



VOLUME A: BEGINNINGS TO 600 CE

TIGNOR ADELMAN BROWN ELMAN LIU PITTMAN SHAW

WORLDS TOGETHER WORLDS APART

5E

FIFTH EDITION



WORLDS TOGETHER, WORLDS APART

Volume A: Beginnings to 600 CE

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W. W. Norton & Company, Inc.

New York • London

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Printed in the United States of America

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Composition: Cenveo® Publisher Services
Illustrations: Mapping Specialists, Ltd.
Manufacturing: Quad Graphics—Versailles

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The Library of Congress has cataloged the one-volume edition as follows:

Names: Tignor, Robert L., author.

Title: Worlds together, worlds apart : a history of the world from the beginnings of humankind to the present / Robert Tignor ... [and eleven others].

Description: Fifth edition. | New York : W. W. Norton & Company, [2018] | Includes bibliographical references and index.

Identifiers: LCCN 2017032085 | **ISBN 9780393624786 (hardcover)**

Subject: LCSH: World history—Textbooks. | World history—Examinations—Study guides. | Advanced placement programs (Education)—Examinations—Study guides

Classification: LCC D21 .T53 2018 | DDC 909—dc23 LC record available at <https://lccn.loc.gov/2017032085>

ISBN this edition: 978-0-393-62486-1 (pbk.)

W. W. Norton & Company, Inc., 500 Fifth Avenue, New York, NY 10110-0017
wwnorton.com

W. W. Norton & Company Ltd., 15 Carlisle Street, London W1D 3BS
1 2 3 4 5 6 7 8 9 0

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PREFACE

W*orlds Together, Worlds Apart* has set the standard for four editions for those who want to teach a globally integrated world history survey course. Just as the dynamic field of world history evolves, so, too, has *Worlds Together, Worlds Apart*. Building on the success of the first four editions, the Fifth Edition continues to offer a highly coherent, cutting-edge survey of the field built around world history stories of significance that make it possible for students to readily make connections and comparisons across time and place and make the teaching of the course more manageable for instructors (for example, the building of the Silk Road, the spread of the Black Death across Afro-Eurasia, the impact of New World silver on global trade, and alternative ways to organize societies during the rise of nineteenth-century capitalism). The Fifth Edition is the most accessible to date. Many of the chapters were substantially reorganized and streamlined to place greater emphasis on the main chapter ideas and amplify comparisons and connections—the book’s greatest strength. The new edition will be the most relevant yet for students. They will find increased coverage on numerous topics, but in particular a topic students care a lot about: the environment’s role in world history. The Fifth Edition pays considerable attention to the role of climate in producing radical changes in the lives of humans. For example, a long-term warming of the globe facilitated the domestication of plants and animals and led to an agricultural revolution and the emergence of settled societies. In the seventeenth century, the dramatic drop in global temperatures, now known as the Little Ice Age, produced political and social havoc and led to civil wars, population decline, and regime change all around the globe. These are the new focuses of Chapters 1 and 13. Indeed, all chapters have been substantially revised, not because they were inadequate when originally written, but because the

recent studies of comparative and global historians have transformed our understanding of the history of the world.

The Fifth Edition is also the most interactive to date. Lead media author Alan Karras (University of California, Berkeley) has brought together an outstanding media team to develop the comprehensive ancillary package for the Fifth Edition, substantially increasing the learning and teaching support available to students and instructors.

- New **InQuizitive**, Norton’s adaptive quizzing platform, uses interactive questions and guided feedback to support students’ understanding of each chapter’s focus questions.
- New **History Skills Tutorials** combine video and interactive activities to provide students with a framework for analyzing a variety of sources.
- New **Primary Source Exercises** in the Coursepack provide ready-made quizzes to assess students’ ability to analyze images and documents tied to each chapter.
- New **Story Maps** break complex maps into a sequence of five annotated screens that focus on the story behind the geography.

Since work began on *Worlds Together, Worlds Apart*, world history has gained even more prominence in college classrooms and historical studies. Courses in the history of the world now abound, often replacing the standard surveys of European history and western civilization overviews. Graduate history students receive training in world history, and journals routinely publish studies in this field. A new generation of textbooks was needed to help students and instructors make sense of this vast, complex, and rapidly evolving field. We believe that *Worlds Together, Worlds Apart* remains the most current, cutting-edge, engaging, readable, interactive, and useful text available for all students of world history. We also believe that this text, one

that has advanced the teaching of this field, could only have grown out of the highly collaborative effort of a team of scholars and teachers rather than the more typical single- or two-author efforts. Indeed, the idea to build each chapter around stories of world history significance and the execution of this model grew out of our monthly team meetings and our joint writing efforts during the development stage. As a team-driven text, *Worlds Together, Worlds Apart* also has the advantage of area experts to make sure the material is presented accurately, which is always a challenge for the single- or two-author texts, especially in world history. Finally, our book reads with a single voice, due to the extraordinary efforts of our general editor and leader, Robert Tignor, who with every edition makes the final major sweep through the text to make sure that the voice, style, and level of detail are consistent throughout. Building on these distinctive strengths, we have worked hard and thoughtfully to make the Fifth Edition of *Worlds Together, Worlds Apart* the best edition so far. While there are many exciting additions to the main text and support package, we have made every effort to remain true to our original vision.

OUR GUIDING PRINCIPLES

Five principles inform this book, guiding its framework and the organization of its individual chapters. The first is that **world history is global history**. There are many fine histories of the individual regions of the world, which we have endeavored to make good use of. But unlike the authors of many other so-called world histories, we have chosen not to deal with the great regions and cultures of the world as separate units, reserving individual chapters to East Asia, South Asia, Southwest Asia, Europe, Africa, and the Americas. Our goal is to place each of these regions in its largest geographical context. Accordingly, we have written chapters that are truly global in that most major regions of the world are discussed in each one. We achieved these globally integrated chapters by building each around a significant world history story or theme. There are a number of wonderful examples throughout the book: the peopling of the earth (Chapter 1), the building of the Silk Road (Chapter 6), the rise of universal religions (Chapters 8 and 9), the Black Death (Chapter 11), the Little Ice Age and its far-reaching impact on political systems globally as well as the effects of New World silver on the economies of the world (Chapter 13), alternative visions to nineteenth-century capitalism (Chapter 15), the rise of nation-states and empires (Chapter 16), and so on. It would be misleading, of course, to say that the context is the world, because none of these regions, even the most highly developed commercially, enjoyed

commercial or cultural contact with peoples all over the globe before Columbus's voyage to the Americas and later expeditions of the sixteenth century. But the peoples living in the Afro-Eurasian landmass, probably the single most important building block for our study, were deeply influenced by one another, as were the more scattered peoples living in the Americas and in Africa below the Sahara. Products, ideas, and persons traveled widely across the large land units of Eurasia, Africa, and the Americas. Indeed, Afro-Eurasia was not divided or thought of as divided into separate landmasses until recent times. It is in this sense that our world history is global.

The second principle informing this work is **the importance of chronology in framing world history**. Rather than telling the story of world history by analyzing separate geographical areas, we have elected to frame the chapters around significant world history themes and periods that transcended regional and cultural boundaries—moments or periods of meaningful change in the way that human beings organized their lives. Some of these changes were dramatic and affected many people. Environments changed; the earth became drier and warmer; humans learned to domesticate plants and animals; technological innovations in warfare, political organization, and commercial activities occurred; diseases crossed political and cultural borders, as did dramatic changes in the world's climate; and new religious and cultural beliefs spread far and wide. These changes swept across large landmasses, paying scant heed to preexisting cultural and geographical unity. They affected peoples living in widely dispersed societies, and they often led to radically varied cultural responses in different regions of the world. In other cases, changes occurred in only one locality while other places retained their traditions or took alternative routes. Chronology helps us understand the ways in which the world has, and has not, shared a common history.

The third principle is **historical and geographical balance**. Ours is not a history focused on the rise of the west. We seek to pay attention to the global histories of all peoples and not to privilege those developments that led directly into European history as if the rest of the history of the world was but a prelude to the rise of the West. We deal with peoples living outside Europe on their own terms and try to see world history from their perspective. Even more significantly, while we describe societies that obviously influenced Europe's historical development, we do so in a context very different from that which western historians have stressed. Rather than simply viewing these cultures in terms of their role in western development, we seek to understand them in their own right and to illuminate the

ways they influenced other parts of the world. From our perspective, it is historically inaccurate to annex Mesopotamia and Egypt to the West because these territories lay well outside Europe and had a large influence on Africa, South Asia, and East Asia as well as on Europe. Indeed, our presentation of Europe in the period leading up to and including the founding of the Roman Empire is different from many of the standard treatments. The Europeans we describe are rather rough, wild-living, warring peoples living on the fringes of the settled parts of the world and looked down on by more politically stable communities. They hardly seem to be made of the stuff that will catapult Europeans to world leadership a millennium later—indeed, they were very different people from those who, as the result of myriad intervening and contingent events, founded the nineteenth- and twentieth-century empires whose ruins are still all around us.

Our fourth principle is **an emphasis on connections and what we call disconnections across societal and cultural boundaries**. World history is not the history of separate regions of the world at different periods of time. It is the history of the connections among peoples living often at great distances from one another, and it is also the history of the resistance of peoples living within and outside societies to connections that threatened to put them in subordinate positions or to rob them of their independence.

