CHAPTER 103: THE LAST FEW MILLENNIA
FROM THE -1ST MILLENNIUM TO THE 17TH CENTURY

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I. **Introduction And Timelines**

The age of past millennia has a vivid hold on our imagination. It was a world that is recognizably ours, yet exotic and romanticized. This is the chapter of Roman conquerors, Jesus Christ and the Buddha, and knights in shining armor. Despite a budding age of reason, it was still a world of magic in most people’s minds.

In classical education, many of our foundational ideas about the world came from the literature of the -1st millennium. Yet that was a time when history was still lost in the mists of mythology. Many ancient texts were a mish-mosh of fact and fancy, undated oral traditions, contemporary political concerns, and the world’s first philosophy. In a post-enlightenment world, it is important for us to understand the context behind ancient texts so we can read them with a critical eye.

The most powerful new forces of history in the last few millennia were empires and world religions. Section II discusses these institutions in the abstract. Sections III and IV chronicle the empires and world religions of ancient history, a time that was characterized by land-based expansion throughout Eurasia. The first “modern” empires established by European overseas colonialism are the subject of section VII. In between, section V discusses the “Middle Ages” in Eurasia. Section VI provides a rare look at the ancient – medieval history of the non-Eurasian world. Finally, section VIII turns to a different theme, the progress of reasoned thought, which is such a crucial lead-in to chapter 2.
II. Overview Of Empires And World Religions

A. Autocracy and Unregulated Competition

In the Chapter 3 timescale, some civilizations and cultures spread far beyond their local homelands and exerted wide influence. The strongest states grew into empires and competed on the global stage. An empire is a state that has grown beyond its own nation of origin. It crosses frontiers into the lands of “foreign” peoples and asserts land ownership, legislative power, tax collection, and/or military authority over them. Empires dominated geopolitics with their size, strength, and cultural carrying capacity. Though the age of empires has passed, like a retreating ice age it carved the terrain into the national and religious maps that we know today.

Empires were small and rare before -1000, when nations were still too few and far between to subsume one another. As states grew and came into contact, they competed for further growth. There was no body of international law at the time. It was an unregulated competition, a contest of brute force.

Autocracy was another guiding principle. Empires often behaved anthropomorphically, because at the head of each empire was the one man who effectively owned it. Empires were the pinnacle of super-ambitious or -fortunate men becoming as wealthy as possible. Once a single man was in control of a government’s military and treasury, his empire became the instrument of his personal incentives. As with any form of wealth, an emperor’s concerns were primarily to protect his domain and secondarily to enlarge it. These objectives required military activity at the fringes. Expansionist war was justifiable when its benefits exceeded its costs from the emperor’s perspective – and war was common, if not nearly constant. When emperors were not at war over territory, warlords were throwing their armies against each other over succession to a throne. Almost without exception, these motives were the impetus of war.

Since WWII, global society has rejected imperialism. Empires were not entirely evil, though. At their best, they provided stability, civilization, and multicultural cities. Moreover, their place in history was essential. Empires accelerated change and created a more unified planet. They even helped reintegrate the global family tree. If you choose any living human at random, you and that person probably share a common ancestor within these last few thousand years.
B. Church and State

Within the same time frame as the ancient empires, the religious map also changed dramatically. Of course, this is no coincidence. It is difficult to discuss the history of civilizations apart from the history of religions. They were virtually inseparable. Every small nation had its own religious traditions, and religion was a state function. As empires grew, diverse beliefs collided and consolidated. In this way, religions passed from one people to another, and some of them spread very rapidly.

There were numerous models for religious practice within an empire. On the active extreme, many governments sought to spread their religion by force or persuasion. This was especially the case with Christians and Moslems, a major factor behind these religions’ growth to the world’s largest. At other times, emperors permitted native religions to continue or new religions to grow. Tolerance could be a good way to minimize disruption and maintain peace, an effective strategy for the Hellenistic Empire. More passively, the invading force occasionally assimilated itself into its acquired territories. Seljuk Turks, for example, adopted Islam after conquering Arab lands.

Empires were extremely effective at homogenizing religious beliefs worldwide. In the long run, a few religions outperformed the empires that had served as their vessels. Today, just four large religions – Christianity, Islam, Hinduism, and Buddhism – account for ¾ of the global population. 
III. The Ancient Mediterranean

Most of today’s non-Asian cultures can be traced continuously back to ancient Mediterranean progenitors. The two root influences were Greece and Israel, both of which ascended in the -1st millennium. These two heritages crossed paths in the Roman Empire.

A. Athens and Alexander

Classic Greek civilization emerged from a dark age in the -9th century. This nation of loosely affiliated city-states was one of the dominant forces of the Mediterranean Sea. Over the next few centuries, Greeks established colonies in present-day Italy and Turkey, including Byzantium. An important contemporary was Phoenicia, from whom Greece adopted the alphabet and improved it with vowels. The Greek alphabet allowed greater precision of expression than any earlier written language, allowing Greece to become a highly literate culture.

The city-state of Athens is well known for its democracy, or direct rule by the people. Democracy evolved out of aristocracy in a series of reforms to expand the rights of the lower classes. In the -6th and -5th centuries, Athenians debated the virtues of democracy, and sometimes actually reverted to tyranny, before committing to their most democratic constitution in the -4th century. All male citizens were invited to debate and vote about serious matters of domestic and foreign policy.6

Democracy was a boon for stability and the economy. The -5th and -4th centuries were Greece’s golden age, and the accomplishments were almost unbelievable. A well-organized Athens prevented an invasion from the much larger Persian Empire. Athens became an unofficial capital over more than 100 city-states, some of which also became democratic. Herodotus and Hippocrates established history and medicine, respectively, as earthly fields of study without divine intervention. The arts flourished in the age of classic life-like statues and Greek choruses.

Greek philosophers were especially influential. The Socratic method of education is named after Socrates, an Athenian intellectual alive in -400. His student Plato founded the Academy, one of the world’s earliest universities. Plato and his student Aristotle wrote prolifically on subjects such as politics, ethics, language, and reality. Their works left an enduring impression on all civilizations that came to know the Greeks.
Though ancient Greek democracy is glorified, it was far from perfect. The full benefits of citizenship were not available to women or immigrants. Greeks owned slaves without a second thought. Most importantly, democracy did not help unite Greece in peace. The city-states were nearly constantly at war with each other. *King Philip II* of Macedon took control of most of Greece by -337.

