages continued until 1800.[15]

The two areas of Earth with the greatest diversity and density of animal species in the period we are now considering, from 1400 to 1800, were Africa and the Americas, albeit for very different reasons. In Africa, humans and animals had evolved together. Despite relatively nutrient-poor soils, Africa has more plant and animal species, and total biomass, per unit of area than anywhere else on Earth. Because large animals, from elephants to rhinos, giraffes, and lions, had evolved with humans, as humans became efficient hunters, these animals learned to be wary and keep their distance.[16] Large animals thus continued to exist in Africa into the modern world, where in many other parts of the world, especially those where large animals had no experience with humans, they were quickly killed off after humans migrated into these spaces, in what scholars call "megafaunal extinctions."[17]

In the Americas, the explanation for the large number of animals involves the story of what happened to the native human inhabitants in the century following Columbus's 1492 voyage. This story will be taken up in more detail in chapter 3, but briefly, Europeans brought numerous communicable diseases with them to the Americas, and the native peoples —who had no experience with these diseases—died off in staggering numbers. Where there may have been as many as seventy million people in the Americas in 1491, by 1600, there were only about eight million left.[18] And when those people vanished, forests returned to overtake the abandoned farms, and animal populations of all kinds, from fish and fowl to wolves and deer, exploded in numbers in the reconstituted natural environment. Not knowing about any of this, the first English visitors to North America, in particular, described "unbelievable" numbers and sizes of fish, birds, deer, bears, and trees,[19] a condition of natural bounty that continued through the nineteenth century.

Thus, from 1400 to 1800, when Earth's human population increased from 380 to 950 million, there was still plenty of room for wildlife of all kinds. Nonetheless, the relationship between the two populations clearly was inverse: the more people, the less wildlife, especially as those in the "civilizations" developed a desire for wearing furs (in China, Europe, and

North America) or eating exotic fish and fowl. Great hunting expeditions to kill whales, tigers, bison, beavers, homing pigeons, sharks, foxes—the list goes on—for their hides, their meat, and their various other body parts started then and continue to this day, except for those species already extinct or, in some parts of the world, protected.

The expansion of the human population on Earth thus meant less land and, hence, habitat available for other species. Although we depend on the environment for our survival, our species has been willing to sacrifice others for our *Lebensraum*.[20] Sometimes the end for other species has come like a rifle shot, with the species wiped out without altering the rest of the physical environment, as when wolves were eliminated from England, France, or Wisconsin, or bison from the Great Plains, leaving the forest or the plains intact—impoverished, but intact. At other times, the end of a species comes as a holocaust, where expanding human populations have burned and slashed entire ecosystems to turn them into agricultural fields, as happened to the South China tiger. However, with each of the great human population declines in the mid-fourteenth and then in the mid-seventeenth century, wildlife populations reestablished themselves and once again expanded. But since the mid-1700s, the human population of the world has steadily increased, putting pressure on all remaining wildlife. Of all the human impacts on the environment—and there are many, as we will see in chapters 5 and 6—perhaps the most significant is the extinction of species and the loss of biodiversity. Pollution of land, air, and water, in principle, can be abated and remediated, and even the challenges of global warming caused by emissions of greenhouse gases can be addressed, but once a species is gone, it is lost forever.

Population Growth and Land

Population growth and decline each brought certain benefits and difficulties to a society. On the one hand, and as with any living organism, an increase in human numbers is an indication of our species' success in obtaining greater food energy from the ecosystem. Higher populations and greater densities made possible civilizations, cities, education, and trade, as well as a growing awareness and understanding of the human and natural worlds. Population growth thus could accompany improving conditions and rising standards of living for most people, at least up to a certain point, where the limits of land and soil nutrients constrained the ability to feed the growing

population. In those instances, the human population could overshoot the capacity of the land to feed them, leading to deteriorating living conditions and greater susceptibility to death from disease and famine. As the population fell back, a better balance between the numbers to be fed and the amount of land available to feed them was reestablished.

A growing human population requires additional food and energy supplies to support it, and given the agricultural technology available in 1400, those increases could come from but three sources: bringing more land under cultivation, increasing the labor inputs on a given plot of land (including selecting better seed), or increasing the amount of water or fertilizer. In China over the period from 1400 to 1800, for example, the population almost quadrupled, from 85 to 320–350 million, the increase being sustained almost equally by increases in the land under cultivation and by more intensive tilling and fertilizing of the land already under the plow.[21]

Of course, bringing new land under cultivation implied human migration to new lands, fighting and displacing the wildlife as necessary, and also battling the "uncivilized" people of the mountains, forests, and bush. Some migrations, though, were easier than others, especially if the new lands were sparsely populated and poorly defended or the migrating people had the military might of their empire backing them (as was the case in China). Some areas, though, were, for all intents and purposes, off-limits; Europeans, for example, could not look too far east because the lands were already occupied by various strong nomadic peoples: Turks, Tartars, and Mongols all sent shivers of fear down the spines of most Europeans and Asians.

In summary, nearly all of the world's 380 million people living in 1400 were rural people producing food and raw materials for handicraft industries to sustain both themselves and a small ruling elite that took a portion of the harvest as taxes (to the state) and rent (to landowners). Peasant families often spun and wove textiles that they used both for themselves and traded in local markets for goods they themselves could not produce, and at times, their textiles entered into some very long-distance trade circuits, as we will see shortly. With good climatic conditions and hence better harvests, peasant families might look to increase their size,[22] especially if additional land were available nearby, or if their government encouraged more distant migration and would protect them from the wolves