APPENDIX B

HISTORY SOCIAL SCIENCE FRAMEWORK

FOR CALIFORNIA PUBLIC SCHOOLS

Kindergarten Through Grade Twelve

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APPENDIX B

Problems, Questions, and Themes in the History and Geography Classroom

The course descriptions in this framework are organized to encourage the study of patterns of change and continuity over time. Students investigate the past in chronological sequences from remote to recent eras. Chronological reasoning supports the ability of students to comprehend relationships between causes and effects, demonstrate connections between past and present, and analyze the significance of historical periods and turning points.

Historical Problems as a Foundation of Study

The *California Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects* (CA CCSS for ELA/Literacy), the *College, Career, and Civic Life (C3) Framework for Social Studies State Standards* (C3 Framework), and the *California English Language Development Standards* (CA ELD Standards) all define the development of historical thinking skills in terms of critical inquiry. Presenting analytical problems and posing significant questions about human

thought and action in the past should be at the heart of history education. As the C3 Framework (NCSS 2013, 24) declares, "central to a rich social studies experience is the capacity for developing questions that can frame and advance an inquiry." Recent research on issues of how students learn about the past shows persuasively that they are likely to achieve more effective outcomes when they and their teachers begin, not merely with statements or outlines of material to be covered, but by defining problems in relation to particular historical developments and translating these problems into logical and open-ended historical questions.[1] Students explore plausible answers to their selected questions on a basis of documentary, material, or other forms of historical evidence. Historical problems may be constructed at widely varying levels of intellectual sophistication and complexity, and they must be tailored to the grade and developmental level of students. Even so, teachers may introduce this strategy at any grade level and in the context of California, United States, or world history and geography, as well as in the study of civics and economics.

Launching study of the historical topics described in this framework with overarching problems to be examined invariably encourages teachers and students to ask "*Why* are we studying this topic? Why might the knowledge learned from this study be important to us? How might the topic be significant for understanding our own world? How will the texts we read or images we look at help answer our main questions? Erecting investigations of the past on a platform of inquiry gives intellectual purpose to study, helps classrooms prioritize and organize concepts and information, encourages analytical comparison of historical developments across time and space, and helps shape anticipated learning outcomes and authentic student assessments.

In the absence of questions that guide study, students may be more inclined to perceive history education as mainly tasks to be completed—information to be

1. Robert B. Bain, "Challenges of Teaching and Learning World History," in Douglas Northrop, ed. *A Companion to World History* (Malden, MA: Wiley-Blackwell, 2012), 111–127; Peter J. Lee, "Putting Principles into Practice: Understanding History," in J. Bransford and S. Donavan, eds., *How Students Learn History in the Classroom* (Washington, DC: National Academy of Sciences, 2005), 31–77; Denis Shemilt, "Drinking an Ocean and Pissing a Cupful: How Adolescents Make Sense of History," in L. Symcox and A. Wilschut, eds., *The Problem of the Canon and the Future of History Teaching* (Charlotte, NC: Information Age, 2009), 141–209; Sam Wineburg, *Historical Thinking and Other Unnatural Acts: Charting the Future of Teaching the Past* (Philadelphia: Temple University Press, 2001).

covered, readings to be completed, activities to be performed, or homework to be handed in. For example, colonial New England is an important subject in United States history, but its study becomes dynamic when posed as one or more large and people-centered historical questions: Why did British men and women want to cross the Atlantic to settle in New England in the seventeenth century when native peoples already inhabited that region? What kind of society did Europeans try to create, one that was the same as in Britain, or something new? Why was colonial New England settled mainly by European migrants but the British colonies in the Caribbean region mainly by African slaves?

Some topics in history may suggest an obvious problem and a single main question. Others may require teachers and students to ponder what the significant historical issue might be and to float a number of questions that might be cogent and engaging. Some questions may have clear relevance for students' own lives. Others may probe for greater understanding of how people lived in the distant past, why individuals or groups made the momentous decisions they did, or why some conditions in human societies have changed rapidly but others remained for generations.

Historical Problems at Different Scales

This framework encourages teachers and students to explore the past at different scales of time, places, and subject matters. Classrooms investigate some historical developments that evolved over long periods of time or involved people around the world. Or they may investigate others that were compressed in time or that took place in a single country or city. Students examine key events, particular groups, and individual achievements but also explore their historical significance by placing them in a larger comparative, regional, or global context. One of the skill pathways recommended in the C3 Framework guidelines (NCSS 2013, 46) is evaluation of "how historical events and developments were shaped by unique circumstances of time and place as well as broader historical contexts."

Study should involve flexible shifting between different contexts of time, space, and topic as well as investigation of historical problems at various scales. It is not that history is seen more clearly at small scales than at big ones; rather, it is that *different things*—different events, different human groups, different patterns of change and continuity—are seen. From the study of geography, one learns that a

map of one's neighborhood is appropriate for understanding local landscapes or traffic routes, but a map of the whole United States is needed to query, for example, the importance of national railway building in the nineteenth century or the relative impact of the Great Depression on different parts of the country.

Viewing the past at relatively large scales not only throws into relief the broader significance of local events, particular inventions, or individual deeds. It also introduces students to important developments such as the growth of major religions or the spread of democratic ideas that cut across particular civilizations, regions, or countries. On the other hand, an in-depth study of the past on relatively small scales anchors "big pictures" to concrete examples, illustrations, stories, ideas, and personalities. Teachers and students may tailor the scale at which they pose a historical problem to the class in the time they have to investigate it, or they may introduce a single topic at two or more scales. For example, both this framework and the History–Social Science Content Standards for grade seven world history recommend study of the Black Death of the fourteenth century as a calamity that affected nearly all of Europe.

Students may also benefit, however, by moving to a smaller scale to undertake a case study that poses questions about the social impact of this plague pandemic on, say, a single English town. Alternatively, students may zoom outward to consider the whole Afroeurasian context of the Black Death, exploring its Inner Eurasia origins, the means of its spread across the hemisphere, and its comparative effects on peoples of China, the Middle East, and North Africa, as well as of Europe. Furthermore, students may compare the Black Death as a trans-hemispheric phenomenon with modern or recent examples of large-scale pandemics and their consequences.

Guiding Questions with Historical Themes

When teachers approach history as a process of critical inquiry, they may wish to emphasize some types or categories of history more than others, depending on the topic under study. These categories typically include political ideas and institutions, production and trade, technology, belief systems, gender issues, the environment, and so on. By giving special attention to particular modes of change and continuity, teachers may achieve greater subject-matter coherence. They may also formulate questions that examine particular types of historical development

in order to take advantage of their own particular intellectual interests or strengths. Educators use the word *theme* in different ways. This framework defines it as subject matter that addresses specific spheres of human thought and activity over time—in other words—the persistent and recurring issues of the human condition.

Notwithstanding the value of thematic investigation, this framework makes clear that historical learning is most engaging and successful when the structure of learning is fundamentally chronological. A curriculum whose structure is too rigidly thematic, centering on the study of such categories as "empire," "human rights," "religion," or "technology" one after the other and over relatively long temporal sequences risks detaching particular phenomena from the wider social contexts in which they may be best understood or, worse, reducing history—the study of change over time—to "background information" for exploring current issues.

Nevertheless, there are many engaging historical problems that address universal or enduring aspects of the human venture and shed light on the exploration of what it means to be human in the world and to what extent differences and similarities have defined human interactions over time. Attention to these questions fosters comparative thinking as well as analytical links between past events and present conditions. Comparative thinking also provides opportunities to connect study of the past to other humanistic and social scientific disciplines, not only civics, economics, and geography, but also sociology, anthropology, philosophy, religious studies, and the arts.

Teachers may best introduce thematic subjects in chronologically grounded studies by choosing particular themes for emphasis during all or part of the school year. Teachers highlight topics in this framework that relate to chosen themes, repeatedly posing questions that weave those themes into the sequential study of historical eras.

Teachers may identify a wide range of thematic ideas. The seven key themes presented here represent a variety of historical spheres that classrooms may explore. These descriptions are intended to suggest historical issues that teachers and students may address in pursuing the topics in both United States and world

history in chronological order.[2] A set of sample historical questions pertinent to grades five through eight and ten and eleven follow each key theme description.

Key Theme 1: Patterns of Population

The number of people inhabiting the world, the distribution of populations, and the migration patterns of men and women from one region to another have always had a large effect on all other types of change. The study of population size, density, and distribution is called *demography.*

Ninety thousand years ago there may have been fewer than 100,000 human beings on the planet. Today there are more than 7.4 billion. Compared to most animal species, humans have multiplied at an astounding rate in that period and especially in the past 300 years. When today's schoolchildren are thirty-something in 2035, they should expect to share the earth with about 8.7 billion people.[3] The global population has grown over millennia because humans have shown the ability to acquire new skills and invent new technologies over and over again. This has allowed them to settle new regions and find new ways to control their environment.