Philip’s son, *Alexander the Great*, consummated his father’s vision of quelling the belligerent Persian Empire to the east. In one manic decade, Alexander destroyed Persia and invaded Asia as far east as the fringes of India. After Alexander’s short life, his *Hellenistic* empire immediately split into four kingdoms. As a political body, it continued to fragment, and was ultimately absorbed into other empires by the -2nd century.

Although classic Greece was gone, its language, philosophy, and way of life were now carried far and wide. Greek influences survived in parts of Arabia and Central Asia longer than they did in Europe. The most important new city of the empire was Alexandria, Egypt. Alexandria was the site of the greatest museum/library of its era and was home to well-known “Greek” scholars such as Archimedes and Euclid. The Hellenistic Empire also encompassed *Canaan*, the eastern Mediterranean shore, where Jewish history was in the making. Greek became the language of Canaan’s educated, including the authors of the Christian New Testament.

**B. Judeo-Christianity**

Judaism is named after Judah, an ancient kingdom in southern Israel. Early Jews, *Hebrews*, were polytheistic like all nearby tribes. They then went through a period of *monolatry* during which they believed in many gods but worshipped only one, who came to be known as *Yahweh*. Monolatry was fairly common practice. What made Judaism unique was its eventual conviction that Yahweh was the only god. Hebrews still believed that God was partial to them and promised them the land of Israel.

Though it was traditionally construed as much older, the Hebrew Bible was written piecemeal through the -1st millennium. The bible mirrored Israel’s relationships with contemporary kingdoms, personified by God and legendary figures. Even the *Torah*, the five-book account of early Hebrew mythology, assumed its final form sometime after -586, when Babylon destroyed Jerusalem and took many Jews into exile. Jews were devastated by this
conquest, and the legend of Egyptian bondage and exodus (probably fictional \(^{12}\) ) was especially meaningful to them.

Persians liberated the Jews after two generations in Babylon. Judaism was profoundly influenced by the Persian religion, *Zoroastrianism*, and incorporated some of its themes. These included the concepts of a devil at war with God, a future apocalypse, and an eternal afterlife. Some of these beliefs were not adopted within priestly circles, so they became more influential in early Christianity. \(^{13}\) One important post-exilic element, though, was central to Judaism’s evolving faith. Prophets taught that God would send a *messiah*, a priest-king who would complete God’s promise and even strengthen Israel into an empire.

The entire Hebrew Bible, then, was a direct response to the geopolitics of -1\(^{st}\) millennium Canaan. This would seem a pretty narrow scope. Its enduring message was its fatherly vision of God. Jews saw God as perfectly loving his followers. * He was omnipotent, yet he had a personal relationship with his worshippers. This is the idea that spread like wildfire beyond Judaism, which has never been a large religion.

By Year 1, Israel was very unhappily under Roman control. This was the situation into which Jesus was born. Jesus preached that the “kingdom of God” was at hand, the reign of God as a king on Earth. He and other Jews looked forward to this liberation of Israel, a reversal of fortune in which the oppressed would become dominant. Roman authorities executed Jesus for sedition. \(^{14}\) Some of his followers claimed to see him resurrected. These founders of Christianity immediately started to proclaim Jesus as the messiah.

The first written account of Jesus’ life appeared a few decades later, after a severely traumatic episode. Following a Jewish revolt, Roman soldiers destroyed Jerusalem in 70. This was the final exile, after which Jews were scattered for two millennia. To the Christians who remained, it may have been imperative to soften Jesus’ anti-imperial message to distance themselves from the Jews. \(^{15}\) The gospels portrayed Jesus as preaching an innocuously abstract redemption of the dispossessed: “Blessed are the meek, for they shall inherit the earth.” \(^{16}\) The “kingdom of God” was vague enough to mean many things to many Christians.

\(^{*}\) One of the Torah’s most commonly used words attributed to God is *chesed*, usually translated into English as “mercy”, “kindness”, or “loving kindness”. 
Early church leader Paul found it important to convert non-Jews. This universality enabled Christianity to outgrow Judaism and to outlast Roman occupation. Later gospels magnified Jesus into God incarnate. His role expanded from liberator of Israel to savior of all Christians’ souls.

C. Ancient Rome

At about the same time that Athens developed its democracy, Rome liberated itself from its kings and formed a republic. A republic is a more moderate form of rule by the people, where citizens elect representatives instead of participating directly in government. The Roman Kingdom had a senate that advised the king. After throwing off the monarchy, the senate elected its own leaders, consuls. Senators came from the upper class, so, as in Greece, oligarchy (rule by the few or the wealthy) was a transitional stage to popular rule. Eventually, the lower class had its own tribunals, with representatives elected according to residential district. The senate, tribunals, consuls, and courts functioned together in a complex system of checks and balances. This constitutional arrangement was strongly influential on the United States millennia later.

The Romans were better than the Greeks at growth and assimilation. Through a combination of conquests and alliances, the Roman Republic expanded from a city-state to most of Western Europe. As it acquired new territory, Rome offered its subjects citizenship, education, and employment as soldiers. The representative system of government was much more adaptable to a large country than direct democracy would have been. Nevertheless, Rome had its limits and was stretched too thin. Unprepared to administer such a vast territory, Rome suffered corruption, inflation, and slave revolts.

When 1st century consul Julius Caesar created a new office for himself, “dictator for life”, Rome entered its final phase as an autocratic empire. Under its emperors, Rome entered its most stable and prosperous phase, the Pax Romana. This transition possibly created the belief, held until the United States’ success, that a king was necessary to hold a large country together. The empire reached its peak in the 2nd century.

Christianity and the Roman Empire had a complicated relationship. The emperor was presumed divine, so the concept of a single god was at odds with that mandate. Roman officials persecuted Christians until 4th century emperor Constantine converted. Constantine was engaged in a civil war against other claimants to the throne. According to the classic account, he sought the strongest god to petition for help. He prayed to his parents’ Christian god, who sent a sign
before a victorious battle, cementing the emperor’s loyalty. Even more remarkably, Christianity became the official Roman state religion by 400. The Christian population exploded, and the empire treated the church with great political favors, including land grants and tax exemptions.