A stress on connections inevitably foregrounds those elements within societies that promoted long-distance ties. Merchants are important, as are military men and political potentates seeking to expand their polities. So are scholars and religious leaders, particularly those who believed that they had universalistic messages with which to convert others to their visions. Perhaps most important of all in premodern world history, certainly the most understudied, are the nomadic pastoral peoples, who were often the agents for the transmission of products, peoples, and ideas across long and harsh distances. They exploded onto the scene of settled societies at critical junctures, erasing old cultural and geographical barriers and producing new unities, as the Arabs did in the seventh century CE and the Mongols did in the thirteenth century. *Worlds Together, Worlds Apart* is not intended to convey the message that the history of the world is a story of increasing integration. What for one ruling group brought benefits in the form of increased workforces, material prosperity, and political stability often meant enslavement, political subordination, and loss of territory for other groups. The historian's task, then, is not only to represent the different experiences of increased connectedness, describing worlds that came together, but also to be attentive to the opposite trends,

describing peoples and communities that remained apart.

The fifth and final principle is that **world history is a narrative of big themes and high-level comparisons**. *Worlds Together, Worlds Apart* is not a book of record. Indeed, in a work that tells the story of humankind from the beginnings of history to the present, the notion that no event or individual worthy of attention would be excluded is the height of folly. We have sought to offer clear themes and interpretations in order to synthesize the vast body of data that often overwhelms histories of the world. Our aspiration is to identify the main historical forces that have moved history, to highlight those monumental innovations that have changed the way humans lived, and to describe the creation and evolution of those bedrock institutions, many of which, of course, endure. In this regard, self-conscious cross-cultural comparisons of developments, institutions, and even founding figures receive attention to make students aware that some common institutions, such as slavery, did not have the same features in every society. But conversely, the seemingly diverse terms that were used, say, to describe learned and religious men in different parts of the world—monks in Europe, *ulama* in Islam, Brahmans in India, and scholar-gentries in China—often meant much the same thing in very different settings. We have constructed *Worlds Together, Worlds Apart* around big ideas, stories, and themes rather than filling the book with names and dates that encourage students only to memorize rather than understand world history concepts.

OUR MAJOR THEMES

The primary organizing framework of *Worlds Together, Worlds Apart*—one that runs through the chapters and connects the different parts of the narrative—is the theme of **interconnection and divergence**. While describing movements that facilitated global connectedness, this book also shows how different regions developed their own ways of handling or resisting connections and change. Throughout history, different regions and different population groups often stood apart from the rest of the world until touched by traders or explorers or missionaries or soldiers. Some of these regions welcomed global connections; others sought to change the nature of their connections with the outside world; and yet others resisted efforts to bring them into the larger world. All, however, were somehow affected by their experience of connection. Thus, the history of the world is not simply one of increasing globalization, in which all societies eventually join a common path to the present. Rather, it is a history of the ways in which, as people became linked, their experience of these global connections diverged.

Besides the central theme of interconnection and divergence, other themes also stand out in *Worlds Together, Worlds Apart*. First, the book discusses **how the recurring efforts of people to cross religious, political, and cultural borders brought the world together**. Merchants and educated men and women traded goods and ideas. Whole communities, in addition to select groups, moved to safer or more promising environments. **The transregional crossings of ideas, goods, and peoples produced transformations and conflicts**—a second important theme. Finally, the movement of ideas, peoples, products, climates, and germs over long distances upset the balance of power across the world and within individual societies. Such movements changed the relationship of different population groups with other peoples and areas of the world and led over time to dramatic shifts in the ascendancy of regions. **Changes in power arrangements within and between regions explain which parts of the world and regional groups benefited from integration and which resisted it**. These three themes (exchange and migration, conflict and resistance, and alterations in the balance of power) weave themselves through every chapter of this work. While we highlight major themes throughout, we tell the stories of the people caught in these currents of exchange, conflict, and changing power relations, paying particular attention to the role that gender and the environment play in shaping the evolution of societies. The history of the world is not a single, sweeping narrative. On the contrary, the last 5,000 years have produced multiple histories, moving along many paths and trajectories. Sometimes these histories merge, intertwining themselves in substantial ways. Sometimes they disentangle themselves and simply stand apart. Much of the time, however, they are simultaneously together and apart. In place of a single narrative, the usual one being the rise of the west, this book maps the many forks in the road that confronted the world's societies at different times and the surprising turns and unintended consequences that marked the choices that peoples and societies made, including the unanticipated and dramatic rise of the west in the nineteenth century. Formulated in this way, world history is the unfolding of many possible histories, and readers of this book should come away with a reinforced sense of the unpredictability of the past, the instability of the present, and the uncertainty of the future.

OVERVIEW OF VOLUME ONE

Volume One of *Worlds Together, Worlds Apart* deals with the period from the beginnings of human history through the Mongol invasions of the thirteenth century and the

spread of the Black Death across Afro-Eurasia. It is divided into eleven chapters, each of which marks a distinct historical period. Hence, each chapter has an overarching theme or small set of themes that holds otherwise highly diverse material together.

Chapter 1, “Becoming Human,” presents biological and cultural perspectives on the way that early hominins became truly human. This chapter incorporates much new research, largely the result of new techniques and methods employed by climatologists, biologists specializing in DNA analysis, linguists, and paleoanthropologists in the tradition of Mary and Louis Leakey. These scientists have transformed our understanding of the evolution of human beings. So much of this work is now being incorporated into the history profession and history courses that it has acquired its own name, big history. We believe that this chapter is important in establishing the global context of world history. We believe, too, that our chapter is unique in its focus on how hominins became humans—how early hominins became bipedal and how they developed complex cognitive processes such as language and artistic abilities. We have incorporated a new understanding of evolution, which now appears to have taken place not in a steady and gradual way as was once thought, but in punctuated bursts, often in response to major climate and environmental challenges. In addition, our findings about the evolution of hominins from *Australopithecus* to *Homo sapiens* are based on more precise information than was available in earlier editions. Research indicates that *Homo sapiens* originated in Africa, probably no more than 200,000 years ago. These early men and women walked out of the African landmass sometime between 100,000 and 50,000 years ago, gradually populating all regions of the world. What is significant in this story is that the different population groups around the world, the so-called races of humankind, have only recently broken off from one another. Also in this chapter, we emphasize the role of climate in human evolution; indeed, the first group of *Homo sapiens* nearly went extinct because of severe freezing temperatures, produced by an eruption of vast quantities of lava into the atmosphere. This critical phase in human evolution was followed almost immediately by a strong warming trend that occurred 10,000 years ago and that has remained with us ever since, despite some significant drops in global temperatures. This warming trend led humans to domesticate plants and animals and to found the first village settlements, beginning in Southwest Asia.

Chapter 2, “Rivers, Cities, and First States, 3500–2000 BCE,” covers the period during which five of the great river basins experienced extraordinary breakthroughs

in human activity. On the floodplains of the Tigris and Euphrates in Mesopotamia, the Nile in Egypt, the Indus Valley in modern-day northern India and Pakistan, and the Yellow and Yangzi Rivers in China, men and women mastered annual floods and became expert in seeding and cultivating foodstuffs. In these areas, populations became dense. River-basin cultures had much in common. They had highly developed hierarchical political, social, and cultural systems, priestly and bureaucratic classes, and organized religious and cultural systems. But they also differed greatly, and these differences were passed from generation to generation. The development of these major complex societies certainly is a turning point in world history. We include in this chapter an expanded discussion on the rise of city-states and provide a greater emphasis on the political aspects leading to the emergence of city-states.

Extensive climatic and technological changes serve as major turning points for **Chapter 3, “Nomads, Chariots, Territorial States, and Microsocieties, 2000–1200 BCE.”** Drought, environmental degradation, and political instability brought the first river-basin societies to a crashing end around 2000 BCE. When aridity forced tribal and nomadic peoples living on the fringes of the settled populations to move closer to settled areas, they brought with them an insurmountable military advantage. They had become adept at yoking horses to war chariots and hence were in a position to subjugate and later intermarry with the peoples in the settled polities in the river basins. Around 2000 BCE, these peoples established new territorial kingdoms in Mesopotamia, Egypt, the Indus Valley, and China, which gave way a millennium later (1000 BCE) to even larger and more militarily and politically powerful states. The section on China features a major rewriting and reorganization of the Shang territorial states in East Asia with a new section on Shang writing. In the Americas, the Mediterranean, sub-Saharan Africa, and the Pacific worlds, microsocieties arose as an alternative form of a political system in which peoples lived in much smaller-scale societies that showcased their own unique and compelling features.

Chapter 4, “First Empires and Common Cultures in Afro-Eurasia, 1250–325 BCE,” describes the different ways in which larger-scale societies grew and became unified. In the case of the world’s first empires, the neo-Assyrian and Persian, political power was the main unifying element. Both states established different models that future empires would emulate. The Assyrians used brute force to intimidate and subjugate different groups within their societies and neighboring states. The Persians followed a pattern that relied less on coercion and more on tributary relationships, while reveling in cultural diversity.