The population of hominid ancestors began to grow, though very gradually, after they began to make tools, perhaps about 2.4 million years ago. In the following eons, hominids developed technologies, including a variety of tools and knowledge of how to use fire. These innovations allowed them to spread from the eastern side of Africa to other parts of that continent and as far east as Indonesia and China.

From about 200,000 years ago, the modern human species evolved, that is, *Homo sapiens,* or people "like us." Eventually this species acquired language, a talent that permitted people to learn from one another and to pass knowledge from one generation to the next. Consequently, people invented much more

2. These descriptions are adapted from the seven "Key Themes" in World History for Us All, a Web-based model curriculum for middle and high school world history at http://worldhistoryforusall.sdsu.edu. World History for Us All is a project of the National Center for History in the Schools (Department of History, University of California, Los Angeles) in cooperation with San Diego State University.

3. United Nations Department of Economic and Social Affairs, Population Division, Population Estimates and Projections Section, http://esa.un.org/unpd/wpp/unpp/panel_population.htm.

sophisticated tools, and in turn, these inventions allowed humans to settle more challenging environments, including very cold ones. By 15,000 years ago, or even earlier, people inhabited every continent except Antarctica. In all these places, people survived by foraging, hunting, and fishing, and they lived in bands, that is, communities typically numbering no more than a few dozen men, women, and children. World population began to rise, but very gradually.

The period of world history extending from about 10,000 to 300 years ago is called the agrarian age, because more and more people lived by farming or animal-raising than only by foraging and hunting. Agriculture allowed people to settle in larger, denser groups because a given piece of territory could support many more farmers than it could food gatherers. As farming technologies improved, people began to build villages, small towns, and, about 5,500 years ago, the first cities. In the 10,000 years of the agrarian age, global population rose from about 6 million to 680 million.

In the eighteenth century, human numbers began to shoot up at a much faster rate than ever before. Today five babies are born and only two people die in the world every second. That makes a net gain of three new people every second. The crowding of this planet has had an enormous impact on the way people live. But why did this acceleration happen?

One factor is the mass exploitation of coal, petroleum, and natural gas. This fossil fuel revolution released vast amounts of energy for human use, driving both the industrial revolution and soaring agricultural production. The planet has therefore been able to feed, clothe, and house many more people than during the agrarian age. A second factor has been advances in medicine and public health that, on a global scale, have pushed up both birthrates and life expectancies far higher than in earlier ages. A third factor has been the development of much faster and more efficient systems for moving food and manufactured goods around the world.

Global population growth has not always been smooth. Over the long term, demographic dips have occurred, some of them severe. Between 1300 and 1400, for example, world population may have dropped about 16 percent mainly due to a combination of climatic cooling (the "Little Ice Age") and recurring plague epidemics that started with the Black Death.

In the sixteenth century, the Indian population in the Americas dropped catastrophically primarily due to contact with people from Eurasia and Africa who introduced infectious diseases previously unknown in the Western Hemisphere and employed weapons and means of transportation previously unknown in the Americas in patterns of conquest and settlement. In the twentieth century, wars, revolutions, genocides, epidemics, and famines carried off tens of millions of people. None of those disasters, however, offset the accelerating population of recent centuries.

The growth and multiplication of cities in the world is an important aspect of demographic change. Seven thousand years ago, the planet had no cities. The earliest ones appeared in the Tigris-Euphrates, Nile, and Indus River valleys between 6,000 and 4,000 years ago, though only a tiny percentage of global population lived in them. As recently as 1800 CE, only about 3 percent of humans inhabited towns of 5,000 or more people. Today, however, about 50 percent live in cities. Tokyo, the world's biggest city at present, has more than 37 million inhabitants, a number perhaps nearly equal to the population of the entire planet 5,000 years ago. Of the 25 biggest cities in the world today, only two—New York and Los Angeles—are in the United States. Some cities have become gigantic so recently that many Americans might have trouble finding them on a map—for example, Dhaka, Shenzhen, or Lagos.

The world's rural, that is, nonurban population lives in small towns, villages, farmsteads, or nomad camps. As of 2010, less than 20 percent of the United States population was rural. By contrast, Africa today is about two-thirds rural, despite the continent's many big cities. Living in the country, however, does not necessarily mean that people have plenty of room for themselves. On the island of Java in Indonesia, for example, there are about 2,000 people per square mile, most of them farmers.

Human migration is another important part of population history. The first great migration was the peopling of the earth. That process started on the eastern side of tropical Africa and, by 14,000 years ago or perhaps earlier, human groups had reached the southern end of South America. Since then, people have continued to travel and migrate, sometimes short distances, sometimes very long ones. The distribution of populations in terms of the country or region people inhabit has constantly changed. Large numbers have migrated permanently to new homes, but

others have moved temporarily to perform seasonal labor or to work for companies abroad. Most men and women who have migrated voluntarily have aimed to settle in new lands to seek better jobs or simply safety from war or famine or the effects of changes in climate, even though they do not necessarily find what they want when they reach their destination.

Large-scale and long-term migrations in world history have included human colonization of islands scattered across the Pacific Ocean, the movement of Bantu-speaking farmers throughout central and southern Africa, the forced migration of African slaves to the Americas, and the movement of Europeans in the nineteenth century to lands with temperate climates, especially to the United States, but also to South America, Russia, Australia, and South Africa. Rural-to-urban migration has also been a worldwide pattern. Cities have always attracted country people because they offer new occupations, military protection, social support, public services, and cultural variety. The communication and transport revolution that began with the railroad, steamship, and telegraph less than 300 years ago has made possible migratory movements at a much greater scale than in earlier eras.

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Population growth and density have had a huge impact on how people live, work, and get along together. The presence today of more than 7 billion people on the planet represents a drastic change from just a century ago. Population growth, urbanization, and migration affect people's daily lives in countless ways. As of 2010, for example, nearly 13 per cent of the U.S. population was born outside its borders. In today's schoolrooms, therefore, students are more likely than ever to have been born in a different country or to have parents who were. This fact suggests the importance of understanding both the local and global demographic patterns that have shaped the kind of society that exists today.

Key Theme 2: Uses and Abuses of Power

Why don't people live in a world where all human beings are equally powerful, individuals cannot control the actions of one another, and no nation can dominate any other? It is well known that the president of the United States is much more powerful than individual citizens, heads of corporations are more powerful than employees, and the members of public school boards are more

powerful than teachers. Differences in power are present at many levels of human society: between individuals, between states, between social classes. In fact, power is all around.

Changes in power relations have been one of the central themes of history. Much of history, especially before modern times, is about monarchs and peasants, owners and slaves, empires and colonies, one race dominating another, or men dominating women.

Teachers and their students may ask many critical questions about power. Yet consolidation and use of power has existed in dynamic tension with the constant human quest to understand and define the relationship of people with one another. The National Council for the Social Studies, in its Position Statement on Human Rights Education, notes: "Questions about rights and responsibilities of humans in society are as old as humankind. Cultures across the globe have for millennia identified people's rights and guaranteed their protection. Even when tied to group identity—family, band, community, religion, class—socially-acknowledged rights have been used to support fairness, compassion for the poor, and justice for members and strangers. . . . As is often the case in human history, ideals proclaimed in the name of 'We the People' and conduct tolerated in actual practice have sometimes been in conflict." http://www.socialstudies.org/positions/human_rights_education_2014 (accessed June 29, 2017).

For most of history, people lived in tiny, familylike communities that moved periodically during the year. These bands experienced power as personal relationships, as they do in families today. As children grew up, they found themselves playing a part in already established power relationships. Parents normally had power over children, older community members over younger ones. Some individuals enjoyed temporary power because of special skills. For example, a woman or man who knew most about a rare food plant would likely be the person to lead an expedition to gather it. Power, therefore, seems always to have been a natural part of family and personal relations. Relationships in the community however, could turn violent, as they sometimes do in families today.

When agriculture began to emerge about 10,000 years ago, human communities started to grow. In some regions, people began to live in larger, denser settlements. In these communities—the earliest villages, towns, and cities—power relationships

were transformed. Why? In large communities, new types of problems appeared, and many occasions arose when people needed to act collectively. To do that, leaders, managers, or organizers were needed, which meant that ordinary people had to surrender some authority to leaders. People had to act together when under attack, to worship the gods together to ensure good harvests, and to work together to build temples or repair irrigation canals. If hundreds or even thousands of people had to be organized for a task, leaders had to take charge.