Constantine established a secondary capital in Byzantium (renamed Constantinople). For a time, Rome and Constantinople each had a co-emperor and a powerful bishop; Rome’s bishop was the pope. The western empire gradually dissolved while neighboring German kingdoms pervaded it. A German tribe captured Rome itself in 476, dethroning the last Latin emperor.

IV. Ancient Asia

A. India

1. Hinduism

By -1000, Indian civilization had migrated from the Indus River to the Ganges. The texts that form the core of today’s Hinduism were added to the Vedas in the -1st millennium.

Two central Hindu principles are reincarnation and the caste system. Castes are social classes. The priests or Brahmins are highest, then the warriors or Kshatriya, followed by the working classes. Each caste has its own dharma, or proper way of life. Karma is the moral law of action and consequences: when a person acts lovingly, she will earn good fortune in return, and when she acts with evil intent, it will come back to harm her. Karma outlasts a human lifetime. When a person dies, her soul returns in a new body. Depending on her karma, she can be reincarnated into a higher or lower caste. Karmic justice justifies caste-based discrimination in mortal life.

The Hindu concept of enlightenment is moksha, connecting one’s soul to a universal consciousness. Moksha requires humility and a simple, healthy lifestyle. At the end of life, it can break the cycle of reincarnation.
The most important Hindu gods are Brahma (creator), Vishnu (preserver), and Shiva (destroyer). Other popular deities include Kali, the goddess of death, and Ganesha, the elephant-headed god of beginnings. These gods are not jealous; Hindus have great flexibility in choosing whom to worship. Animal sacrifices were traditionally important as tributes to the gods.

2. **Buddhism**

A Buddha is a teacher who has learned his own path to moksha. Buddha *Siddhartha Gautama* lived in northern India or Nepal in the mid-1st millennium. He is remembered for his spiritual and philosophical teachings. However, there were many buddhas, and Gautama’s message probably would not have attracted attention unless it had immediate political impact.

Gautama was a prominent Kshatriya, which was the dominant caste at that place and time while Brahmins were on the rise. Brahmin priests had monopolized sacrificial rites, charging high fees that fostered corruption. Gautama rejected animal sacrifice and downplayed the caste system. Buddhism thus had the effect of reducing Brahmins’ influence. Some historians argue this was not his intent. Nevertheless, Gautama was an influential proselytizer who personally converted kings.

Buddhism had populist appeal. It was rapidly institutionalized with a hierarchy of temples and monks. This brought about a Hindu counter-reaction, wherein the caste system was enforced more strongly. This was also the time that the Hindu gods Shiva and Vishnu became more popular. Hinduism offered personal relationships with gods, which improved its appeal versus Buddhism’s.

Gautama is now remembered for his spiritual vision, motivated by a quest for liberation from suffering. Buddhist cosmology borrows from Hinduism. There are numerous levels of spiritual beings, including gods, humans, animals, and lost souls. All are mortal. Gautama taught an unintuitive form of reincarnation without a continuous soul. Rather, the karmic energy of each deceased being “conditions” the birth of another, acting as a third parent during conception. The most useful metaphor is as one flame igniting another. When a being learns to eliminate fear, hatred, and delusion, he reaches a state of *nirvana* (extinguishment) and he conditions no further

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* His lifespan can’t be pinpointed more precisely than this.
† The origins of Buddhism and Christianity have a number of similarities, including this one. Usurious monopolization of religious rites was also a complaint that rebellious Jews of Jesus’ time had against their high priests. The Protestants again made similar complaints against the Catholic order in the 1500s.
lives. After all, with no life there is no suffering! Gautama’s advice for achieving peace of mind is his greatest enduring legacy.

3. Empires

The Mauryan Empire was the first state to unify most of what we now think of as India. Emperor Chandragupta Maurya spread his Magadha kingdom west around -320 to fill a void left by the evacuation of Alexander the Great. Chandragupta’s grandson Ashoka expanded the empire to its greatest extent. After his final battle, Ashoka felt great remorse for the death and destruction. He embraced Buddhism and committed to “conquest by dharma” rather than by violence. By building temples, convening councils, and sending out missionaries, Ashoka made Buddhism a major religion through the entire Indian subcontinent and into Southeast Asia.

After Ashoka, India relapsed into fragmentation for centuries. The Gupta Dynasty, again from the wealthy Magadha Kingdom, reunited northern India in the 4th – 6th centuries. The Guptas were Hindus who tolerated Buddhism. Although not as large or powerful as the Mauryans, the Gupta Empire ruled peacefully, helping to cultivate great advances in civilization. This was the highwater mark of ancient Indian art, science, medicine, architecture, and secular literature. Perhaps the most influential innovation was the Hindu numeral system, the first to use place values and the “0” digit. Chess and the love / sex treatise Kama Sutra were also popularized in this period.

Besides its ancient empires, India’s history was also shaped by its unique position in the center of Eurasia. Indians had extensive interchange with Mediterranean and East Asian cultures alike.
B. China

1. Warring states and Chinese philosophy

The Zhou Dynasty wrested control of Shang territory, the historic heartland of China, shortly before -1000. An early Zhou leader justified his family’s takeover by formulating the Mandate of Heaven. The Shang leaders had become corrupt and ineffective, he said, so the gods empowered the Zhou to take the throne. Most succeeding emperors would claim the same mandate.

The Zhou Dynasty maintained control over some territory for an astonishing reign of eight centuries, though its heyday only spanned the first 10% of that period. In a uniquely Chinese form of feudalism, early Zhou kings appointed family and loyal officers to govern regional territories and offered them a high degree of autonomy, including hereditary title. Over the generations, these regional leaders became more distantly related to the Zhou Dynasty and more tied to their own localities. The Zhou dominion shrank to the capital while the vassals’ spheres of influence grew around it. As several independent states formed, they engaged in fierce competition for control of the whole region. The turbulent -8th to -3rd centuries are now known as the Eastern Zhou Period, an incredibly long phase of constant warfare that kept getting worse.

Competition between the warring states spurred innovation. Local leaders found it ineffective to rely on advisors who had inherited their positions, so they recruited the best minds instead. In this environment, engineers invented cast iron and designed sophisticated canals and dams.

* Because the Zhou capital had been relocated eastward in response to foreign attacks in -771.
Most influential were the philosophers, court advisors who debated “100 Schools of Thought” on how to reform society, win war, or find peace. Legalism (prominent in the Qin state) started with the premise that each person’s self-interest is harmful to the public good. Therefore, the law must restrict individual free will for the benefit of society. Laws must apply equally to everyone and must be enforced strictly.