The Zhou state in China offered yet a third way of political unity, basing its rule on the doctrine of the mandate of heaven, which legitimated its rulers’ succession as long as they were able to maintain stability and order. Vedic society in South Asia offers a dramatically different model in which religion and culture rather than centralizing monarchies were the main unifying forces. Religion moves to the forefront of the narrative in other ways in this chapter. The birth of monotheism occurred in the Zoroastrian and Hebrew faiths and the beginnings of Buddhism. All three religions endure today.

The last millennium before the Common Era witnessed some of the most monumental developments in human history. In the six and a half centuries discussed in **Chapter 5, “Worlds Turned Inside Out, 1000–350 BCE,”** teachers and thinkers, rather than kings, priests, and warriors, came to the fore. Men like Confucius, the Buddha, Plato, and Aristotle, to name only the best known of this brilliant group, offered new insights into the natural world and provided new guidelines for how to govern justly and live ethically. Drawing on the work of sociologist Karl Jaspers, we call this era the Axial Age, during which Greek, Chinese, and South Asian thinkers elaborated political, religious, and philosophical ideas that informed the societies in which they lived and that have been central to the lives of these societies ever since. In this era, small-scale societies, benefiting from more intimate relationships, took the place of the first great empires, now in decline. These highly individualistic cultures developed new strategies for political organization, even experimenting with a democratic polity. In Africa, the Bantu peoples spread across sub-Saharan Africa, and the Sudanic peoples of Meroe created a society that blended Egyptian and sub-Saharan influences. These were all dynamic hybrid societies building on existing knowledge. Equally dramatic transformations occurred in the Americas, where the Olmec and Chavin peoples were creating hierarchical societies of the like never before seen in their part of the world.

Chapter 6, “Shrinking the Afro-Eurasian World, 350 BCE–250 CE,” describes three major forces that simultaneously integrated large segments of the Afro-Eurasian landmass culturally and economically. First, Alexander and his armies changed the political and cultural landscape of North Africa and Southwest and South Asia. Culturally, Alexander spread Hellenism through North Africa and Southwest and central Asia, making it the first cultural system to achieve a transregional scope. Second, it was in the post-Alexander world that long-distance trade was intensified and stabilized. For the first time, a trading network, known as the Silk Road, stretching from Palmyra

in the west to central Asia in the east, came into being. This chapter incorporates new research on the origins of the Silk Road and its Afro-Eurasian political, commercial, and cultural importance. Despite the fact that the Silk Road was actually made up of many different roads and was not always accessible, and despite the fact that trade took place mainly over short distances, its reputation was well known to merchants, military adventurers, travelers, religious leaders, and political elites. Buddhism was the first religion to seize on the Silk Road's more formal existence as its followers moved quickly with the support of the Mauryan Empire to spread their ideas into central Asia. Finally, we witness the growth of a "silk road of the seas" as new technologies and bigger ships allowed for a dramatic expansion in maritime trade from South Asia all the way to Egypt and East Africa.

Chapter 7, "Han Dynasty China and Imperial Rome, 300 BCE–300 CE," builds on our comparison of the Neo-Assyrian and Persian Empires in Chapter 4 by comparing in great detail the Han dynasty and Roman Empire, the two political, economic, and cultural powerhouses that dominated much of the Afro-Eurasian landmass from 200 BCE to 200 CE. Both the Han dynasty and the Roman Empire ruled effectively in their own way, providing an instructive comparative case study. Both left their imprint on Afro-Eurasia; rulers for centuries afterward tried to revive these glorious imperial systems and use them as models of greatness. Only the Chinese were successful in restoring imperial rule and did so for more than two millennia. European efforts to re-create the Roman Empire, at least in western Europe, failed. This chapter also discusses the effect of state sponsorship on religion, as Christianity came into existence in the context of the late Roman Empire and Buddhism was introduced to China during the decline of the Han.

Out of the crumbling Roman Empire new political systems and a new religion emerged, the major topic of **Chapter 8, "The Rise of Universal Religions, 300–600 CE."** The Byzantine Empire, claiming to be the successor state to the Roman Empire, embraced Christianity as its state religion. The Tang rulers patronized Buddhism to such a degree that Confucian statesmen feared it had become the state religion. This chapter has new information on the Sogdians, a pastoral peoples who inhabited central Asia and were vital in spreading Buddhism and supporting Silk Road trade. Both Buddhism and Christianity enjoyed spectacular success in the politically fragmented post-Han era in China and in the feudal world of western Europe. These dynamic religions represent a decisive transformation in world history. Christianity enjoyed its eventual successes through

state sponsorship via the Roman and Byzantine Empires and by providing spiritual comfort and hope during the chaotic years of Rome's decline. Buddhism grew through imperial sponsorship and significant changes to its fundamental beliefs, when adherents to the faith deified Buddha and created notions of an afterlife. In Africa, a wide range of significant developments and myriad cultural practices existed; yet large common cultures also arose. The Bantu peoples spread throughout the southern half of the landmass, spoke closely related languages, and developed similar political institutions based on the prestige of individuals of high achievement. In the Americas, the Olmecs established their own form of the city-state, while the Maya owed their success to a decentralized common culture built around a strong religious belief system and a series of spiritual centers.

In **Chapter 9, "New Empires and Common Cultures, 600–1000 CE,"** we see another world religion, Islam, explode with world-changing consequences in a relatively remote corner of the Arabian Peninsula. The rise of Islam provides a contrast to the way universalizing religions and political empires interacted. Islam and empire arose in a fashion quite different from Christianity and the Roman Empire. Christianity took over an already existing empire—the Roman—after suffering persecution at its hands for several centuries. In contrast, Islam created an empire almost at the moment of its emergence. There is much new scholarship on early Islam, the life of Muhammad, and the creation of the Quran, based mainly on the writings of non-Muslim observers and scholars. Although these texts are often critical of Muhammad and early Islam, they must be used (albeit very carefully) because of the dearth of information on the beginnings of Islam found in the few Muslim and Arabic sources that remain to us. We have added this important perspective to our discussion of the birth of Islam. By the time the Abbasid Empire came into being in the middle of the eighth century, Islamic armies, political leaders, and clerics exercised power over much of the Afro-Eurasian landmass from southern Spain, across North Africa, all the way to central Asia. The Tang Empire in China, however, served as a counterweight to Islam's power both politically and intellectually. Confucianism enjoyed a spectacular recovery in this period. With the Tang rulers, Confucianism slowed the spread of Buddhism and further reinforced China's development along different, more secular pathways. Japan and Korea also enter world history at this time as tributary states to Tang China and as hybrid cultures that mixed Chinese customs and practices with their own. The Christian world split in this period between the western Latin church and

the eastern Byzantine church. Both branches of Christianity played a role in unifying societies, especially in western Europe, which lacked strong political rule at a time when all of Europe experienced a profound and disabling drop in temperature.

In the three centuries from 1000 to 1300 (**Chapter 10, “Becoming ‘The World,’ 1000–1300 CE”**), Afro-Eurasia experienced an unprecedented rise in prosperity and population that even spread into West and East Africa. Just as importantly, the world in this period divided into regional zones that are recognizable today. And trade grew rapidly.

A view of the major trading cities of this time demonstrates how commerce transformed cultures. Sub-Saharan Africa also underwent intense regional integration via the spread of the Mande-speaking peoples and the Mali Empire. The Americas witnessed their first empire in the form of the Chimu peoples in the Andes. This chapter ends with the Mongol conquests of the twelfth and thirteenth centuries, which brought massive destruction. The Mongol Empire, however, once in place, promoted long-distance commerce, scholarly exchange, and travel on an unprecedented scale. The Mongols brought Eurasia, North Africa, and many parts of sub-Saharan Africa into a new connectedness. The Mongol story also underscores the important role that nomads played throughout the history of the early world. Just as much of Europe had suffered through a drop in temperature in the ninth and tenth centuries, as described in Chapter 9, now a radical fall in temperature in combination with drought troubled the eastern Mediterranean and the Islamic world. Here the result was a steep decline in standards of living, leading to riots and political fragmentation. Even so, Islamic science flourished, and China became the most urbanized part of the world.

The Black Death brought Afro-Eurasia’s prosperity and population growth to a catastrophic end, as discussed in **Chapter 11, “Crises and Recovery in Afro-Eurasia, 1300–1500.”** The death and destruction of the fourteenth century saw traditional institutions give way, forcing peoples to rebuild their cultures. The political systems that came into being at this time and the intense religious experimentation that took place effected a sharp break with the past. The bubonic plague wiped out as much as two-thirds of the population in many of the densely settled locations of Afro-Eurasia. Societies once brought to their knees by the Mongols’ depredations now suffered grievously from biological pathogens. In the face of one of humanity’s grimmest periods, peoples and societies demonstrated tremendous resilience as they looked for new ways to rebuild their communities, some turning inward and others seeking inspiration, conquests, and riches elsewhere.

New dynasties emerged all across Afro-Eurasia. The Ming replaced the Mongol Yuan dynasty in China. A small band of Muslim warriors in Anatolia became sophisticated military tacticians and administrators and created an empire that would last as the Ottoman Empire until the end of World War I. New Muslim dynasts also took over South Asia (the Mughals) and the Iranian plateau (Safavids). Nor was Europe left behind, for here, too, new dynamic rulers came to the thrones in England, France, Spain, and Portugal, ready to project their power overseas. Volume One concludes on the eve of the Columbian Exchange, the moment when “old” worlds discovered “new” ones and a vast series of global interconnections and divergences commenced.