But how were leaders selected? In foraging bands and agrarian villages, they probably emerged quite naturally. In communities of that scale, extended families, or kinship groups of people related by birth, marriage, or adoption maintained social order and cooperation. Older members of these groups, as well as members of families that were larger or had been around longer, tended to enjoy higher status. In this way, the community sometimes regarded particular families as being the "natural" leaders.

Communities also chose leaders because of their particular skills, perhaps as fighters, peacemakers, alliance builders, or intermediaries between the community and the gods. Anthropologists have described leaders in relatively small-scale societies as "big men," though in some cases they might be big women. These leaders collected valued goods from their family and friends and then gave them away in large feasts. Eventually, big men could call in these debts by demanding support from those who attended their feasts. In this way, big men accumulated special and sometimes permanent authority. However, if these leaders failed to lead effectively, they might be overthrown. Political power used to work along these lines—for example, among Native American societies of northwestern North America.

About 6,000 years ago, the state began to emerge. The state is a particular form of human organization. The concept of the state includes the idea of government, but the two terms do not mean exactly the same thing. A state is a population that inhabits a territory and that has a central governing authority. A state is assumed to possess sovereignty, which means that it is politically independent of other states and recognizes no authority above itself. In world history, states have varied greatly in size and organization, from city-states centered on a single urban area to huge multiethnic empires. The state possesses a government, which is the group of people and system of institutions that administers and regulates the affairs of the state.

The elements of central government may include, depending on the period of history and a variety of other factors, a supreme ruler (monarch or emperor), a small ruling group (oligarchy), an elected head of state, a code of laws, lawmaking bodies, a bureaucratic administration, a system of courts, a police force, and an army.

Among several types of governments, monarchies and oligarchies were common in premodern times, republics and constitutional monarchies since the nineteenth century. Yet many ancient societies developed codes of laws and rules of public conduct that sought to define and place limitations on the power of rulers and to establish an ethical basis for civic engagement. Examples such as the Code of Hammurabi, the Torah, the Upanishads, the laws of republican Rome, the Analects of Confucius, and the like antedate the Magna Carta and exist across a broad cultural and geographic spectrum.

The earliest states known in Mesopotamia (mainly Iraq and Syria today) had just one city plus surrounding villages and agricultural land. But much larger states, even giant empires, eventually appeared, at first in Egypt more than 5,000 years ago and in Mesopotamia about 4,300 years ago. A particularly spectacular example was the empire centered on Persia ruled by the Achaemenid Dynasty between the sixth and fourth centuries BCE. Its monarchs ruled millions of people and incorporated hundreds of cities and towns stretching for a time from Turkey and Egypt in the west to Afghanistan in the east. The Mongol empire that arose in the thirteenth century CE came to embrace, at its greatest extent, the lands of Eurasia stretching from Poland to Korea. In the later fifteenth century, the Inca Empire extended about 3,000 miles along South America's Pacific coast and Andean mountain spine.

Before modern times, a relatively small elite group controlled the governments of almost all states and held themselves apart from the mass of people over whom they ruled. Whether called king, queen, emperor, sultan, or shah, these rulers typically regarded themselves as the "owners" of the state and the state as their personal property. They expected personal loyalty from the wealthy families, administrators, judges, and soldiers who helped them rule.

Such governments controlled much of the state's resources, which they used freely to force the town-dwellers and farmers who made up most of the population

to pay taxes and do other things that they might not otherwise wish to do. The structure of the state was like a pyramid—a hierarchy of power in which all people were supposed to know which level they belonged on. From the royal household, military command, and top bureaucrats down to village chiefs, peasants, and slaves, everyone was expected to know who had more power and who had less.

Government and religious leaders usually made close alliances. Religious specialists typically enjoyed a generous income and privileges in return for teaching people that they had a moral duty to obey those above them in the hierarchy. Finally, all the premodern states that much is known about were patriarchal. Women exerted considerable informal power in the "private sphere," whether in the royal palace or the peasant household, but on all levels of the social pyramid men tended to hold authority over women in public life.

Rather than constantly coerce and punish people, the governments of kingdoms and empires normally found it advantageous to get people to pay taxes, perform labor, and otherwise cooperate voluntarily. Peasants who felt continually repressed and terrorized tended to produce fewer of the crops and other resources that the government needed.

To keep the society and economy running smoothly, rulers typically sought the advice and opinions of local leaders, respected laws and customs much of the time, protected the population against invasions or other disasters, and maintained canals, roads, and marketplaces. Rulers and ruled commonly engaged in negotiations, though these were sometimes hidden from public view. Furthermore, premodern states did not have sophisticated enough communications or an administrative system to allow them to interfere much in the day-to-day lives of ordinary people, especially those who lived far from the major cities. In rural or remote provinces, most men and women dealt mainly with local chiefs, judges, and military officers. In these circumstances, the mass of population at the bottom levels of the pyramid often accepted their status to safeguard their families and get on with their lives. Riots and rebellions periodically broke out but usually only when poverty, hunger, or government brutality made people desperate.

In modern times, and especially in the last two centuries, the nature of states has dramatically changed. For one thing, the number of states in the world, both large and small, has declined from at least a few thousand just two or three

centuries ago to fewer than 200 today. Almost all of these sovereign states are members of the United Nations (U.N.). In addition, modern states, even relatively small ones, are much more powerful than earlier states were. Their governments intervene much more insistently in people's daily lives, partly due to much more powerful means of coercion and sophisticated communications technologies. In the contemporary period, the power of the state is sometimes seen as in contest with or influenced by the power of nongovernmental economic entities, such as large and multinational corporations whose economic power may influence the exercise of power by the state.

In the past two centuries and especially since the mid-twentieth century, many states have used wealth and technology to benefit their populations in numerous ways. Others, however, have used their resources mainly to benefit a relatively small ruling group. Repressive, authoritarian states such as Germany under the Nazis, Russia under Stalin, China under Mao Zedong, or Iraq under Saddam Hussein have aimed to eliminate as much as possible all layers of power or influence separating the central government, typically dominated by a single political party or group of military officers, from everyone else in the society. In the past few decades, fortunately, the number of states in which political leaders govern, keep order, protect rights, and work for economic prosperity in ways that involve the active, voluntary participation of the population have grown as a percentage of all sovereign states.

Modern states with strong democratic institutions, whether they are republics or constitutional monarchies, invariably possess certain key characteristics. One is the idea that individuals are citizens, not the personal subjects of the ruler, which was the case in most premodern states. Citizens have a basically impersonal rather than personal relationship with government officials. In democratic republics, for example, citizens have an interest in safeguarding the *office* of president, not in keeping a particular individual in the presidency for an indefinite period.

A second characteristic is the rule of law, the idea that not only does society have laws people are required to obey but that *everyone,* including the most powerful political leaders, is required to obey them. A third feature is the concept of accountability: the rulers, whether monarchs, prime ministers, or presidents, cannot do whatever they like but must account for their actions to the citizens by

abiding by the decisions of elected legislatures (representatives of the people) and by periodically submitting themselves to election.

The ideal that modern states *should* have these characteristics is nearly universal. Even the most ruthless dictators in modern world history claim to represent the will of the citizenry in order to make themselves seem legitimate in the eyes of the world. These rulers take the title of president, hold presidential elections (in which they are the only candidate!), and give lip service to constitutions and bills of rights. Democratic institutions in states like these are in reality extremely weak. World history also offers many examples of the institutions, which hold states together, completely collapsing as a consequence of invasions, civil wars, or economic disruption. In no state in the world, however, do modern democratic institutions work perfectly. To preserve them, citizens must be vigilant against political corruption, miscarriages of the rule of law, severe economic inequality, bureaucratic incompetence, and the excessive influence of special-interest groups. A challenge for large democratic societies is to maintain their democratic structure without succumbing to a coercive majoritarianism that overruns these different communities within communities.

In the electronic age, possessing and controlling information is a crucial way of exerting power. States, corporations, interest groups, universities, and other holders of power manage and disseminate floods of valuable information. Governments and other power groups from ancient times to today have had an interest in controlling the flow of knowledge and news, including official propaganda and commercial advertising. Understanding the complex relationship in history between information and power will help citizens consider more carefully the sources, accuracy, and validity of information they receive.