Confucius, alive in -500 in Lu, proposed a model of society almost opposite of legalism. He taught that ethical standards were more important than strict rule of law. A virtuous leader who taught by example, and rituals that reinforced a sense of community, would inspire men to act righteously. Confucius died relatively unknown, finding no audience with kings consumed by war. His devoted disciples carried on his wisdom in collected sayings. His best known is the “silver rule” of decency: “Do not do to others what you would not wish done to you.” Other key Confucian values were respect for parents and authority.

2. The Qin and Han Empires

Qin chancellor Shang Yang instituted a sweeping program of bureaucratic reforms in the -4th century. He organized local governments around a strong central court, privatized and taxed land, and created a rank system through society. For most male commoners, land and promotions were tied to military achievements. Thus, the entire state became a military machine. Qin is a strong early example of a society where the ideal of “rule of law” was taken too far. Crime was low and the state was stronger than its neighbors, but the people had little freedom to do much else besides serve the state.

Ying Zheng became king of Qin in -235. With a particularly fierce ambition and an aggressive military commandant, he decided that the time was right for Qin to subdue all the warring states. Amazingly, he did so in just nine years of campaigns. Zheng became Shi Huang, the first emperor (and god) of unified China. The name China is itself taken from Qin. It is fair to call this new China an empire, because Qin had already expanded into non-Zhou lands.

Shi Huang expanded the Qin legalist system through all of China. Qin bureaucracy still provides the framework of Chinese government today. Huang’s government standardized the empire’s written language, which helped to unite and maintain Chinese identity for millennia.

*“China” is the name used by foreigners outside of China. The Chinese name for China is Zhong Guo, “The middle of the world”, as so many cultures name themselves.
The emperor died young shortly after unification. He had many enemies and his heirs were weak; his death was immediately followed by revolts. His grave was “defended” by the now-famous army of thousands of terra cotta soldiers, an elaborate but vain gesture. Within just five years, the Han Dynasty assumed the throne.

Hans adopted the Qin style of government and culture, with one major innovation: they tempered it with Confucianism. A court advisor convinced the first Han emperor that maintaining the empire required a different approach than conquering it. 32 A Confucian system stabilized peace internally so that the emperor could focus on defending the borders. By the -2nd century, government jobs required exams on Confucius’ philosophy and similar classics.

The Han Dynasty presided over a golden age for four centuries. It was a Han envoy that opened the Silk Road through Central Asia. Chinese silk, spices, and ceramics were valued to the west, while China imported resources such as jade and horses. The Roman and Han Empires flourished at the same time, creating a trading bloc across half the northern hemisphere.

V. The “Middle Ages”

The medieval or “middle” ages roughly spanned the years 500 – 1500, between the classic land empires and 2nd-millennium overseas colonization. * The largest empires and most advanced civilizations of the Middle Ages were Asian.

A. Asian Dominance

1. Islam

Islam is the youngest world religion, originating in 7th-century Arabia. Moslems believe that God communicated to the prophet Mohammed through an angel. Mohammed recited a quasi-poetic rendition of God’s word, subsequently written in the form of the Koran. This scripture was said to be a “reminder” of God’s original message, before Jews and Christians corrupted it with human interpretation. The Koran’s central supernatural position is that there is only one God, who

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* The term “Middle Ages” only makes sense in the place and time in which it was coined, namely in a Europe that saw its history in three stages: Greco-Roman Empires – Middle Ages – Renaissance. The term will gradually lose its meaning but is still used extensively, so I feel justified using it in this book.
will someday resurrect and judge humanity. Islam rejects Judaism’s oral traditions as well as Christianity’s belief in the divinity of Jesus.

Islam prescribed humble submission to God in all walks of life. It rejected the accumulation of wealth and demanded treating all members fairly. The pillars of Islam included giving alms, fasting to remember the plight of the poor, and bowing to a holy city as a daily reminder of spiritual devotion.

Most non-Moslem historians believe that Mohammed’s personal struggles are woven into the Koran. For instance, his hometown of Mecca had become increasingly materialistic during his lifetime, growing rich from trade and banking. His vision of the Moslem community was a thinly veiled anti-Mecca. He made enemies and fled to Medina. There, he was mocked by some Jewish tribes and he memorialized those frustrations as well.

Mohammed became involved in wars between Mecca and Medina, culminating in his leadership over both. In a world where victory was seen as God’s blessing, he quickly won converts throughout the Arab peninsula. Before his lifetime, Arabs had had no national identity. They were hungry for unity and a scripture in their own language.

Mohammed died just two years later, in 632. Competition to succeed him led immediately to a rift between Sunni and Shi’ite Moslems. His Sunni successors, the caliphs, had more success on the ground and began expanding outward. By 750, the Umayyad Caliphate was one of the largest empires in the world, spanning east almost as far as India and west across northern Africa into Spain.

The Abbasid Dynasty was the classic medieval caliphate. This was the height of Arab civilization, the era of 1,001 Nights. Baghdad was the intellectual center of the world. Scholars adopted the Hindu numeral system and translated Greek texts that were forgotten in Europe. The Abbasids ruled with an iron fist and encouraged Islamization. Moslem law, Shariah, proved a more enduring unifier than the caliphate. The empire broke into independent states, but they all remained Islamic.

The Ottoman Empire grew out of a small state in Turkey around 1300. A turning point in European history was the Ottomans’ capture of Constantinople (now Istanbul) in 1453. This ended the Byzantine Empire and established a permanent Moslem presence in Eastern Europe. The Ottoman Empire survived until WWI.
2. China and India

Asian religious demographics shifted slowly but significantly in the Middle Ages. Buddhism disappeared from India in the millennium after Ashoka; the ancient Hindu customs were too deeply entrenched to replace. Buddhist monks carried the religion outward and found a receptive populace in China. The 6th century Sui Empire was the first Buddhist Chinese state.

As Buddhism faded out of India to the east, Islam entered from the west. After centuries of tense proximity and skirmishes, Turkish invaders made inroads into northern India and established the Delhi Sultanate around 1200. Active traders, Moslems spread their faith as far as China and Southeast Asia, where a few small Islamic states were founded.

Since the Sui, Chinese continuity has been broken only by a few intermittent decades of fragmentation or occupation. The Sui Dynasty completed the Grand Canal. It runs north-south to connect China’s west-to-east rivers, the Yellow and the Yangtze. The canal provided a vital supply line from the agricultural south to northern cities, courts, and armies.