OVERVIEW OF VOLUME TWO

The organizational structure for Volume Two reaffirms the commitment to write a decentered, global history of the world. Christopher Columbus is not the starting point, as he is in so many modern world histories. Rather, we begin in the eleventh and twelfth centuries with two major developments in world history: the Mongols and the Black Death. The first, set forth in **Chapter 10, “Becoming ‘The World,’ 1000–1300 CE,”** describes a world that was divided for the first time into regions that are recognizable today. This world experienced rapid population growth, as is shown by a simple look at the major trading cities from Asia in the east to the Mediterranean in the west. Yet nomadic peoples remained a force, as revealed in the Mongol invasions of Afro-Eurasia.

Chapter 11, “Crises and Recovery in Afro-Eurasia, 1300–1500,” describes how the Mongol warriors, through their conquests and the integration of the Afro-Eurasian world, unwittingly spread the bubonic plague, which brought death and depopulation to much of Afro-Eurasia. Both these stories set the stage for the modern world and are clear-cut turning points in world history. The primary agents of world connection described in this chapter were dynasts, soldiers, clerics, merchants, and adventurers who rebuilt the societies that disease and political collapse had destroyed.

The Mongols joined the two hemispheres, as we describe in **Chapter 12, “Contact, Commerce, and Colonization, 1450–1600,”** bringing the peoples and products of the Western Hemisphere into contact and conflict with Eurasia and Africa. It is the collision between the Eastern and Western Hemispheres that sets in motion modern world history and marks a distinct divide or turning point between the premodern and the modern. Here, too, disease

and increasing trade linkages were vital. Unprepared for the advanced military technology and the disease pool of European and African peoples, the Amerindian population experienced a population decline even more devastating than that caused by the Black Death.

Europeans sailed across the Atlantic Ocean to find a more direct, less encumbered route to Asia and came upon lands, peoples, and products that they had not expected. One item, however, that they had sought in every part of the world and that they found in abundance in the Americas was precious metal. Although historians rightly emphasize the European intrusion into the Indian Ocean and their discovery of the Americas, we remind readers that the Europeans were not alone in expanding their influence through the oceans. The Ottomans made gains in the Red Sea and ventured into the Indian Ocean as rivals to the Portuguese.

In **Chapter 13, “Worlds Entangled, 1600–1750,”** we discuss how New World silver from Mexico and Peru became the major currency of global commerce, oiling the long-distance trading networks that had been revived after the Black Death. The effect of New World silver on the world economy was so great that it, even more than the Iberian explorations of the New World, brought the hemispheres together and marks the true genesis of modern world history. Sugar also linked the economies and political systems of western Europe, Africa, and the Americas and was a powerful force in a triangular trade centered on the Atlantic Ocean. This trade involved the shipment of vast numbers of African captives to the Americas, where they toiled as slaves on sugar, tobacco, cotton, and rice plantations.

For Europe and the rest of the world, the sudden dip in temperature in the seventeenth century, which historians now call the Little Ice Age, brought immense suffering not seen around the world since the Black Death. Wars broke out, and regimes were overthrown in China and Iran. Much of the new research into the Little Ice Age is based on a better understanding of the climate through the studies of climatologists, research that has transformed the way historians now look at the seventeenth century.

Chapter 14, “Cultures of Splendor and Power, 1500–1780,” discusses the Ottoman scientists, Safavid and Mughal artists, Chinese literati, and European thinkers, whose notable achievements were rooted in their own cultures but tempered by awareness of the intellectual activities of others. In this chapter, we look closely at how culture is created as a historical process and describe how the massive increase in wealth during this period, growing out of global trade, led to one of the great periods of

cultural flourishing in world history. In our discussion of Europe’s scientific revolution, which got under way at the end of the sixteenth century and came to full fruition in the seventeenth century through the studies of Isaac Newton, we tackle the vexed question of why the scientific breakthrough occurred in Europe and not in China, India, and the Muslim world, which had been in the lead up to then. It was a turn to quantification that catapulted Europe ahead of the rest of the world, coupled with the fact that the Chinese had their exposure to European science through the Jesuits.

Around 1800, transformations reverberated outward from the Atlantic world and altered economic and political relationships in the rest of the world. In **Chapter 15, “Reordering the World, 1750–1850,”** we discuss how political revolutions in the Americas and Europe, new ideas about how to trade and organize labor, and a powerful rhetoric of freedom and universal rights underlay the beginning of “a great divide” between peoples of European descent and those who were not. These forces of laissez-faire capitalism, industrialization, the nation-state, and republicanism not only attracted diverse groups around the world; they also threatened groups that put forth alternative visions. Ideas of freedom, as manifested in trading relations, labor, and political activities, clashed with a traditional world based on inherited rights and statuses and further challenged the way men and women had lived in earlier times. These political, intellectual, and economic reorderings changed the way people around the world saw themselves and thus represent something quite novel in world history.

Much new comparative work has been done on the industrial revolution in the same way that historians have placed Europe’s scientific revolution within a global context.

These new ways of envisioning the world did not go unchallenged, as **Chapter 16, “Alternative Visions of the Nineteenth Century,”** makes clear. Here, intense resistance to evolving modernity reflected the diversity of peoples and their hopes for the future. Wahabbism in Islam, the strongman movement in Africa, Indian resistance in America and Mexico, socialism and communism in Europe, the Taiping Rebellion in China, and the Indian mutiny in South Asia catapulted to historical prominence prophets and leaders whose visions often drew on earlier traditions and led these individuals to resist rapid change.

Chapter 17, “Nations and Empires, 1850–1914,” discusses the political, economic, military, and ideological power that thrust Europe and North America to the fore of global events and led to an era of nationalism and modern imperialism, new forces in world history. Yet this period

of seeming European supremacy was to prove short-lived. This chapter has new material on the Irish potato famine and an in-depth analysis of European colonialism.

As **Chapter 18, “An Unsettled World, 1890–1914,”** demonstrates, even before World War I shattered Europe’s moral certitude, many groups at home (feminists, Marxists, and unfulfilled nationalists) and abroad (anticolonial nationalists) had raised a chorus of complaints about European and North American dominance. As in Chapter 14, we look at the processes by which specific cultural movements rose and reflected the concerns of individual societies. Yet here, too, syncretistic movements emerged in many cultures and reflected the sway of global imperialism, which by then had become a dominant force.

In keeping with our stress on the environment, this chapter discusses Teddy Roosevelt’s promotion of the conservation of nature and other efforts by Europeans to be stewards of the earth. There is also a new environmentally oriented Current Trends in World History about the felt need for sustainable agricultural methods on the Russian steppe lands.

Chapter 19, “Of Masses and Visions of the Modern, 1910–1939,” briefly covers World War I and then discusses how, from the end of World War I until World War II, different visions of being modern competed around the world. It is the development of modernism and its effects on multiple cultures that integrate the diverse developments discussed in this chapter. In the decades between the world wars, proponents of liberal democracy struggled to defend their views and often to impose their will on authoritarian rulers and anticolonial nationalists.

The chapter presents a number of revisionist views on the origins of World War I, the Armenian genocide, the Sykes-Picot agreement that was reached by Britain and France during World War I to partition the Ottoman Middle Eastern lands once the war was over, and the secularizing and modernizing ideas that animated Mustafa Kemal, later known as Atatürk, to create a new nation in Turkey.

Chapter 20, “The Three-World Order, 1940–1975,” covers World War II and describes how new adversaries arose after the war. A three-world order came into being—the First World, led by the United States and extolling capitalism, the nation-state, and democratic government; the Second World, led by the Soviet Union and favoring authoritarian polities and economies; and the Third World, made up of former colonies seeking an independent status for themselves in world affairs. The rise of this three-world order dominated the second half of the twentieth century and constitutes another major theme of world history.

In **Chapter 21, “Globalization, 1970–2000,”** we explain that at the end of the cold war, the modern world, while clearly more unified than before, still had profound cultural differences and political divisions. At the beginning of the twenty-first century, capital, commodities, peoples, and ideas moved rapidly over long distances. But cultural tensions and political impasses continued to exist. The rise of this form of globalism represented a vital new element as humankind headed into a new century and millennium. This chapter contains an expanded discussion of the role of international and supranational financial organizations; the environmental crisis, brought on by the release of carbon emissions into the atmosphere and the resulting global warming; and the end of white rule in South Africa.

We close with the **Epilogue, “2001–The Present,”** which tracks developments since the turn of the millennium. These last few years have brought profound changes to the world order, yet we hope readers of *Worlds Together, Worlds Apart* will see more clearly how this most recent history is, in fact, entwined with trends of much longer duration that are the chief focus of this book.

We see the last half decade as pointing the peoples and countries of the world in more populist, ethnic nationalist, and violent directions. Britain’s vote to withdraw from the European Union, known as Brexit; the election of Donald Trump to the American presidency; the rise of ethnic and religious consciousness in Turkey and India most notably and throughout the world in general; and the emergence of militant Islam in al-Qaeda and then in ISIS (the Islamic State in Iraq and Syria) all seem to us to be the consequence of various groups believing themselves to be disenfranchised and demanding to be heard.