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In our complex world, powerful individuals and groups affect people's lives every day. To deal with power, it is necessary to understand how it evolved in history. Many students in school today will grow up to exercise some degree of power as managers, executives, soldiers, parents, educators, or officeholders. A person's ethnicity, gender, age, occupation, wealth, education, and state of health may all affect the power exercised in his or her lifetime. Students need to see the history of states and their governments in the context of a long-term historical

perspective to understand how they work in people's lives today. The power that governments, corporations, armies, and other groups exercise also raises moral questions of right and wrong, and so does the power inherent in a particular socioeconomic, racial, ethnic, or indigenous status. How does society know when governments or corporations are using power appropriately? Is it ever right to try to overthrow a government? When is a country justified in using military power? Why should the rule of law apply equally to everyone? Learning how power has been used in the past helps society consider how it may be applied justly and compassionately.

Key Theme 3: Worlds of Exchange

People tend to take today's complex world economy for granted. Americans jog in shoes made in Indonesia, wear shirts made in Guatemala, and use smartphones whose components may be manufactured in several different countries. Columbian coffee, Argentinian beef, and Senegalese peanuts are consumed without awareness of the webs of exchange that brought those products to local stores.

People also tend to believe that international trade is a fairly recent development in world history. In fact, people have been exchanging products, technologies, and information, often over long distances, since Paleolithic times. The sea, air, and land routes that move goods around the world today are really complex extensions of networks of exchange that people began to organize long before the earliest cities arose.

Routes of commerce that connected the early river valley civilizations of Egypt, Mesopotamia, and the Indus River valley became gradually connected to other regional networks, eventually spreading across and interlocking most of Afroeurasia. Well before Europe became economically important on the world scene, China, India, and the Middle East routinely exchanged products by way of both the Inner Eurasian silk roads and the maritime routes of the Indian Ocean. Native Americans created ancient trade routes that linked far-flung areas of North America and ran along the Andean mountain spine. European desires to gain direct access to African gold and South Asian pepper inspired long voyages of exploration in the fifteenth and sixteenth centuries. Those voyages greatly transformed older patterns of trade. For the first time in about 12,000 years,

people living in Afroeurasia and the Americas forged links with each other across both the Atlantic and Pacific Oceans, making possible a truly globe-encircling system of exchange.

Over time, exchanges of goods across political or cultural frontiers have become progressively deeper, denser, and more intricate, linking more societies together over greater distances. Furthermore, exchanges have taken place at accelerating speed due to innovations in transport and communication. A big jump occurred, for example, in the nineteenth century following the invention of the telegraph, railroad, and steamship. The webs of telegraph lines and later undersea cables that wove the globe together are reminders that economic exchange has involved not only products but also information. The history of commerce has involved the exchange of all kinds of cultural and material information, from spear point design to gunpowder technology to Web site data. Furthermore, information about prices, transport schedules, and local market conditions has always been vital to producers, consumers, merchants, and investors.

Why have humans wanted to trade with one another for thousands of years? Their basic motive has been to acquire goods that could not be easily obtained where they live. The fact that people have inhabited widely contrasting ecological zones—temperate grasslands, tropical forests, desert oases—has encouraged exchange between these zones. For example, societies that, in earlier centuries, inhabited the great bend of the Niger River in West Africa and depended on grain farming and fishing for their livelihood traded local products with forest-dwellers to the south, who produced kola nuts and iron goods, and with Sahara Desert communities to the north, who mined and sold salt. In China, the Grand Canal that emperors of the Tang Dynasty began to build in the seventh century CE linked the moist, rice-producing southern regions with the drier, wheat-producing northern lands.

The exchange of goods has taken different forms. Barter, for example, is an ancient practice involving direct and reciprocal exchange of goods or services of supposed equal value: for example, farmers and pastoralists exchanging grain for animal products. This method worked well for local trade but was too cumbersome for long-distance exchange. Exchange of tokens of various kinds facilitated trade on larger scales.

In the first millennium BCE, merchants who moved goods long distances across Eurasia started using gold and silver as preferred mediums of exchange. The natural scarcity of these metals, together with their physical characteristics and malleability, made metals well suited as early money. The oldest evidence of the use of gold or silver coins comes from the kingdom of Lydia in Anatolia (modern Turkey) in the seventh century BCE. The shells of cowries, a small sea snail, came into use in West Africa as currency nearly 1,000 years ago. Cowrie shells had scarcity value there because merchants imported them thousands of miles from the Indian Ocean to routes leading south across the Sahara Desert.

Individual ethnic groups, cities, or regions have frequently specialized in providing particular products in the history of exchange. During much of the past 2,000 years, Chinese ceramic factories have supplied pottery to buyers all across Afroeurasia and, after 1500, around the world. In the early modern centuries, southern India was the leading exporter of cotton textiles to other regions. When states and empires have had the power to do it, they sought to control and tax the movement of products from one place to another.

Groups sharing language and culture have sometimes established trade diasporas. These are networks of merchants who have dispersed themselves across wide distances and specialized in developing, managing, and profiting from long-distance trade. The word *diaspora* means "scattering." For example, the Phoenicians, whose home cities were clustered at the eastern end of the Mediterranean (what is now Syria, Lebanon, and Israel today), built a trade diaspora in the early first millennium BCE that extended as far west as Spain and Morocco. In the seventeenth and eighteenth centuries, diasporas of French, English, and Native American hunters and traders in upper North America dealt in beaver and other furs, supplying a huge market in Europe.

Networks of economic exchange may be considered as made up of three levels nested in one another—local, regional, and long distance. Everyday products with relatively low value and high bulk, such as grain, dried fish, and timber, provided the basis of local exchanges between towns and the agricultural regions around them. Regional networks featured the exchange of more costly products, for example, textiles, pottery, or metal ware between one town and another in a region. Finally, long-distance trade knitted together cities widely distant from one another to exchange high-value commodities like spices, gold, silk, carpets,

or fine ceramics. In the sixteenth century, most regions of the world became interconnected, laying the basis for the global economy today.

The development of economic exchange networks and advances in technology have always been inseparable. The ability of societies to produce increasing quantities of food or manufactured goods, and to trade these things, has depended on advances in technology and technical skill. People have used and exchanged iron tools and weapons, for example, because artisans in Turkey, East Africa, and perhaps other places invented furnaces hot enough to smelt iron ore. Keeping track of quantities of goods became easier after writing systems were invented more than 5,000 years ago. In just the past few decades, computers have revolutionized the transmission and storage of economic and commercial information.

In recent centuries, successive technological innovations have made possible the transport of goods at faster speeds and in greater volume and at the same time reduced the number of workers required to handle flows of trade. The crew of a Spanish galleon in the sixteenth century, for example, might number 180 sailors. By contrast, crews of 20 or fewer people operate modern supertankers laden with 2 million barrels of crude oil.

Systems of production and exchange have also been dependent on the amount of energy that humans have been able to tap. The energy that people could harness with human and animal muscle power, wind, flowing water, or the heat of burning wood was limited and inefficient. In the eighteenth century, however, inventers and entrepreneurs, working mainly in England at first, found ways to both exploit coal as a fuel in much greater quantities and to drive machinery with pressurized steam.

This was the start of the industrial revolution, which allowed humans to burst through the energy ceiling that had previously kept production of food and manufactured goods under strict limits. Coal, petroleum, natural gas, electricity, and nuclear fission together multiplied many times the energy available to human society. Consequently, production, trade, and consumption have soared since the nineteenth century. Even though the world economy continues to have ups and down—that is, phases of growth and contraction—one can scarcely imagine what the upper limits of worldwide exchange might be in the future.

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Throughout most of the past 200,000 years, humans have lived in small groups that mostly fed and clothed themselves. They traded with neighbors or strangers only for things they could not produce themselves. Today, by contrast, self-sufficient societies are almost unknown. Even the hundreds of millions of families in the world that continue to grow food for themselves depend on market exchanges for many of their needs. In the United States, only a tiny minority of families produces its own food.

Most Americans are dependent on the market for nearly all their material desires and needs. Most of the goods and information consumed originate from producers that are never seen or known. As working teenagers or fully employed adults, most Americans contribute something to the global economy. However, they usually do it in narrowly specialized ways: serving hamburgers, for example, or selling life insurance. In addition, fluctuations in production, finance, and trade in distant parts of the world may seriously affect the income, employment chances, and career plans that Americans have.

How did Americans become so dependent on the global economy, and how might that dependence affect the direction of their lives? Answers to these questions require world-scale perspectives—not only the "globalizing" developments of the past few decades—but also the long-term trends that transformed trade from a secondary human economic activity to one that hardly anyone can do without.