The next medieval Chinese dynasties were the Tang, Song, and Ming. Great inventions of the Tang period included gunpowder, movable-type printing, and the mechanical clock. The Tang Code of law provided a model that survived into the 20th century. Tang China was highly influential on neighboring nations such as Japan, Korea, and Vietnam. Song China enjoyed a great economic boom, and merchants became ever more prominent. Quasi-capitalist instruments such as guilds, stocks, bonds, and savings accounts came into use, as well as paper money itself.

The Ming Dynasty was founded by the Hongwu Emperor, who liberated China from Mongolia but became a murderous tyrant. His successor the Yongle Emperor moved the capital to the Forbidden City in Beijing. The Yongle Emperor built up the world’s largest navy, using it primarily for diplomatic missions. Later Ming emperors, though not strong leaders, are remembered for their Great Wall.

China was handily the leading world power in 1500. It then lost that status for centuries when it failed to colonize or industrialize.

3. Mongols

Genghis Khan conquered more than twice as much land as any other single man in history. He already earned his title, which means “ruler of the world”, when he united all the Mongol tribes. He then led the Mongols on an unending campaign of expansion. Their numbers were
relatively small, but they were efficient and ruthless. Their secret weapon was the horse. As a nomadic people, the Mongols used their land for grazing horses instead of farming.

By the end of Genghis Khan’s lifetime in 1227, his empire spanned all of Central Asia. His sons and grandsons augmented the empire still further; by 1279 it engulfed China and Mesopotamia and reached Eastern Europe. Obviously difficult to administer, it was split among Genghis Khan’s sons, and the political division continued from there. The dynasty gradually lost territory but held some until 1920. 43

The empire was significant not for its lasting legacy but for the abrupt change it brought to geopolitics. It momentarily disrupted the Islamic and Chinese empires, forming a political bridge between Europe and Asia. Islamic states had controlled the seas and the Silk Road and blocked European access to China. Nor was China particularly interested in Europe. The Mongolian government in China, under Kublai Khan, was much more open to the west and welcomed visiting traders. European missionaries and merchants such as Marco Polo reached eastern Asia in large numbers for the first time. This contact whetted the European appetite for Asian trade, the major impetus behind overseas exploration of the Renaissance.
B. Quasi-Roman Europe

1. Rome didn’t fall in a day

The historically accepted “fall” of Rome was the abdication of the last western emperor in 476. The decline was much more nuanced than that. The empire had been disintegrating for centuries, yet extensions of it persisted for another full millennium. Its state church, Christianity, has not only survived to the present but is still arguably the world’s largest institution.

The first non-Latin king in Rome was Odoacer. He was part of a mass migration of Germanic tribes into Europe. By the time of Odoacer’s reign in Italy, Western Europe was already divided into a number of Germanic tribes and kingdoms such as the Franks, Vandals, and Visigoths.44

* In this context, “Germanic” refers to a family of languages. It does not imply a connection to the region now called Germany. Germanic tribes ranged from Scandinavia to northern Africa.
Germanic kings saw the advantages of plugging into the last remnant of the imperial bureaucracy, the Roman Catholic Church. Wealthy, organized, and stable, the church was in a strong position to perform traditionally governmental roles such as collecting revenues, providing for the poor, and enacting laws. When kings converted, their people quickly followed. The church needed kings’ support too, for military protection. The Franks, early to convert, were the church’s strongest ally. By 1000, the banner of Christendom flew over all of western Europe, with the pope as its top leader. Popes led the Crusades, a long series of wars against Moslem kingdoms.

The eastern half continued as the Byzantine Empire. East and West were divided by a language barrier. Further political differences led to a permanent schism between the Roman Catholic and Eastern Orthodox Churches, an estrangement that dated to the 1st millennium and was formalized in the 2nd. The Byzantine Empire remained highly influential in Russia and eastern Europe.

2. Long ago, in a kingdom far, far away …

The High Middle Ages (8th – 13th centuries) were characterized by a Germanic system we now call feudalism. Feudal society was a hierarchy of landlords and tenants, or lords and vassals. With a shortage of cash in the economy, lords granted land rights in exchange for the fruits of that land or for personal services.

Each king was a large landowner. His vassals were powerful noblemen, who provided services such as giving counsel at the king’s court and raising armies of knights. The lowest-level vassals were peasants, mostly farmers or craftsmen. 80% of the population was peasantry. Fairy tales like Cinderella depict the daily drudgery and escapist fantasy of ordinary peasants.

Each kingdom saw a power struggle between the king and his nobles. The English king was very powerful, but in France the king had trouble controlling his nobles. Noblemen fought each other regularly. To complicate matters, the church was Europe’s largest feudal lord, and many noblemen were bishops. This is another reason the Church was entangled with politics.

* This is its exonym. The “Byzantines” had changed the name of their capital to Constantinople, and they called themselves the Roman Empire.
† Interestingly, Japan, Russia, and India went through feudal phases at roughly the same time as Europe.
Feudalism was also a legal system, with lasting impact. The king’s court was the predecessor to modern parliament. The fundamental basis of law was the personal oath between each lord and his vassal. Oaths were inherently contractual relationships between social unequals. Knights needed their serfs just as much as serfs needed knights, and courts enforced both parties’ rights. In these ways, feudal institutions foresaw the rule of law over the rule of man. The Magna Carta of 1215 was an early example of noblemen negotiating the power structure with their king.

3. Nation-states

Medieval Europeans idealized the Roman Empire and made more than one futile attempt to restore it. In 800, the pope christened Frankish king Charlemagne as “emperor”. The Frankish kingdom was very large at the time, covering half the continent. It soon split in half, giving birth to France in the west. The German half was again optimistically proclaimed the “Holy Roman Empire” in 962. It survived for eight centuries but was actually the spottiest patchwork of small kingdoms that Europe ever saw.

With no central government to standardize communication, languages diverged and multiplied across the continent. Latin branched into French and Spanish, while Germanic offshoots included English and Dutch. After Europe achieved some stability around 1000, feudal hierarchies grew into bureaucracies for modern nation-states within each linguistic zone. England was large enough to rival France by 1200. Modern Portugal is traceable to the 12th century, and Spain to the 15th.