MEDIA & PRINT ANCILLARIES

The Fifth Edition of *Worlds Together, Worlds Apart* is supported by an array of digital resources to help faculty meet their course goals—in the classroom and online—and activities for students to develop core skills in reading comprehension, historical analysis, and writing.

FOR STUDENTS

- **InQuizitive** (Shane Carter, Siobhan McGurk) is an adaptive quizzing tool that improves students’ understanding of the themes and objectives of each chapter while honing their critical analysis skills with primary source, image, and map analysis questions. Students receive personalized quiz questions with detailed, guiding feedback on the topics in which they need the most help, while the engaging, gamelike elements motivate them as they learn.

- The **History Skills Tutorials** feature three modules—Images, Documents, and Maps—to support students’ development of the key skills needed for the history course. These tutorials feature author videos modeling the analysis process, followed by interactive questions that will challenge students to apply what they have learned.
- The free and easy-to-use **Student Site** offers additional resources for students to use outside of class. Resources include interactive iMaps, author videos, and a comprehensive Online Reader featuring 100 additional sources.
- Free and included with new copies of the text, the **Norton Ebook Reader** provides an enhanced reading experience that works on all computers and mobile devices. Features include intuitive highlighting, note-taking, and book-marking, as well as pop-up definitions and enlargeable maps and images. Author videos are embedded throughout to create an engaging reading environment.

FOR INSTRUCTORS

- **Norton Coursepacks** allow instructors to bring strong assessment and lecture tools directly into their Learning Management System (LMS). Available at no cost to professors or students, Norton Coursepacks include chapter-based assignments, including Guided Reading Exercises, Primary Source Exercises, Chapter Review Quizzes, author videos, interactive iMaps, forum prompts, and more.
- **Story Maps** (Ruth Mostern) break complex maps into a sequence of five annotated screens that focus on the story behind the geography. Twelve maps, including two new maps, cover such topics as “The Silk Road,” “The Spread of the Black Death,” and “Population Growth and the Economy.”
- The **Instructor’s Manual** (Sharon Cohen) has everything instructors need to prepare lectures and classroom activities: lecture outlines, lecture ideas, classroom activities, and lists of recommended books, films, and Web sites.
- The **Test Bank** (Ryba Epstein, Derek O’Leary) contains approximately 1,400 multiple-choice, true/false, and essay questions. All test questions are now aligned with Bloom’s Taxonomy for greater ease of assessment (available in print, PDF, Word, and Examview formats).
- **Lecture PowerPoints and Art PowerPoints** feature lecture outlines, key talking points, and the photographs and maps from the book to support in-class presentations.

ACKNOWLEDGMENTS

Worlds Together, Worlds Apart would never have happened without the full support of Princeton University. In a highly unusual move, and one for which we are truly grateful, the university helped underwrite this project with financial support from its 250th Anniversary Fund for undergraduate teaching and by allowing released time for the authors from campus commitments.

The history department’s support of the effort over many years has been exceptional. Four chairs made funds and departmental support available, including the department’s incomparable administrative talents. We would be remiss if we did not single out the department manager, Judith Hanson, who provided us with assistance whenever we needed it. We also thank Eileen Kane, who tracked down references and illustrations and merged changes into the manuscript. We also would like to thank Pamela Long, who made all of the complicated arrangements for ensuring that we were able to discuss matters in a leisurely and attractive setting. Sometimes that meant arranging for long-distance conference calls. She went even further and proofread the entire manuscript, finding errors that we had all overlooked.

We drew shamelessly on the expertise of the departmental faculty, and although it might be wise simply to include a roster of the Princeton history department, that would do an injustice to those of whom we took most advantage. So here they are: Mariana Candido, Robert Darnton, Sheldon Garon, Anthony Grafton, Molly Greene, David Howell, Harold James, William Jordan, Emmanuel Kreike, Michael Mahoney, Arno Mayer, Kenneth Mills, John Murrin, Susan Naquin, Willard Peterson, Theodore Rabb, Bhavani Raman, Stanley Stein, and Richard Turits. When necessary, we went outside the history department, getting help from Michael L. Bender, L. Carl Brown, Michael Cook, Norman Itzkowitz, Martin Kern, Thomas Leisten, Heath Lowry, and Peter Schaefer. Two departmental colleagues—Natalie Z. Davis and Elizabeth Lunbeck—were part of the original team but had to withdraw because of other commitments. Their contributions were vital, and we want to express our thanks to them. David Gordon, now at Bowdoin College, used portions of the text while teaching an undergraduate course at the University of Durban in South Africa and shared comments with us. Shamil Jempie, like David Gordon a graduate of the Princeton history department, now teaching at the University of Cape Town in South Africa, read and commented on various chapters.

Beyond Princeton, we have also benefited from exceptionally gifted and giving colleagues who have assisted this book in many ways. Colleagues at Louisiana State

University, the University of North Carolina, the University of Pennsylvania, and the University of California at Los Angeles, where Suzanne Marchand, Michael Tsin, Holly Pittman, and Stephen Aron, respectively, are now teaching, pitched in whenever we turned to them. Especially helpful have been the contributions of Joyce Appleby, James Gelvin, Naomi Lamoreaux, and Gary Nash at UCLA; Michael Bernstein at Tulane University; and Maribel Dietz, John Henderson, Christine Kooi, David Lindenfeld, Reza Pirbhai, and Victor Stater at Louisiana State University. It goes without saying that none of these individuals bears any responsibility for factual or interpretive errors that the text may contain. Xinru Liu would like to thank her Indian mentor, Romila Thapar, who changed the way we think about Indian history.

The quality and range of reviews on this project were truly exceptional. The final version of the manuscript was greatly influenced by the thoughts and ideas of numerous instructors. We wish to particularly thank our consulting reviewers, who read multiple versions of the manuscript from start to finish.

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For the Fifth Edition, we also had a mix of new and returning authors who helped create the best support materials to accompany *Worlds Together, Worlds Apart*. Alan Karras served as the lead media author, directing the development of our ancillary author team. For their tremendous efforts, we would like to thank Sharon Cohen for authoring the Instructor's Manual, Ryba Epstein and Derek O'Leary for creating the test bank, and Shane Carter and Siobhan McGurk for developing InQuizitive.

For the Fifth Edition, we have some familiar and new friends at Norton to thank. Chief among them is Jon Durbin, who once again played a major role in bringing this edition to publication. Laura Wilk, our new media editor, has put together a fabulous package of support materials for students and instructors. Sarah England has put together a creative marketing plan for the book. Jillian Burr is responsible for the book's beautiful and effective design. Jennifer Barnhardt has done an amazingly efficient job as our project editor. Andy Ensor has shepherded the project through production beautifully. Kelly Rafey has done a masterful job compiling the manuscript with a special focus on photos, primary sources, and permissions. Michelle Smith and Chris Hillyer have done a fine job lending their support in strengthening the media support materials to meet the ever more complex classroom and assessment needs of instructors. Alice Vigliani did a spectacular job working on the manuscript, paying particular attention to our efforts to reorganize and streamline many of the chapters in both volumes. Janet Greenblatt did a superb job with the copyediting, turning the chapters around quickly to meet our schedule. A special shout-out goes to Debra Morton-Hoyt and her team of cover designers. *Worlds Together, Worlds Apart* has always been incredibly creative and distinctive looking, and the Fifth Edition covers are even more eye-catching and memorable than the first four editions. Bravo!

Finally, we must recognize that while this project often kept us apart from family members, their support held our personal worlds together.

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THE GEOGRAPHY OF THE ANCIENT AND MODERN WORLDS

Today, we believe the world to be divided into continents, and most of us think that it was always so. Geographers usually identify six inhabited continents: Africa, North America, South America, Europe, Asia, and Australia. Inside these continents they locate a vast number of subcontinental units, such as East Asia, South Asia, Southeast Asia, the Middle East, North Africa, and sub-Saharan Africa. Yet this geographical understanding would have been completely alien to premodern men and women, who did not think that they inhabited continents bounded by large bodies of water. Lacking a firm command of the seas, they

saw themselves living on contiguous landmasses, and they thought these territorial bodies were the main geographical units of their lives. Hence, in this volume we have chosen to use a set of geographical terms, the main one being Afro-Eurasia, that more accurately reflect the world that the premoderns believed that they inhabited.

The most interconnected and populous landmass of premodern times was Afro-Eurasia. The term Eurasia is widely used in general histories, but we think it is in its own ways inadequate. The preferred term from our perspective must be Afro-Eurasia, for the interconnected



landmass of premodern and indeed much of modern times included large parts of Europe and Asia and significant regions in Africa. The major African territories that were regularly joined to Europe and Asia were Egypt, North Africa, and even parts of sub-Saharan Africa.

Only gradually and fitfully did the divisions of the world that we take for granted today take shape. The peoples inhabiting the northwestern part of the Afro-Eurasian landmass did not see themselves as European Christians, and hence as a distinctive cultural entity, until the Middle Ages drew to a close in the twelfth and thirteenth centuries. Islam did not arise and extend its influence throughout the middle zone of the Afro-Eurasian landmass until the eighth and

ninth centuries. And, finally, the peoples living in what we today term the Indian subcontinent did not feel a strong sense of their own cultural and political unity until the Delhi Sultanate of the thirteenth and fourteenth centuries and the Mughal Empire, which emerged at the beginning of the sixteenth century, brought political unity to that vast region. As a result, we use the terms South Asia, Vedic society, and India in place of Indian subcontinent for the premodern part of our narrative, and we use Southwest Asia and North Africa to refer to what today is designated as the Middle East. In fact, it is only in the period from 1000 to 1300 that some of the major cultural areas that are familiar to us today truly crystallized.