Key Theme 4: Haves and Have-Nots

In the Paleolithic era, which embraces most of the history of the human species, few differences of wealth, power, or social status separated individuals from one another. Foraging and hunting communities lived mobile lives, moving from camp to camp and carrying all their possessions with them. Individuals or families did not accumulate large amounts of goods because they could not haul them around and because they found food and other resources in their local neighborhoods. Much more important to these communities were their intangible possessions: networks of family and friends, knowledge of the environment, and stories and rituals to explain life, death, and the workings of supernatural forces. All these elements of culture were easy to carry around, and the idea of personal wealth had little meaning.

When communities that practiced farming and lived in one place most of the year began to appear about 10,000 years ago, ideas about wealth, possession, and personal power began to change. Unlike foragers, early farmers harvested seasonal crops and held food in granaries. As families began to accumulate wealth and to live in dense settlements, they had to confront the question of who had the right to consume stored and protected goods. The idea of personal ownership became more important and complicated.

In principle, most people in small farming communities might have thought that everyone should share equally whatever resources were available. However, in modern studies of many different types of human communities, anthropologists have shown that as communities get larger and more complex, wealth tends to get distributed more and more unequally. In the first few thousand years of the agrarian era, farming technologies and methods improved, allowing villages to grow larger. As that happened, certain families inevitably harvested more grain crops than their neighbors, raised more pigs or sheep, and built more spacious granaries. Perhaps some families worked especially hard, had better luck with harvests, gained control of richer land, or had more children to help with farming, Consequently the distribution of wealth among the families became more lopsided.

Additionally, as communities grew, some of them expanding into big towns and cities, they had to accept leaders to coordinate the activities of the whole group. As evident in Key Theme 2, the success and stability of communities required that leaders be given special power over other people. Leaders, whether chiefs, priests, or monarchs, also had to control at least part of the community's wealth in order to manage large public projects: for example, irrigation works, religious temples, or defensive walls. In this way, leaders and their families ended up controlling more wealth than most other people did. Furthermore, once leaders gained control of a substantial part of a society's wealth, they had to ensure their power by recruiting personal bodyguards, gangs of "enforcers," and even armies. It is not surprising, therefore, that until recent centuries the wealthy have almost always been the most powerful, and vice versa. Monarchs, aristocrats, generals, high bureaucrats, and religious leaders have almost always lived much more comfortably than those over whom they have ruled.

In the agrarian age, ruling elites amassed and consumed a great deal of wealth from farming, mining, city industries, and trade. They also collected taxes and

tributes on those productive activities to pay for their government bureaus, armies, communication systems, lavish royal courts, and luxurious lifestyles. In other words, ruling classes tended to "pump" their populations for wealth, spend it or squirrel it away, then go back to their populations to collect more.

As urban societies took up manufacturing and trade on a larger scale, however, the role of wealth began to change. Resourceful individuals found that wealth could be used to create more wealth by investing in productive enterprises. They might improve an irrigation system to grow crops for private sale in the marketplace, build a ship to undertake profitable long-distance trade, or open an inn to provide food and shelter to paying travelers.

Many features of market economies appeared in ancient times. Manufacturers, artisans, and merchants—sometimes of humble family origins—found that investing even a little wealth in some enterprise might not only make them rich but also buy social privileges or political influence. In the agrarian era, however, the wealthiest people were rarely private entrepreneurs. Rather, people at the top rungs of society acquired most of their wealth from control of productive land, often great farming estates worked by peasants and slaves. Those families usually passed their wealth and power to their own heirs. For ruling elites, their status was measured by noble ancestry, traditional privileges, and favorable laws. And as long as they could command plenty of laborers to farm their lands and work their mines, they were not usually interested in investing their wealth in new labor-saving technologies. The cost of labor was not a problem!

These attitudes began to change after about 400 years ago. As international commerce greatly expanded, especially after all the world's inhabited continents were linked, investment of wealth in machine-based manufacturing, new mining techniques, better farming methods, and improved transport and communications systems made good economic sense. The industrial revolution of the eighteenth and nineteenth centuries—based initially on the harnessing of energy from coal burning and steam engines—represented both an enormous expansion of human productive power and the generating of unheard-of amounts of wealth in the hands of relatively few people. In the early industrializing countries such as Britain, Belgium, the United States, Germany, and Japan, working people saw their living standards rise. Even so, the wealthiest members of society, which now included many more capitalist investors and entrepreneurs, became wealthier still.

One of the great ironies of the twentieth century was that colossal increases in economic productivity in the world did not produce betterment for all. Even though strong middle classes of relatively well-off people emerged in many countries, especially the most industrialized ones, the gap between an affluent minority at one end of the economic spectrum and an impoverished majority at the other end became wider. In 2011, for example, 42 percent of total global income went to the wealthiest 10 percent of the world's population, and 1 percent went to the poorest 10 percent.

Also, a *regional gap* has grown wider as well. Since ancient times, all agrarian societies had rich and poor social classes. But by the early twentieth century, differences in living standards correlated with social position not only *within* a society but also *between* societies in different parts of the world. For example, the wealthiest people in the major industrialized countries have tended to be much richer than the wealthiest people in developing countries. And wage-earning men and women in the United States or Western Europe have had higher living standards than working people in many countries of Africa or Latin America.

In the mid-twentieth century, the idea that all persons should be guaranteed certain basic economic and social rights, such as a place to live, a job with a living wage, necessary health care, education, protection in childhood and in old age, gained considerable support in international agreements. Yet, the institutionalization of these standards has lagged behind their initial expression.

Ever since the first dense agrarian societies arose, people have sought ways to explain and justify social gaps in both power and wealth. On the one hand, world religions have all taught that compassion, unselfishness, and moral responsibility were important virtues. Consequently, those at the top of the social pyramid lived with pressure from pious priests and holy teachers to improve the conditions of the poor and to govern with moderation and benevolence. On the other hand, religious leaders also allied themselves with ruling elites in the task of maintaining stable social order, opposing, for example, popular movements for social equality, which might "rock the boat." Until quite recent times, therefore, all the major belief systems taught that some degree of social inequality was part of the natural order of things. The fact is that religions have both supported inequality and opposed it.

Is inequality an inevitable dimension of modern society? Or will a time come when there is enough wealth to ensure that all people live decent lives? Certainly, inequalities based simply on birth—that is, on the place in the social hierarchy that one's family occupied—have faded in the past two centuries. It is also easier today than in premodern times for an individual from a poor background to become wealthy. The middle classes in the world today enjoy more material abundance than did most aristocrats in the past. At the same time, however, more people live close to starvation than ever before.

In the nineteenth century some European intellectuals theorized that nothing could be done about this. Poor people remain poor because they are lazy, incompetent, or stupid. Most modern explanations of inequality, however, are less harsh, recognizing numerous economic, social, and political factors that contribute to poverty. Indeed, many twentieth- and twenty-first century international agreements and national laws and charters have recognized a responsibility on the part of governments and economic powers to recognize basic levels of economic, social, and physical well-being as rights belonging to all people. Is it likely that rich nations maintain their wealth mainly by exploiting poorer nations? Or is it simply that the benefits of industrialization have not yet spread to many parts of the world? Will most countries eventually develop economically to the point that their inhabitants begin to enjoy the affluence that middle classes do in the richest countries? The yawning gap between the haves and have-nots and what is to be done about it is one of the great questions of this time.

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No matter the country, social and economic inequalities among individuals and groups are part of daily experience. At the same time, many people deplore extreme or unjust inequalities, consider them contrary to the right of every person to live with a basic level of human dignity and well-being, and strive to lessen or eliminate them. Over the long run, the study of human history shows a clear connection between social inequality and the increasing size, density, and complexity of human societies.

History also shows that in the past few hundred years humans have made progress in reducing some forms of inequality, notably slavery, political power based on birth, and denial of social rights to women. From ancient times, extreme

inequalities have triggered social protests, revolts, and revolutions. Students should consider the connections, both now and in the past, between inequality, the consequences of social instability, and the rise of movements to fight injustice and poverty. Students may ask whether the growing gap between have and have-nots is a threat to democratic societies.

Key Theme 5: Expressing Identity

Who am I? What group do I belong to? Who are my friends? Who are my enemies? What is my identity? Knowing one's identity is like knowing where one's home base is. All humans need to know to which groups they belong and have a sense of what those group memberships entail.

The ability to think in complex ways about one's identity depends fundamentally on language. Being conscious of one's identity allows people to shape it in different ways and to change others' perceptions of them. Evidence from the Paleolithic era shows that people deliberately molded their personal identities by adopting distinctive bodily ornamentation—for example, wearing colorful beads or painting themselves with ochre pigment. Marks or decorations on the body, including tattoos, scars, piercings, and jewelry, make powerful statements about who people are. Is a person a man or a women? An aristocrat or a peasant? A factory worker or an executive? In probably every society in the world, hairstyles, clothing, facial makeup, and gestures act as markers of identity. Even today, people can immediately tell a lot about each other by looking at dress, hair, makeup, and posture. In the 1988 movie *Working Girl,* for example, female characters communicate their different positions in the corporate hierarchy by their hairstyles ("big hair" for office staff, soft curls for executives) and the jewelry they wear (chunky versus fine).