Strong centralized governments, money economies, and land reform brought feudalism to an end. Mercantilism and trade increased, and Catholic universities educated the masses. On the dark side, the vision of unity was lost. Games of thrones ravaged Europe for the entire 2nd millennium.
VI. Outside Eurasia

At this point, traditional histories jump directly to European colonization of the “New World”. Of course, that new world had its own history. Due to European colonization, the civilizations outside Eurasia have not directly left as much of a lasting legacy. However, colonization is a two-way influence. We can’t fully understand colonialism and imperialism without studying the subject peoples.

A. African Sahara and Sahel

Ancient modes of travel did not enable Europeans to penetrate Africa. Besides the forbidding Sahara, the west coast of Africa was non-navigable because currents only permitted southward sailing. The only sub-Saharan points of contact with ancient civilizations were at the Nile River and Africa’s east coast. That contact germinated the sub-continent’s earliest state, the Nubian kingdom.

The Nubians lived along the Nile in present Sudan. A Nubian dynasty took brief control of Egypt and ruled as pharaohs. The Nubian culture survived until 350, long enough to be reached by Christian monks. The subsequent Axum kingdom remained Christian, as did Ethiopia, which arose nearby in the Middle Ages. This unique pocket of Christianity was isolated from Europe for a millennium.

The Sahel is the region where the western Sahara meets the savannah. This region’s greatest resources were salt mines in the Sahara and gold mines to the south. The salt / gold trade accelerated and expanded after Saharans domesticated the camel around the 3rd century. Civilization developed on the Niger River between the mines. In the Middle Ages, the Sahel was dominated by the Mali and other empires.

The best-known personage of this era was Mansa Musa, the 14th century Mali Emperor. Bandits on trade routes were a serious problem in his time, and he brought law and order. He founded a university and brought new architecture to Mali. Outside of Africa, Musa made Mali famous with his pilgrimage to Mecca. He was accompanied by a caravan of 60,000 finely dressed citizens, thousands of camels, and enough gold to depress Egypt’s gold market. Mali was the second largest empire in the world at the time, and according to some metrics Mansa Musa was the richest man in world history.
From the 9th century onward, Africa was strongly influenced by Arab culture. For the most part, Arabs penetrated Africa peacefully as traders and scholars. Moslems had a monopoly on the African market, blocking European access. Traders were enticed by Africa’s gold as well as ivory, copper, and slaves. For West Africans, the most treasured Arabian commodity was the war horse. Islam itself had mixed success in Africa. Urban elites took to the new religion, but most kings could not convert their rural subjects.

Small independent states continued to rise and fall throughout sub-Saharan Africa without a dominant empire. This was the Africa that Europeans encountered in the 15th century.

**B. The Americas**

Both American cradles of civilization were conquered by upstart tribes in the 15th century. The Pacific South American Inca Empire became one of the world’s largest empires in its time. Aztecs (who called themselves Mexica) ruled the smaller Mesoamerican Empire. Coincidentally, these two tribes ascended within a decade of each other. Since neither the Aztecs nor the Incas had an ancient history, each tribe adopted the culture it dominated.

Olmec influences still endured throughout Mesoamerica, from the ballgame to pyramid temples and a pantheon of animalistic gods. The most iconic deity was Quetzalcoatl, the benevolent feathered serpent. In the 1st millennium, the Mayan civilization had been the most advanced. Mayan civilization was reminiscent of ancient Greece, a plurality of warring-but-trading city-states with unusually high cultural development. In addition to their famous astronomical calendar, they were one of the few civilizations to use the number zero.

Human sacrifice became a notorious hallmark of Mesoamerican culture. The Aztecs took up this ritual with great zeal. It served religious purposes such as feeding the sun so he could continue to rise and shine. Mayan and Aztec sacrifices were violent ordeals; priests would
commonly decapitate the victim or cut out his heart. Most victims were prisoners of war from nearby tribes, making the Aztecs a fearsome neighbor. On the more civil side, the Aztecs are also known for centralizing their educational system and engineering major water works.

Andean culture remained similar to the Norte Chico civilization, with an economy centered on llamas and potatoes. The Incas added an administrative structure, as they had thousands of kilometers of coastline to govern. They integrated numerous road systems and employed a network of runners to convey messages orally. As the Incas themselves were a small ruling minority, they appointed local leaders in their numerous provinces. Provinces were further divided into family groups, each responsible for a certain amount of agricultural product and/or labor for the state. Materially, metal working was more highly developed here than further north. Incan masonry skills are still on display at Machu Picchu, a palace built without mortar.

The Inca, too, practiced human sacrifice, albeit a much quieter form. The Andes are subject to climate extremes, earthquakes, and volcanoes. To mollify the gods, Inca sometimes sent them their own children. Several mummified children have been found high in the mountains and can now be seen in museums.

C. Where Time Stood Still

Civilization had not yet touched everyone by 1500. Many people continued to live Paleolithic lifestyles, some farming but not yet urbanized, and others still hunting.

South of the Sahel, most of Africa was inhabited by peoples speaking the Bantu family of languages. Originating in western equatorial Africa, over the last few millennia Bantu migrated eastward and southward into Africa’s interior. Without strong states, they were easily exploited. African kingdoms enslaved Bantu prisoners of war since ancient times. The increase of Arab wealth created high demand for these slaves. Since at least the 7th century, millions of Africans were exported to Arabs and Asians in international trade of an unprecedented scale.

Hundreds of tribes spanned the Americas, from the Arctic Eskimos to the nearly Antarctic Ona. A large North American economic zone, the Mississippian Culture, once ranged from Florida to Wisconsin. It was characterized by abundant agriculture, river trade, earthworks and temples, fairly large towns, priestly chiefdoms, and class structure. Mississippian settlements scattered into small tribes after 1350 for unknown reasons. Eastern tribes warred regularly. Some started to coalesce into powerful alliances before European settlers arrived. The Iroquois Confederacy
(present New York) was a union of five tribes formed for internal peace, which then proceeded to conquer its neighbors. It had a sophisticated (oral) constitution with republican representation, two centuries before the US version. 73

East of the Andes, the Amazon rainforest was home to infamous headhunters and cannibals. The Caribs were a seafaring tribe who settled and gave their name to the Caribbean Sea. Nearby at the Isthmus of Panama were the Muisca, expert goldsmiths whose women specialized in salt mining.