WORLDS TOGETHER, WORLDS APART

FIFTH EDITION



Before You Read This Chapter

Go to
INQUIZITIVE
to see what you
know & learn
what you've
missed.

GLOBAL STORYLINES

- Communities, from long ago to today, produce creation narratives to make sense of how humans came into being.
- Hominin development across millions of years results in modern humans (*Homo sapiens*) and the traits that make us “human.”
- During the period from 200,000 to 12,000 years ago, humans live as hunter-gatherers and achieve major breakthroughs in language and art.
- Global revolution in domesticating crops and animals leads to settled agriculture-based communities, while other communities develop a pastoral way of life.

CHAPTER OUTLINE

- Precursors to Modern Humans p. 4
- The First Modern Humans p. 14
- The Life of Early *Homo Sapiens* p. 18
- The Beginnings of Food Production p. 24
- Emergence of Agriculture p. 28
- Revolutions in Social Organization p. 35
- Conclusion p. 38



FOCUS QUESTIONS

- What are the various creation narratives identified in this chapter, in addition to that of human evolution? Explain how they differ.
- What major developments in hominin evolution resulted in the traits that make *Homo sapiens* “human”?
- What were the human ways of life and cultural developments from 200,000 to 12,000 years ago?
- In what varying ways did communities around the world shift to settled agriculture, and what was the significance of this shift for social organization?

Becoming Human

In 2003, in a remote corner of the Ethiopian highlands of Africa, a team of evolutionary biologists came upon a remarkable cache of fossil remains lodged in volcanic rock. Identifying and reassembling these remains took six years, but the researchers eventually reconstructed one of the most revealing sets of human fossils ever found: a nearly complete skeleton of an adult male and the partial remains of another adult and a juvenile. By dating the volcanic rock, the team determined that the bones were about 160,000 years old. Although the skeletal remains were not identical to those of modern men and women (who are technically *Homo sapiens sapiens*, the sole surviving subspecies of *Homo sapiens*), they were close enough to form part of the family of modern humans. In short, the bones represented the oldest record of *Homo sapiens*. The fossil finds confirmed what earlier studies had suggested: *Homo sapiens*, or modern humans, originated in a small region of Africa about 200,000 years ago and migrated out of Africa less than 100,000 years ago. As the team leader proclaimed, “We are all Africans.”

Not everyone agrees with the “Out of Africa” thesis, which contends that modern humans are all descendants of recent migrants out of Africa. Doubters claim that the world’s “races” evolved separately in different

regions for up to 1 million years after migrating out of Africa. These doubters argue that as the early descendants of modern men and women evolved in widely dispersed geographical settings, they took on diverse personality traits and distinctive physical appearances, with the result that they appear today as different “races.” In this view, the story of humanity is about fundamental differences. But now it is becoming clear that all humans share a common heritage, and our differences are not genetic or crudely physical, but mainly cultural. We are also much newer than scholars once imagined.

As a species we have been living apart for a comparatively short amount of time, and as a result the world’s “races” have much in common. Most of the common traits of human beings—the abilities to make tools, engage in family life, use language, and refine cognitive abilities—evolved over many millennia and crystallized on the eve of the exodus from Africa. Only with the advent of settled agriculture did significant cultural divergences occur, as artifacts such as tools, cooking devices, and storage containers reveal. The differences in humankind’s cultures are less than 15,000 or 20,000 years old.

This chapter lays out the origins of humanity from its common source. It shows how many different **hominins** (erect two-footed mammals, represented today only by humans but in the past by many groups descended from the great apes) preceded modern humans and that humans came from only one—very recent—stock of migrants out of Africa. Fanning out across the world, our ancestors adapted to environmental constraints and opportunities. They created languages, families, and clan systems, often innovating to defend themselves against predators. One of the biggest breakthroughs was the domestication of animals and plants—the creation of agrarian settlements. With this development, humans could cease following food and begin producing it in their own backyards.

Before we begin our exploration, it will be useful to clarify two terms that occur frequently in this chapter’s discussion: *evolution* and *modern humans*. **Evolution** is the process by which the different species of the world—its plants and animals—adapt in response to their often changing environments in ways that enable them to survive and increase in numbers. Biological evolution does not imply progress to higher and more exalted forms of life, only adaptation to environmental surroundings.

It was once thought that evolution is a gradual and steady process. The consensus now is that changes occur in punctuated bursts after long periods of stasis, or non-change. These transformative changes were often brought on, especially during early human development, by dramatic alterations in climate and by ruptures of the earth’s crust caused by the movement of tectonic plates below the earth’s surface. The heaving and decline of the earth’s surface led to significant changes in climate and in animal and plant life.

Of even greater significance in causing radical climate variation were changes in the rotation of the earth around the sun. The twentieth-century breakthroughs of astronomers and climatologists have revealed that the earth does not move around the sun in a perfect oval. The earth’s path around the sun is a wobbly one. When the earth tilts toward the sun, temperatures rise and rainfall is abundant. Conversely, when the earth moves away from the sun, temperatures plunge and aridity occurs. These phases tended to last 100,000 years.

Climate change has been dramatic and radical over time. For millions of years, glaciation reached all the way to the equator, while at other times the climate was so warm that dinosaurs flourished in Antarctica and ferns grew to spectacular heights in the Canadian Arctic. As we will see, throughout most of hominin existence these precursors to modern humans and *Homo sapiens* had to cope with a severely freezing and dry universe.

The term *modern humans* refers to members of the various *Homo sapiens* subspecies that evolved about 200,000 years ago. So when we say “modern” (and “recent”), we are speaking in relative terms; compared with the life of the universe and even the earliest hominins, the ancient creatures we call modern humans were indeed “modern.” This chapter’s discussion will show that as modern humans evolved in varying environments, they passed through successive waves of migration, adaptation, and innovation.

PRECURSORS TO MODERN HUMANS

To understand the origins of modern humans (*Homo sapiens*), we must consider what is common to all humans and what distinguishes them from one another. We must also come to terms with time. Though the hominins that evolved into modern humans lived millions of years ago, our tools for analyzing them are relatively new. What we now know about the origins of human existence and the evolution into modern humans would have been unimaginable a century ago.

Creation Narratives

For thousands of years, humans have constructed, out of their values and available evidence, narratives of how the world—and humans—came to be. These **creation narratives** have varied over time and across cultures. Only 350 years ago, English clerics claimed on the basis of biblical calculations and Christian tradition that the first day of creation was Sunday, October 23, 4004 BCE. One scholar even specified that creation happened at 9:00 A.M. on the morning of that day. Now we see things differently. The origin of the universe dates back some

PRIMARY SOURCE

A Hindu Creation Narrative

Around 1500 BCE, a migrant people settled in South Asia. These Vedic people sang hymns while making sacrifices to their gods, and the hymns were later collected in the Rig-Veda—the earliest Hindu sacred text. This hymn describes the creation of the universe by the gods' sacrifice ("oblation") of a creature—Purusha, or "Man." From Purusha's body come four different kinds of people: the Brahman, the Rajanya, the Vaishya, and the Shudra. They represent the forefathers of the four castes, or hereditary social classes, of India. (To compare this reading with a Mesoamerican creation narrative, see p. 32.)

Thousand-headed Purusha, thousand-eyed, thousand-footed—he, having pervaded the earth on all sides, extends ten fingers beyond it.

Purusha alone is all this—whatever has been and whatever is going to be. Further, he is the lord of immortality and also of what grows on account of food.

Such is his greatness; greater, indeed than this is Purusha. All creatures constitute but one-quarter of him, his three-quarters are the immortal in the heaven.

With his three-quarters did Purusha rise up; one-quarter of him again remains here. With it did he variously spread out on all sides over what eats and what eats not. . . . When the gods performed the sacrifice with Purusha as the oblation, then the spring was its clarified butter, the summer the sacrificial fuel, and the autumn the oblation.

The sacrificial victim, namely, Purusha born at the very beginning, they sprinkled with sacred water upon the sacrificial

grass. With him as oblation, the gods performed the sacrifice, and also the Sādhyas [a class of semidivine beings] and the rishis [ancient seers].

From that wholly offered sacrificial oblation were born the verses and the sacred chants; from it were born the meters [*chandās*]; the sacrificial formula was born from it.

From it horses were born and also those animals who have double rows [i.e., upper and lower] of teeth; cows were born from it, from it were born goats and sheep.

When they divided Purusha, in how many different portions did they arrange him? What became of his mouth, what of his two arms? What were his two thighs and his two feet called?

His mouth became the brāhman; his two arms were made into the rājanya; his two thighs the vaishyas; from his two feet the shūdra was born.

The moon was born from the mind, from the eye the sun was born; from the

mouth Indra and Agni, from the breath [*prāna*] the wind [*vāyu*] was born.

From the navel was the atmosphere created, from the head the heaven issued forth; from two feet was born the earth and the quarters (the cardinal directions) from the ear. Thus did they fashion the worlds.