Awareness of identity is important because it helps people make their way through the world. Knowing who one is in relation to others helps people to know who might have beliefs or attitudes in common with them, what is expected in social situations, and how others may react to their presence.

It may be helpful to think about what it would be like to suddenly lose one's identity. Imagine forgetting one's name, losing all documents proving one's identity, or enduring electronic "identity theft." What would a person do? How

easy would it be to survive? In some societies in the past, men or women without a clear social identity were made outcasts. One of the worst punishments anyone could suffer was banishment from one's village or kinship group. This is a theme in Chinua Achebe's famous novel *Things Fall Apart*.

Throughout history people have found many ways to think about or express their identities. In small communities, identity has depended basically on knowing a person's relationship to his or her extended family—to kin. Kinship could be extremely complicated. Modern anthropologists who study small-scale societies often have to draw up complex maps to trace kinship links between different groups. These mental "identity maps" often determined whom one could or could not marry, one's occupation, or those who should be willing to trade favors with an individual.

After about 10,000 years ago, when societies in some parts of the world became much larger and when crowded cities arose, people joined in all sorts of new relationships. In large towns, people might develop a sense of identification not only with kin but also with neighbors who were unrelated but shared the same streets and markets every day. In pastoral societies, where groups moved long distances with flocks or herds each season to find grazing land, identifying with others on the basis of sharing a fixed territory did not work well. Claiming blood kinship ties far beyond the local scale was a more effective way of knowing which group of herders might be friendly and which might be thieves or raiders.

Anthropologists sometimes use the term *tribe* to describe the largest group in a region, especially in herding ways of life, that claims descent from a common ancestor. *Claims* is a key word here because groups that needed, for some reason, to cooperate with one another quite commonly invented kinship relations to establish a foundation of shared identity. ("We believe we are all descended from Ibn Khatib who lived long ago.") Pastoral peoples of the North American plains, the Sahara Desert, or Inner Eurasia (including the Mongols) were generally organized in tribes claiming shared descent from a distant ancestor.

In large societies—where people lived together in the thousands and traveled more frequently for trade, diplomacy, learning, or military service—identity that focused on kinship worked mainly on the local level. New markers of identity were needed when people found themselves dealing more frequently with complete

strangers. Members of different occupations therefore often identified themselves as having similar skills or knowledge by wearing distinctive clothing or by marrying their children into families pursuing the same occupation. From early agrarian times, soldiers, officials, and aristocrats have worn distinctive costumes or uniforms as markers of their social status or political authority. In some societies, for example, only aristocrats or high officers were allowed to carry weapons or ride horses. In the United States and many other countries, judges wear black robes as symbols of their identity as legal experts and as upholders of the rule of law.

As people traveled more, they became aware of belonging to larger communities, most of whose members they would never even meet. For example, people outwardly advertised their religious identity in various ways partly to know to signal to strangers shared spiritual beliefs and moral values. Members of one religious group might shave their heads, another wear their hair short, and a third grow it long or cover it with caps. There are many examples of men and women today identifying their religious affiliation with particular dress, headgear, ornamentation, or public behavior and ritual. In warfare, the clothing and ornaments soldiers wore identified which side they were on—an important marker to be sure! The War of the Roses in fifteenth century England (1483–85) is an example. The two sides in this struggle adopted roses as their symbols of identity and loyalty: one side a white rose, the other a red one.

Language has been one of the most powerful markers of identity because the speakers of a particular language share complex meanings through speech and writing that outsiders cannot understand. Visitors in a foreign city who share a common language often feel an instant rapport.

Throughout history, merchant groups have often preferred to deal with members of their own linguistic community because it tended to strengthen the trust so necessary in business. In modern times, migrants moving from one country to another frequently gravitate to particular regions or cities because they know they will find people who speak their native language and probably share many cultural beliefs and practices.

For thousands of years, people have become proficient at expressing multiple identities, not just one. Individuals who identified themselves one way with their families would likely have to "put on" a somewhat different identity when they

worked as a bodyguard for the local chief or carried goods to a neighboring village for trade. In the modern world, identities tend to be fluid and adjustable, not fixed. People have coexisting identities as children and parents, members of ethnic or religious groups, citizens of countries, affiliates of political parties, or fans of particular football teams. The way identity is expressed often depends on particular social contexts or situations. For example, an American teenager whose immigrant parents speak little English is likely to express one social identity at home and a somewhat different one at school.

Since the rise of the ideology of nationalism and the formation of nation-states, people have belonged to national groups, in a few cases numbering in the hundreds of millions. One scholar calls modern nation-states "imagined communities." This means that the members of the nation do not, by and large, personally know one another. The identity they share exists in their imagination rather than in real relationships. In modern nation-states, individuals identify themselves as citizens, and they have the right to that state's passport. Members of a particular state feel a common sense of identity because they are subject to the same set of laws, liable to service in the same army, obligated to pay the same taxes, or study the same curriculum in school. People also often express a deep emotional attachment to their national identity—their imagined communities—by displaying flags, singing songs, observing patriotic holidays, and using currency imprinted with the faces of past heroes or current monarchs on it. Furthermore, governments usually do everything they can to encourage citizens to identify with the state, especially with the governmental system as it exists. The way of thinking that is called *nationalism* is the modern form of identity that links citizens powerfully to their own governments.

Constructing accounts of history is one of the most powerful ways of strengthening national identity. Reading and thinking about the history of the nation-state to which one belongs is a way of identifying with citizens who lived in the past and with their ideals and achievements. History books may also teach children to identify with past revolutions or struggles for social justice. In France, for example, the French Revolution of 1789 continues to be a potent symbol of national identity.

Individuals who wrote great national histories, such as Charles Beard in the United States, helped create in millions of readers a powerful sense of national

belonging. Governments understand that the way people think about the past affects their attitudes about present conditions and where they place their loyalties and affections. Political leaders know that in a crisis citizens who have a strong sense of national identity will more likely make sacrifices or even fight and die for a national cause.

History also serves other identities besides the national one. For example, historical writing in recent decades about women and gender has thrown into relief the role of women's movements and the shared sense of identity that communities of women have possessed. Twentieth-century historians devoted to Marxist ideology have written books about working class life that helped create a sense of solidarity among industrial workers. Racial, ethnic, and indigenous groups from African Americans to Aboriginal Australians to French Canadians have felt empowered by histories describing the trials and achievements of their own imagined communities. In the contemporary period, the special status of Indigenous Peoples as distinct from a purely ethnic or racial classification has been recognized by international agreements such as the U.N. Declaration on the Rights of Indigenous Peoples and many national laws.

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Knowing one's identity greatly influences behavior and how people behave toward others. A sense of shared identity expressed in many forms and situations has been a powerful shaper of human action throughout history. It can motivate people as powerfully as the desire for wealth or power, and it can lead to both calamity and heroism. History, as a discipline, is very much about identity. Studying the past means learning about the identities of many sorts of communities and how those identities may have appeared, changed, or vanished. Understanding the historical identities of the communities in which people feel they belong is a powerful way of defining one's sense of distinctiveness in the world. In studying world history, teachers and students may ask whether they can feel a sense of identity with the whole of humankind, the "imagined community" to which all belong.

Key Theme 6: Science, Technology, and the Environment

The study of science and technology has to do with the changing ways in which humans have used knowledge to exploit their physical and natural surroundings for human benefit. As people have discovered more and more ways of extracting energy and making use of plants, animals, and minerals for their own purposes, they have begun to alter the biosphere—the zone of Earth that can support life—at an increasing pace. Though technological and scientific creativity has allowed the human species to multiply, it has also transformed the living conditions for all species on earth. Where these accelerating changes will lead is not yet known. They include, for example, an explosion of genetic knowledge that promises effective treatments for numerous diseases. But they also include global warming, which, if it continues, will have devastating effects on humankind's future.

Over time, humans have learned to exploit a huge variety of different physical and natural environments with increasing efficiency. Today, though humans are only one of millions of species, they may control up to 40 percent of all the energy that enters the biosphere from sunlight. The environment includes both biological and physical surroundings. The word *technology* may be basically defined as the various methods, procedures, and tools that humans have used to get food and energy and to change the environment in useful ways—for example, to grow crops, build houses, or communicate through the Internet.