Australia was the only continent untouched by farming or ranching until modern times. As far as can be told, aboriginal life was much the same 500 as 5,000 years ago. Asian island hoppers had made it to Melanesia (northeast of Australia) by -1000. Migration then continued in small boats to islands as remote as Hawaii and Easter Island by 1000. Hawaiian culture, famous for surfing, was also unique for allowing open homosexual relationships. 74 Around 1200, Maori people discovered New Zealand – the last spot on Earth settled by man.

VII. The European Age

A. Renaissance

The Renaissance was Western Europe’s “rebirth”, its first ascendancy since the Roman Empire. Cities, which never were part of the feudal order, led Europe out of the Middle Ages. In particular, the Renaissance is due to the spreading influence of northern Italian city-states. Venice and Genoa were Europe’s largest ports of trade with Asia. Traders earned wealth independently of land holdings and helped revive the cash economy. Wealthy merchant families such as the Medicis in Florence were the pinnacle of
society. European noblemen and even kings relied increasingly on Italian bankers for loans, sometimes forfeiting property to them in case of default.75

These states were highly competitive. They were tightly packed together and all trying to grow at the others’ expense. In this belligerent environment, constant communication was imperative. The states created the modern form of diplomacy with permanent embassies.76 Ruling families formed complicated strategic alliances, often through intermarriage. They competed for social status as well as resources. The status symbol of the day was patronage of the arts. Great wealth was available for great talent.

The Renaissance was sparked by a double influx of “content and media” to this highly receptive region. The content was ancient literature. Italian scholars rediscovered lost Roman writings in libraries. * 77 An influx of Greek and Arab material came from Constantinople, especially after the 1453 fall to the Ottomans. Artists were profoundly inspired by the humanism in these works, the achievements of Man outside of his glorification of God. Italian art became increasingly innovative and virtuosic. This was the climate that sponsored the great works of Michelangelo, Monteverdi, Brunelleschi, and so many others.

In the 15th century, German metalworker Johannes Gutenberg invented a drastically improved printing press, the first to enable mass distribution of books. Ancient classics were translated into modern languages and read widely. New books, and later newspapers, created a literate public and a continental communication network, the basis for a renewed humanism.

With this combination of content and delivery, urban Italian culture spread northward and westward as far as England. France, Spain, England, and other nation-states adopted diplomacy and a continental elite social network. The humanistic spirit flourished, and patronage of the arts continued to support geniuses such as Shakespeare. The Renaissance’s ironic legacy was its blazing of the future by glorifying the past.

B. The Reformation

By 1500, Catholicism was a religion of priests and rituals. The main service that it provided to its parishioners was redemption from sin to prepare for Heaven. There was good money in the

* The most famous finding was Petrarch’s discovery of letters by Cicero in 1345. Petrarch has become a convenient historical figurehead for the Renaissance because he coined the phrase “Dark Ages” and explicitly drew a distinction between his era and the preceding few centuries.
salvation business. The Church was corrupt with its sale of priestly offices and indulgences, shares of God’s grace.

**Martin Luther** was a monk and professor of theology. Vehemently opposed to the sale of indulgences, he went so far as to question the Church’s very role as a middleman between God and his worshippers. Luther construed the doctrine of “justification by faith alone” to mean that Christians were redeemed solely by having faith in Jesus, not by good works or priestly rituals. Luther was well known for standing his ground before the pope and the Holy Roman Emperor, becoming the leader of the first Protestant church. He translated the bible into German so that laymen could interpret it for themselves.

Luther’s Reformation hit Europe like a lightning bolt. It appealed to ordinary people as a more democratic form of worship. To secular rulers, it justified a shift of power in their favor. Protestant princes seized Church property and diverted their subjects’ tithes (Church fees) to taxes, so the conflict had very real earthly significance.

The transition was traumatic, plunging Europe into chaos and war for most of the 16th and 17th centuries. The French Wars of Religion ended with an uneasy truce before Louis XIV ultimately outlawed Protestantism. After three civil wars, England ended up a Protestant nation. The Thirty Years War, centered in the Holy Roman Empire but entangling several nations, was Europe’s deadliest war in history up to that time, foreshadowing the hell to come three centuries later.

The common phrase “religious war” is a little misleading. By and large, these wars were kingly contests. However, religion was a central pillar of state and nation, so the Reformation made religion a pressing question in matters of alliances and autonomy. Some rulers believed that God would protect them or judge them depending on their defense of the true faith.

The 1648 Peace of Westphalia mostly ended the holy wars. This seminal treaty established the principle that European states existed as equal sovereigns and would not interfere in each other’s domestic affairs without invitation. National sovereignty is still a governing principle of international law. The Protestant / Catholic rift spelled the end of Christendom and the beginning of modern Europe. It is a more humanist, secular Europe, opposite of Luther’s predilections.

* Catholic France, for example, allied with Lutheran principalities against the Catholic Habsburg Dynasty.
C. Overseas Empires

One of the most consequential facts of the last millennium is that America was colonized by Europeans, not by Asians. That’s in large part because Europeans were attracted seaward by Asian riches. The Ottoman Empire controlled overland trade routes to Asia. The few sea routes open from Europe to the east were monopolized by Italian states. Other European nations started to think ambitiously about reaching Asia the long way around. Spain and Portugal began seriously exploring the Atlantic in the 15th century.

Portugal was the first to reach Asia. Enticed by legends of Mali’s gold, Portugal was also attracted to Africa. Prince Henry the Navigator invented caravels, greatly improved sailboats that could make the return trip against headwinds. With these vessels, Portugal quickly established trading posts all along the shoreline from western Africa to China.

Spain attempted the trans-Atlantic route. Columbus was destined for India when he landed in the Caribbean “Indies”. 15th-century papal decrees granted Portugal sovereignty over most of Africa, and Spain over most of the Americas.

Spanish conquistadors were drawn to South America for its silver and its dense populations of natives. Spain implemented a feudal system exchanging native labor for defense and Christianization. After observing human sacrifice by the Aztecs and Incas, conquistadors felt justified subduing these cultures and Christianizing them. They toppled the Aztecs with the aid of neighboring enemy tribes. The Incas were weakened by civil war and also fell easily. Soon, all of South - Central America was Spanish except Brazil, ceded by treaty to Portugal.