QUESTIONS FOR ANALYSIS

- In early Vedic society the Brahman (priest) was the highest caste, and the Shudra (outsider/laborer) was the lowest. What parts of Purusha's body did these two castes come from, and what is the significance of each?
- According to this creation narrative, what other beings came into existence fully formed?

Source: *Sources of Indian Tradition*, vol. 1, *From the Beginning to 1800*, edited and revised by Ainslie T. Embree, 2nd ed. (Columbia University Press, 1988), pp. 18–19.

13.75 billion years, and hominins began to separate from apes some 6 or 7 million years ago. These discoveries have proved as mind-boggling to Hindus and Muslims as to Christians and Jews—all of whom believed, in different ways, in a creationist account of humanity's origins. The Judaic-Christian belief in creation was based on the first book of the Old Testament, Genesis, which portrayed God creating the universe from nothingness, all the plants and animals and the first set of human beings (Adam and Eve) over a period of seven days. This story became foundational for western societies and also for the Islamic world, which accepted the Old and New Testaments—though not the divinity of Jesus—as the word of God.

Modern discoveries about humanity's origins have also challenged other major cultural traditions, because no tradition conceived that creatures evolved into new kinds of life, that humans were related to apes, and that all of humanity originated in a remote corner of Africa. According to the Brahmanical Vedas and the Upanishads, which date to the seventh or sixth century BCE and remain fundamental to Hindu faith today, the world is millions, not billions, of years old. The Chinese do not appear to have their own creation story, and the Buddhists believe in a continuous reappearance of human and animal souls. (See Primary Source: A Hindu Creation Narrative; also see Primary Source: A Mesoamerican Creation Narrative, p. 32.)

CURRENT TRENDS IN WORLD HISTORY

Determining the Age of Fossils and Sediments and Measuring Climate Change



Our knowledge of human origins has been the result of several remarkable scientific breakthroughs. Only recently have scholars been able to date fossil remains, to use biological research to understand the relationships among the world's early peoples, and to chart the evolution of climate change over long stretches of time.

The first major advance in the study of the time before written historical records occurred after World War II, and it involved the use of *radiocarbon dating*. All living things contain the radioactive isotope carbon-14 (^{14}C), which plants acquire directly from the atmosphere and animals acquire indirectly when they consume plants or other animals. When these living things die, the ^{14}C isotope begins to decay into a stable nonradioactive element, carbon-12 (^{12}C). Because the rate of decay is regular and measurable, it is possible to determine the age of fossils that leave organic remains for up to 40,000 years.

A second major dating technique, the *potassium-argon method*, also involves analysis of the changing chemical structure of objects over time. Scientists can calculate the age of nonliving objects by

measuring the ratio of potassium to argon in them, since potassium decays into argon. This method allows scientists to calculate the age of objects up to a million years old. It also enables them to date the sediments in which researchers find fossils—as a gauge of the age of the fossils themselves.

DNA (deoxyribonucleic acid) analysis is a third crucial tool for unraveling the beginnings of modern humans. DNA, which determines biological inheritance, exists in two places within the cells of all living organisms—including the human body. *Nuclear DNA* occurs in the nucleus of every cell, where it controls most aspects of physical appearance and makeup. *Mitochondrial DNA* occurs outside the nucleus of cells and is located in mitochondria, structures used in converting the energy from food to a form that cells can use. Nuclear and mitochondrial DNA exists in males and females, but only mitochondrial DNA from females passes to their offspring: the female's egg cells carry her mitochondria with their DNA to the offspring, but sperm cells from males do not donate any mitochondrial DNA to the egg cell at fertilization. By examining mitochondrial DNA, researchers can measure the genetic relatedness and variation among living organisms—including human beings. Such analysis has enabled

researchers to pinpoint human descent from an original African population to other, genetically related populations that lived approximately 100,000 years ago.

As this chapter demonstrates, the environment, especially climate, played a major role in the appearance of hominins and the eventual dominance of *Homo sapiens*. But how do we know so much about the world's climate going so far back in time? This brings us to the fourth of the scientific breakthroughs, known as *marine isotope stages*. By exploring the marine life, mainly pollen and plankton, deposited in deep-sea beds and measuring the levels of oxygen-16 (^{16}O) and oxygen-18 (^{18}O) isotopes in these life-forms, oceanographers and climatologists are able to determine the temperature of the world hundreds of thousands of years ago; and with reconstructions of the earth's orbital path around the sun, they have extended their knowledge of climate to billions of years, thus providing data on the cooling and warming cycles of the earth's climate.

Climatologists have probed the large ice sheets and glaciers in Greenland and elsewhere to obtain information on the earth's climate in the past and the prospects for the future. Crucially important in this endeavor were the investigations of a multinational team of European climatologists, whose drilling deep into the

Evolutionary Findings and Research Methods

Revisions in the time frame of the universe and human existence have occurred over a long period of time. Geologists made early breakthroughs in the eighteenth century when their research into the layers of the earth's surface revealed a world much older than biblical time implied. Evolutionary biologists, most notably Charles Darwin (1809–1882), concluded that all life had evolved over long periods from simple forms of matter. In the twentieth century, astronomers, evolutionary biologists,

climatologists, and archaeologists (scholars of ancient cultures whose information comes mainly from nonliterary sources such as fossils, monuments, and artifacts) have employed sophisticated dating techniques to pinpoint the chronology of the universe's creation, the evolution of all forms of life on earth, and the decisive role that changes in climate have played in the evolution of living forms. (See Current Trends in World History: Determining the Age of Fossils and Sediments and Measuring Climate Change.) Understanding the sweep of human history, calculated in millions of years, requires us to revise our sense of time.



Neanderthal DNA Extraction. This sample of fossilized Neanderthal bone will have its genetic material extracted and sequenced as part of the Neanderthal Genome Project.

ice cores of Greenland revealed both the rapidity of climate change in the past and the crucial challenges encountered by plants and animals, including *Homo sapiens* and, before them, all hominins. Astronomical observations into the earth's varying orbital paths around the sun were additional and essential elements in charting the radical and rapid climate changes that have occurred over billions of

years—for instance, when the earth's orbit around the sun, responding to the tilt of its axis and the gravitational pull of other planets, caused different distributions and intensities of light and major changes in temperature and rainfall. Moreover, when the earth's orbit took it away from the warming effects of the sun, freezing temperatures and aridity occurred. The earth's spinning more closely to the sun, as it has

done for the last 16,000 years, created warmer and wetter conditions. A climate that was warmer and wetter facilitated the agricultural revolution and the rapid growth of the human population, as we observe in the text. Yet, in the twentieth and twenty-first centuries, the trapping of greenhouse gases in the earth's atmosphere has led to even higher degrees of temperature and now threatens the life of all species on earth.

QUESTIONS FOR ANALYSIS

- How has the study of prehistory changed since World War II? What are the consequences?
- How does the study of climate and environment relate to the origins of humans?

Explore Further

Barham, Lawrence, and Peter Mitchell, *The First Africans: African Archaeology from the Earliest Toolmakers to Most Recent Foragers* (2008).

Barker, Graeme, *Agricultural Revolution in Prehistory: Why Did Foragers Become Farmers?* (2006).

Early Hominins and Adaptation

Not surprisingly, Charles Darwin predicted, though with little evidence, that Africa was the likely birthplace of humanity. In his *Descent of Man* (1871), he wrote, “In each great region of the world, the living mammals are closely related to the extinct species of the same region. It is therefore probable that Africa was formerly inhabited by extinct apes, closely allied to the gorilla and chimpanzee, and as these two species are man's closest allies, it is somewhat probable that our earliest progenitors lived on the African continent” (cited in Meredith, p. xvii). Of course,

evolution deniers appeared right away. Perhaps no one better expressed the skepticism and revulsion of this view that humanity owed its origins to apes than the wife of an English cleric, who wrote, “Let us hope that it is not true, but if it is true let us pray that it will not be widely known” (Meredith, p. xvii).

What was it like to be a hominin in the millions of years before the emergence of modern humans? An early clue came from a discovery made in 1924 at Taung, not far from the present-day city of Johannesburg, South Africa. Raymond Dart, a 29-year-old Australian anatomist teaching at the Witwatersrand University Medical School, happened upon a skull and bones that