The word *science* is trickier to define. Normally, it refers to the forms of knowledge developed in recent centuries that enable humans to transform their environments faster than ever before. All human societies, however, have created theories about their environments, often embedded in religious traditions. For example, in the Middle Ages of Europe, most educated Christians accepted the description of the universe that the ancient Greek scholar Ptolemy worked out. He put Earth at the center of the universe, and the heavenly bodies were attached to transparent shells that surrounded Earth. Though not accepted by modern science, Ptolemy's description offered a plausible explanation for the movements of the sun, the planets, and the stars. In a sense, all human societies attempt to explain the cosmos, the earth, and the mystery of life.

Sometime around 100,000 years ago, Homo sapiens acquired language and, with it, the capacity for what the historian David Christian has named *collective learning.* This meant that members of the human species can share complex knowledge with one another, accumulate and store knowledge, and pass knowledge to the next generation. No other species can do these things, except in very rudimentary ways. For example, equipped with language, the distant ancestors of humankind acquired the ability to share skill and understanding in using a new kind of tool, say, a sharper stone axe. Individuals could (1) give a name to that particular type of axe that thousands of other people in their neighborhood could recognize; (3) explain how to use the axe without having to give a demonstration; (4) discuss with others how the axe might benefit the welfare of the community; and (5) pass on to their children and grandchildren complex information about the axe and its uses. Technological knowledge could be transmitted from one community to another, sometimes over great distances. For example, knowledge of how to make flint tools by flaking them off a piece of rock spread all the way across Afroeurasia in the Paleolithic age. And flint tools alone allowed humans to change their local environments in many ways.

In the Paleolithic era, all humans lived by foraging, hunting, or fishing. Since their numbers worldwide were tiny compared to today, they had much less impact on the environment than humans did in later eras. This does not mean, however, that hunters and foragers had no impact at all. For example, in many parts of the world, foragers set fire to tracts of vegetation, sometimes large ones, to clear undergrowth, encourage new growth, and attract game (which came to eat the new growth). Early humans also had a big impact on many species of large animals, or megafauna, especially in the Americas, Australia, and Siberia. In those regions, animals encountered humans only between about 60,000 and 10,000 years ago and therefore had no evolved instincts for running away when people first appeared. Consequently, hunters wielding spears or bows rapidly depleted the number of large species such as mammoths, giant kangaroos, and sloths. Humans should probably be held responsible for the total extinction of many megafaunal species.

About 10,000 years ago, when agricultural societies started to appear, the pace of scientific and technological change sped up sharply. So did human effects on the environment. Early farming was based on new forms of knowledge and

technology, including tools and techniques for planting, irrigating, and harvesting, as well as for managing domestic animals. To increase production of the most useful plants and animals, humans began to get rid of plants and animals they did not want or need. They destroyed weeds and killed predators. They also transformed landscapes by clearing trees, digging irrigation ditches, terracing hills, and draining swamps.

The appearance of agriculture marks one of the most fundamental developments in history because it allowed people to extract much more energy and resources from a piece of land. As a result, population began to rise rapidly in places where farming was established. Knowledge of how to manage the environment accumulated faster than ever before. Technological advances included new ways of coping with cold climates, more complex systems for managing water in arid climates, and knowledge of how to weave textiles, make pottery, cast bronze weapons and tools, and construct large buildings such as temples and palaces. People also found ways to use more energy by harnessing animals to pull plows and using streams and rivers to drive water wheels.

Knowledge systems also became much more complex. In many societies, specialists studied the movements of the stars and planets in order to devise accurate calendars. Rulers then used that knowledge to coordinate public rituals, market day rotations, and tax-collection schedules. As wealth accumulated in societies, leaders also had to come up with new techniques to survey land and keep accounts, which stimulated development of writing systems and mathematics.

New technologies of communication and transport were particularly important because they encouraged people to exchange ideas and knowledge over large areas, which further stimulated collective learning. People in different parts of Afroeurasia began about 6,000 years ago to use animals for transport. Shipbuilding and sailing technologies multiplied the possibilities for contacts across wide seas, most spectacularly in the Pacific Ocean, where mariners sailed huge distances to settle the islands of Oceania. The ancient Chinese invented the magnetic compass for navigation; by the thirteenth century, this simple device was in use from the East China Sea to the Mediterranean. Inventions such as paper permitted people to communicate in words or pictures over longer distances and to store greater quantities of information.

In the past 10,000 years, advances in science and technology have had increasing effects on the physical and natural environment. These advances allowed humans to populate the earth in much larger numbers, raise agricultural production, build great cities, and experiment with many new forms of social and political organization. However, the spread of farming and metalworking also led to forest cutting on a large scale, and with it erosion and loss of productive hunting and crop-growing land. In some places, humans caused environmental changes that led to social catastrophe. In Mesopotamia in the late third millennium BCE, excessive buildup of salt deposits (salinization) on irrigated land undermined the productivity of the soil, leading to a gradual long-term decline in population in much of the region. In Mesoamerica toward the end of the first millennium CE, the Maya civilization collapsed, at least in part as a result of overexploitation of the land. In towns and cities around the world, the burning of wood and other fuels, as well as tanning and metalwork industries created extremely polluted environments, which seriously reduced life expectancies.

As communications and transportation technologies developed, exchange networks knitted large areas of the world together until, by the sixteenth century, all the major land areas of the world (excepting Australia until the late eighteenth century) became interconnected in a single global web of trade and cultural interaction. The fashioning of this global network gave a huge impetus to the development of even more new technologies and forms of knowledge. Information from all parts of the world contributed to a single global system of ideas, skills, and techniques.

For a time, Europe found itself at the center of this system because its fleets dominated so many international trade routes. As a result, Europe and, more broadly, the Atlantic region had an early advantage in benefiting from access to the existing global inventory of new ideas and technologies. This may be one reason why so many of the core ideas of modern science emerged in Europe between the sixteenth and eighteenth centuries, the era of the scientific revolution. In the eighteenth and early nineteenth centuries, this concentration of scientific knowledge laid the foundation for the industrial revolution. It first got underway in Britain. That country's economic connections to the wider world were crucial to industrialization's success.

At the heart of the new industrialization was the fossil fuel revolution. Coal, oil, and natural gas are called *fossil fuels* because they are made from fossilized plants and bacteria that contain much of the energy acquired from sunlight when they were alive. In burning fossil fuels, sunlight energy that has been stored in natural underground "batteries" for several hundred million years is being used. New machines such as the steam engine and the railway locomotive allowed humans to harness huge amounts of energy stored in fossil fuels, especially coal at first. Miners used steam engines to pump water from underground shafts and tunnels, allowing extraction of coal on a much larger scale than ever before. And steam locomotives carried coal relatively inexpensively from mines to factories and homes. In a sense, the fossil fuel revolution came just in the nick of time because by the eighteenth century the growth of world population, the continuing spread of farming, and the accelerating pace of deforestation were causing increasing shortages of energy.

Rapid technological change has produced dangers as well as benefits. Industrialization and the accompanying rapid growth of world population have speeded up rather than slowed deforestation and overexploitation of land. Burning vast quantities of fossil fuels worldwide has begun to transform the atmosphere in ways that will lead to catastrophic climatic change in the absence of strong countermeasures. New forms of social inequality have emerged because those nations and peoples that first acquired advanced machines and weapons gained military, economic, and political advantages over societies that lagged behind technologically. Indeed, the concentration of technological and scientific skill in Western Europe, North America, and Japan beginning in the mid-nineteenth century allowed mainly the peoples of those regions to dominate the rest of the world politically and economically for about a century and a half.

The human species has been astonishingly inventive. The benefits of scientific and technological advances have been immense: in global communication, farm productivity, medical treatment, useful genetic modification, availability of material goods, and, for hundreds of millions, higher standards of living than humankind could have dreamed of just 200 years ago. But human inventiveness has also brought gaping social and economic imbalances in the world and an array of new dangers: from extinction of animal species to nuclear terrorism. Unless these serious threats and inequalities are addressed and the worst problems are

solved, the human species could conceivably be set back hundreds or thousands of years, just as excessive exploitation of the land ruined great societies in ancient Mesopotamia and Mesoamerica.

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As living organisms, humans need to draw energy and resources from their environment. How they have done this from Paleolithic times to the present is one of history's dramatic stories. Science and technology have transformed the daily lives of all peoples. Making sense of the world and understanding how and why people live the way they do require at least some grasp of the immense technological and scientific changes that have occurred in the world, especially in the past two centuries, though this period represents barely a page in the long chronicle of human history. The world's population could never have reached its current level of nearly 7.4 billion without the mastery of nature that human knowledge and skill have afforded. Simply feeding billions of people has depended upon the continuous accumulation of new ideas and techniques for irrigating land, mechanizing farming, genetically modifying seeds, moving goods from place to place, and organizing business and finance. However, history shows that these systems might be more fragile than believed. Therefore, the history of humankind's changing relationship to the natural and physical world cannot be ignored.

Key Theme 7: Spiritual Life and Moral Codes

How have ideas of morality and spirituality shaped history? How has human spirituality changed in the course of history? The word *spirituality* refers to human awareness of a transcendental state of being, one that is beyond the material world of everyday life. It may mean belief in a supreme creator, in an afterlife, or in the existence of mysterious spirits and magical forces. People's sense of spirituality shapes how they think of the world and their place in it. It also shapes their sense of morality, that is, the way in which they recognize differences between right and wrong. Spirituality has been a powerful force in human history.

Do animals have a sense of spirituality or morality? All animals have to learn that some behaviors work well, and others do not. But being aware of morality, like being aware of identity, appears to be uniquely human. Only humans have language, which allows them to think about the rightness or wrongness of their

behavior. The same is probably true of spirituality. Symbolic language allows people to express and share information, not just about what is in front of them, but also about things that cannot be seen with human eyes. Language lets humans think and talk about God, angels, saints, demons, fairies, heaven, and hell. Only humans, it seems, can conceive of a spiritual realm.

From what is known, all human communities have had ideas of a spiritual realm and of rules for right and wrong behavior. However, different communities have thought about those things in an astonishing variety of ways. People have often fought, killed, or died to put forth or defend their own ideas of spirituality and morality. A belief or practice that one community considers normal may seem totally unacceptable to another. For example, some religious groups regard consumption of pork as normal, while others deplore or prohibit it.

What can be known of the spiritual life of humans in Paleolithic times? Archaeologists have found many objects that look as if they might have had spiritual meaning to those who created them. Fifteen thousand years ago in southern Europe, people took the trouble to crawl far back into the dark reaches of a cave to carve clay statuettes of bison that hardly anyone was ever likely to see. It is not known why they did that but certainly not merely to amuse themselves or to make "art for art's sake." What about cave paintings that show hunters stalking animals? Were these works possibly designed to cast a spell over animal prey? One cave painting includes the picture of a man who looks, to modern eyes, like a priest or wizard—in other words, a person with some spiritual function. The problem is that so little is understood about the wider social or cultural contexts in which works like these were produced and used in the distant past.

There are some theories. Anthropologists have studied the spiritual beliefs of small, relatively isolated communities that exist today. In many of these communities, there may be no clear borderline between the human and spiritual worlds. One feature that seems to appear in all small-scale communities is *animism.* This is the belief that the world is full of spirits and that one must coexist and communicate with them to survive. The community may regard natural objects and forces, such as wind, trees, the sun, and stars as members of a huge and varied family. However, people may not always think of spirits as more powerful or more moral than humans. Spirits may be like family members. Some are good and helpful, but others are bad, fickle, dangerous, or stupid.

How did people contact the spirit world? They might hear spirits in a thunderstorm or make contact through dreams or rituals. Frequently, communities looked for help from individuals believed to have special gifts for communicating with the spirits. In Siberia and several other parts of the world, such specialists have been known generally as *shamans*. These are women or men who have the power to go into a trance. In that state, they may "fly" to the spirit realm to talk, fight, or plead with spirits. Upon returning to the human world, shamans tell other people what happened and how individuals or the community should behave in response—for example, that they should perform certain rituals to stop an epidemic.

After about 10,000 years ago, when larger-scale societies began to appear, people's sense of spirituality also changed. As communities became larger and cities arose, spiritual beings also became more potent and awe-inspiring. Priests and rulers began to take on the power that local shamans previously exercised. Rulers of early city-states and kingdoms often claimed spiritual power and identified themselves with particular gods. In Sumer, the region of southern Mesopotamia (Iraq today), each city had its own major deity, which the community represented in images of stone or wood. In the city of Uruk, for example, the goddess of love, known as Inanna, inhabited the "white temple." This building stood atop a ziggurat, or stepped structure that dominated the whole town. In Sumer, every urban temple had its religious leaders, or priests, who had the job of pleasing the gods in endless rituals, festivals, and sacrifices. As the top social class, the priests claimed the right to command the population and economy, ruling the city. Religious teachings supported the right of the rulers to accumulate wealth and wield power. Priests told the population that if they wished to receive the blessing of the gods they should be obedient.

From the third millennium BCE, when bigger states, indeed empires, began to appear, rulers almost always associated themselves with powerful deities. In ancient Egypt or the later Roman Empire, for example, rulers claimed to be not only deputies of gods but actual deities themselves. In the ancient Mediterranean and other regions, people thought of their numerous gods and goddesses as part of a pantheon, or "household" of deities that controlled the universe as one big and sometimes quarreling family. Stories about the gods were at the heart of oral and literary traditions, and children learned about duties and obligations, right and wrong behavior, from the examples that gods and goddesses set.

In Afroeurasia in the middle centuries of the first millennium BCE, belief systems emerged that eventually became world religions. These systems focused on a single supreme god or cosmic, creative power. They also appealed to people of differing languages and cultural traditions, not just the members of a single city or local area. Most of these systems, though not all, were "universalist" in that they preached their message to whoever would listen, not just to particular groups. Universalist religions include, for example, Hinduism, Zoroastrianism, Buddhism, Sikhism, Christianity, Daoism, Manicheanism, and Islam. Judaism, which took shape as a distinctive belief system in the first millennium BCE, shared its monotheism, or belief in one God, with Christianity and Islam. Jews, however, did not take up a universalist mission; instead they transmitted their faith mainly within the community believed to descend from the early Hebrews. Confucianism also emerged in the mid first millennium BCE, but as a belief system it has emphasized moral and ethical behavior much more than spiritual teachings.

All the world religions embrace varying beliefs, practices, and sects. None is homogeneous or uniform. For example, in Islam, Sunnism and Shi'ism constitute two major branches with somewhat differing beliefs. In fact, the Shi'a tradition has several branches of its own. In the Christian tradition, Roman Catholics, Greek Orthodox Catholics, Protestants, and other groups all share basic monotheism but with numerous differences in doctrine, ritual, and practice.

Most major religious traditions also incorporate two important dimensions. One of them involves people joining together for public worship, scriptural study, and mutual moral and social support. The other, which in some traditions is characterized as mysticism, is concerned with the individual's search for knowledge of God, union with the divine, transcendent experience, healing, and salvation. For millions of people, religious experience may involve both dimensions.

Today, many people argue that modern science presents a powerful challenge to religion because it offers explanations of nature, the cosmos, and human origins that require no reference to God or any other manifestation of spiritual power. In addition, the material evidence presented by science to support a description of the natural and physical universe has continued to grow, especially during the past few centuries. For some people, science and religion start from such contradictory premises that they cannot be reconciled. This perceived contradiction may even be a source of profound bewilderment or

dismay. Other people, however, find no trouble accepting the propositions of modern science while at the same time expressing faith in a transcendent creative power.

Principles and standards of ethical behavior are as important to peace, order, and social cooperation in the world as they have ever been. Science, however, has very little to say about ethics. In addition, persistent poverty, environmental degradation, epidemic disease, and crime have defied the best efforts of humanity's scientific imagination. Amid the distresses and dangers of the contemporary era, people have sought not only communal ties to one another but also moral and spiritual certainties. Spiritual quests and ethical questions continue to be a vital part of human cultural life.

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For most of history, spiritual ideas have been at the core of how humans understand and explain the workings of the natural, physical, and social world. No wonder that people have stood up, and sometimes died, for their religious principles, or that societies have built their sense of unity and identity around their spiritual traditions. How people explain the world and find meaning in it shapes their hopes, fears, and behavior toward one another. Young people who struggle today with spiritual questions and uncertainties should understand how and why these yearnings have always been among the most powerful shapers of the human past.

Human beings learned long ago that peace, order, and cooperation in social groups—whether they be families, foraging bands, business partnerships, or nation-states—depend in the long run on guiding principles, standards, and rules of moral behavior. Systems of morality and ethics vary around the world, but all of them are founded on ideals of social harmony and trust. Moreover, successful collective learning among human communities requires forthrightness, honesty, and trust between both individuals and groups.

Belief systems embody the shared moral and ethical expectations that allow humans to get along in peace and to learn systematically from one another. These expectations have influenced the development of political institutions and the rules surrounding the exercise of power. The history of the use and abuse of power—governmental, military, economic, and so on—intersects in key dimensions with

the history of the development and evolution of religious traditions, moral codes, and ethical standards.