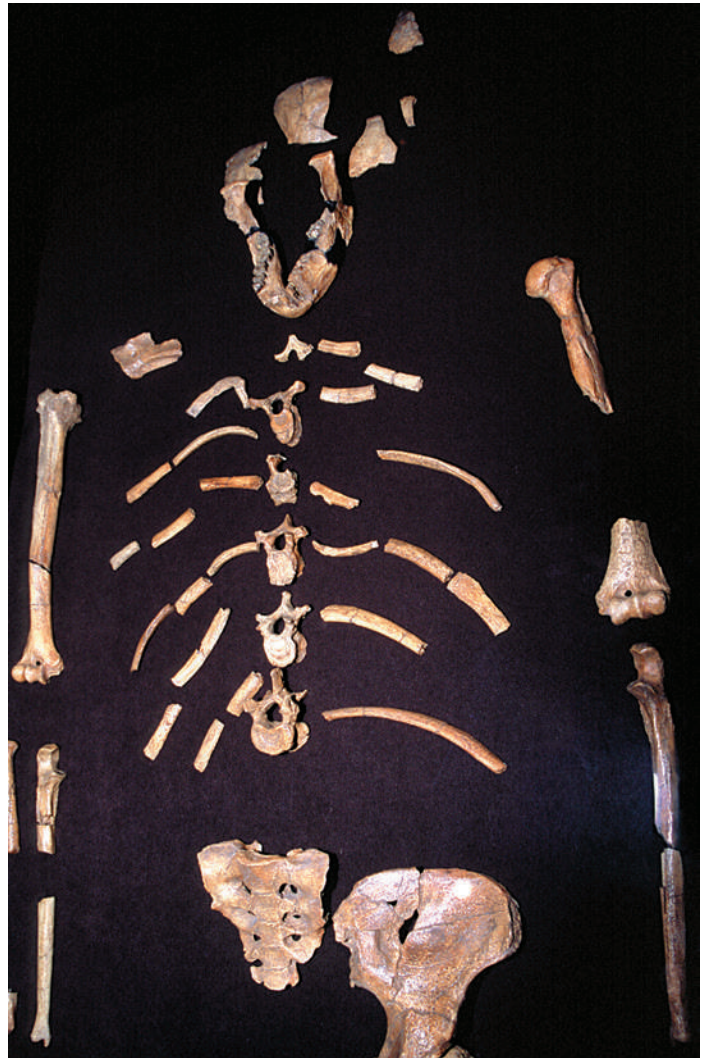
appeared to be partly human and partly ape. Believing the creature to be “an extinct race of apes intermediate between living anthropoids (apes) and man . . . a man-like ape,” Dart labeled the creature the “Southern Ape of Africa,” or *Australopithecus africanus* (Meredith, p. 61). This individual had a brain capacity of approximately 1 pint, or a little less than one-third that of a modern man and about the same as that of modern-day African apes. Yet, according to Dart, these **australopithecines** were different from other animals, for they walked on two legs.

Alas, Dart failed to convince most of the scholarly world. The fact that his British mentors, with whom he had studied, rejected his findings, claiming that Dart had not found a hominin precursor to humankind but a juvenile anthropoid, so disappointed Dart that he stopped his research in this area and plunged into a deep depression. Yet not all despaired. Robert Brown, a Scottish doctor with a keen interest in the origin of mammals, came to South Africa, entered Dart’s laboratory, walked straight past Dart, knelt at the Taung skull, and exclaimed, “I am kneeling in adoration of our ancestor” (Meredith, p. 26). Brown went on to find other fossils and in 1946 copublished a book with Dart, *The South African Fossil Ape-Men: The Australopithecinae*, asserting that “if one could be found alive today, I think it probable that most scientists would regard him as a primitive form of man” (Meredith, p. 32). This book persuaded even the most skeptical of Dart’s and Brown’s critics.

The fact that australopithecines survived at all for about 3 million years in a hostile environment is remarkable. But they did, and over the many million years of their existence in Africa, the australopithecines developed into more than six species. (A species is a group of animals or plants possessing one or more distinctive characteristics.) It is important to emphasize that these australopithecines were not humans but that they carried the genetic and biological material out of which modern humans would later emerge.

LUCY Luckily for researchers, australopithecines existed not only in southern Africa but in the north as well. In 1974, an archaeological team working at a site in present-day Ethiopia unearthed a relatively intact skeleton of a young adult female australopithecine in the valley of the Awash River. The researchers gave the skeleton a nickname, Lucy, based on the popular Beatles song “Lucy in the Sky with Diamonds.”

Lucy was extraordinary. She stood a little over 3 feet tall, she walked upright, her skull contained a brain within the ape size range, and her jaw and teeth were humanlike. Her arms were long, hanging halfway from her hips to her knees, and her legs were short—suggesting that she was a skilled tree climber, might not have been two-footed at all times, and sometimes resorted to arms for locomotion, in the fashion of a modern baboon. Above all, Lucy’s skeleton was very, very old—half a million years older than any other complete hominin skeleton



Fossil Bones of Lucy. Archaeologist Donald Johanson discovered the fossilized bones of this young female in the Afar region of Ethiopia. They are believed to date from approximately 3.2 million years ago and provide evidence of some of the first hominins to appear in Africa. This find was of great importance because the bones were so fully and completely preserved.

found up to that time. Lucy left the scholarly world with no doubt that human precursors were walking around as early as 3 million years ago. (See Table 1.1.)

ADAPTATION To survive, hominins had to adapt and evolve to keep pace with physical environments that underwent rapid and destabilizing change—for if they did not, they would die out. Many of the early hominin groups did just that. The places where researchers found early hominin remains in southern and eastern Africa were characterized by drastic changes in the earth’s climate, with regions going from being heavily forested and well watered to being arid and desertlike and then back again. Survival required constant adaptation (the ability to alter behavior

TABLE 1.1 | Human Evolution

SPECIES	TIME
<i>Orrorin tugenensis</i>	6 MILLION YEARS AGO
<i>Australopithecus anamensis</i>	4.2 MILLION YEARS AGO
<i>Australopithecus afarensis</i> (INCLUDING LUCY)	3.4 MILLION YEARS AGO
<i>Australopithecus africanus</i>	3.0 MILLION YEARS AGO
<i>Homo habilis</i> (INCLUDING DEAR BOY)	2.5 MILLION YEARS AGO
<i>Homo erectus and Homo ergaster</i> (INCLUDING JAVA AND PEKING MAN)	2 MILLION YEARS AGO
<i>Homo heidelbergensis</i> (COMMON ANCESTOR OF NEANDERTHALS AND HOMO SAPIENS)	600,000 YEARS AGO
<i>Homo neanderthalis</i>	200,000 YEARS AGO
<i>Homo sapiens</i>	200,000 YEARS AGO
<i>Homo sapiens sapiens</i> (MODERN HUMANS)	35,000 YEARS AGO

and to innovate) and finding new ways of doing things. Some hominin groups were better at it than others. (See Map 1.1.)

In adapting, early hominins began to distinguish themselves from other mammals that were physically similar to themselves. It was not their hunting prowess that made the hominins stand out, because plenty of other species chased their prey with skill and dexterity. The major trait at this stage that gave early hominins a real advantage for survival was bipedalism: they became “two-footed” creatures that stood upright. At some point, the first hominins were able to remain upright and move about, leaving their arms and hands free for various useful tasks, such as carrying food over long distances. Once they ventured into open savannas (grassy plains with a few scattered trees), about 1.7 million years ago, hominins had a tremendous advantage. They were the only primates (an order of mammals consisting of humans, apes, and monkeys) to move consistently on two legs. Because they could move continuously and over great distances, they were able to migrate out of hostile environments and into more hospitable locations as needed.

Explaining why and how hominins began to walk on two legs is critical to understanding our human origins and how humans became differentiated from other animal groups. Along with the other primates, the first hominins enjoyed the advantages of being long-limbed, tree-loving animals with good vision and dexterous hands. Why did these primates, in contrast to their closest relatives (gorillas and chimpanzees), leave the shelter of trees and venture out into the open grasslands, where they were vulnerable to attack? The answer is not self-evident. Explaining

how and why some apes took these first steps also sheds light on why humanity’s origins lie in Africa. Fifteen million years ago there were apes all over the world, so why did a small number of them evolve new traits in Africa?

ENVIRONMENTAL CHANGES Approximately 40 million years ago, the world endured its fourth great ice age, during which the earth’s temperatures plunged and its continental ice sheets, polar ice sheets, and mountain glaciers increased. We know this because of the work of paleoclimatologists during the last several decades using measurements of ice cores and oxygen isotopes in the ocean to chart the often radical changes in the world’s climate. This ice age lasted until 10,000 years ago. Like all ice ages, it had warming and cooling phases that lasted between 40,000 and 100,000 years each. Between 10 and 12 million years ago, the climate in Africa went through one such cooling and drying phase. To the east of Africa’s Rift Valley, stretching from South Africa north to the Ethiopian highlands, the cooling and drying forced the forests to contract and the savannas to spread. It was in this region that some apes came down from the trees, stood up, and learned to walk, to run, and to live in savanna lands—thus becoming the precursors to humans and distinctive as a new species. Using two feet for locomotion augmented the means for obtaining food and avoiding predators and improved the chances of these creatures to survive in constantly changing environments.

In addition to being bipedal, hominins had another trait that helped them survive: opposable thumbs. This trait, shared with other primates, gave hominins great physical dexterity, enhancing their ability to explore and to alter materials found in nature—especially to create and use tools. They also used increased powers of observation and memory, what we call cognitive skills (such as problem solving and—much later—language), to gather wild berries and grains and to scavenge the meat and marrow of animals that had died of natural causes or as the prey of predators. All primates are good at these activities, but hominins excelled at them. Cognition was destined to become the basis for further developments and was another characteristic that separated hominins from their closest species.

The early hominins were highly social. They lived in bands of about twenty-five individuals, surviving by hunting small game and gathering wild plants. Not yet a match for large predators, they had to find safe hiding places. They also sought ecological niches where a diverse supply of wild grains and fruits and abundant wildlife ensured a secure, comfortable existence. In such locations, small hunting bands of twenty-five could swell through alliances with others to as many as 500 individuals. Hominins, like other primates, communicated through gestures, but they also may have developed an early form of spoken language that led (among other things) to the establishment of rules of conduct, customs, and identities.