English, French, and Dutch colonizers followed the Latins by one critical century – a century of Reformation and religious wars. Many settlers were drawn to America for peace and religious freedom. As Protestants, the English disregarded the pope’s reservation of America to Spain. By 1700, they established 12 colonies representing 14 of today’s United States. The English crown was primarily interested in colonizing Ireland in the 17th century, so it left American colonization to smaller private ventures. Consequently, those colonies always had a particularly independent character. With neither mineral wealth nor a native labor pool available to them, North American settlers invested more in private enterprise and land development than the Spanish.
Native land rights were complicated. European colonists made a series of purchases and treaties with native tribes, but also engaged in war, slavery, and exclusion. In reality, they were encroaching empires that gradually overpowered native nations. This is still an emotional issue today, but it was no different from any other empirical domination of the preceding few millennia, including the Aztec and Inca subjugation of the tribes before them.

**D. Capitalism and Protectionism**

Post-Renaissance Europeans developed *capitalist* economies. Capital is wealth invested by private parties in hopes of making a profit. As ordinary people began to earn wages and own property, the feudal model of the self-contained manor broke down. Various regions produced surpluses of different products that could be traded in markets, leading to greater overall productivity nationwide. This happened most rapidly in England. A major 17th-century breakthrough was the *stock market*. Stocks are small shares of investment and ownership in large corporations.

At that time, the biggest money-making ventures were for trade. There was great profit to be made by picking up shiploads of goods in Asia and selling them at a markup in Europe (or vice versa). The Dutch and English *East India Companies* were formed for that very purpose around 1600. Until the 19th century, these and similar charter companies were behemoths, precursors to today’s multi-national corporations. They were semi-private. State governments took great interest in using them as agents of economic competition.

This was the era of highly nationalistic *merchant capitalism*. Nobody was looking out for the best interest of the world as a whole, so the idea of free trade did not cross borders. The prevailing view of global economics was a *zero-sum game*; it was falsely assumed that one nation’s gain was another’s loss. Monarchs felt they had no choice but to compete fiercely for access to resources, goods, trade routes, and markets. Economic protectionism and trade wars led regularly to military conflicts until the breaking point in WWII.

Capitalism has a mixed legacy. Its purpose, to grow wealth, is noble on the face of it. Capitalism helped distribute wealth to more people than ever before, and it went hand-in-hand with industrialization. But in its original form capitalism was ruthless and had no concern for the harm it caused to outsiders. Colonization was a major program in the competition for resources. The darkest chapter of colonial history was the Atlantic slave trade. As early as the 1400s,
Portuguese traders made slave raids in Africa. The slave trade expanded for centuries as several European nations transported African slaves to their American colonies for free labor.

2nd-millennium European nations chose to define their relationships by competition rather than cooperation. Their arch-rivalries led to high arts and sciences, industry, and modern medicine as well as slavery and racism. Competition brought out the best and worst of Europe, inseparably woven into the culture that was soon to spread worldwide.

VIII. Reasoned Thought

Our ancestors have contemplated the world ever since they had the capacity for abstract thought. However, higher thought functions evolved as untrained instincts harnessed to the senses and emotions. Only in the last few millennia did philosophers start to think about thinking. They recognized that thought is most accurate when imagination is disciplined by reason. Reason can reveal universal truths that do not depend on culture, opinion, or coercion. Sometimes people have changed the world just by changing the way we think about it.

A. Logic

Ancient Greeks, especially Aristotle, systematized formal logic. Logic is the study of truth as captured by language. It is highly abstract, so logical rules apply equally to apples, oranges, and thoughts about oranges. The adjective “formal” here means that the veracity of an argument can be analyzed based on its form, no matter what the argument is about.

The basic unit of logic is a sentence that represents a true or false fact. Facts can be qualified and quantified with terms such as sometimes and for every. They can be connected with conjunctions like and / or / not. Some connections are conditional, for instance, “If fact A is true, then fact B is false.” These simple connections lead to rules about how the mind must work in order to follow reality.

Aristotle analyzed formal logic during the Athenian democracy. In a democracy, citizens debate to persuade each other to action. Aristotle recognized that clever rhetoricians could convince each other of false facts with illogical tactics: by appealing to emotions or popular opinion, or by making faulty arguments sound convincing. His main contributions were the
analysis of syllogisms and logical fallacies (faulty reasoning). A syllogism connects two factual premises together to deduce a third fact, a conclusion:

<table>
<thead>
<tr>
<th>Correct</th>
<th>Example</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Some Antiques are Bronze, and All Bronze Corrodes.</td>
<td>Some As are Bs</td>
</tr>
<tr>
<td></td>
<td>Therefore, Some Antiques Corrode.</td>
<td>All Bs are Cs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some As are Cs</td>
</tr>
<tr>
<td>Also</td>
<td>Some Albums have Ballads, and Ballads always make me Cry.</td>
<td>Some As are Bs</td>
</tr>
<tr>
<td>Correct</td>
<td>Therefore, some Albums make me Cry.</td>
<td>Some Bs are Cs</td>
</tr>
<tr>
<td>Incorrect</td>
<td>Some Appetizers have Berries, and some Berries make me Choke.</td>
<td>Some As are Bs</td>
</tr>
<tr>
<td></td>
<td>Therefore, some Appetizers make me Choke.</td>
<td>Some Bs are Cs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some As are Cs</td>
</tr>
</tbody>
</table>

An argument that follows the upper form will be correct, whether it’s about antiques, albums, or anything. By merely changing the “all” to “some”, we get the lower fallacy. The “appetizers” argument is faulty, even if some appetizer really does make me choke! *

It’s easy to fool people with bad logic, because the human mind understands examples and personal experience best; it takes extensive training to think in purely abstract terms. Many people buy fallacious arguments, especially ones that support predisposed beliefs. Not only do we filter evidence, but we often filter logic itself!

An orderly system of logic gave philosophers and scientists much better guidance to move academic progress forward. Logical statements have a “mechanical” flavor to them, in that they lead to conclusions automatically. In very recent centuries, engineers learned how to program logical sequences into machines, which progressed into computers. Even the phone in your pocket is part of a long tradition going back to Aristotle.

* The conclusion could be false even while both premises are true, for example if appetizers contain strawberries but it’s blackberries that make me choke. Even if an appetizer made me choke, this would only prove the conclusion, not the argument connecting the premises to the conclusion. Mathematically (stripped of examples), this is a false argument.
B. Science

1. The scientific method

Logic alone is not enough to understand the world. Consider this argument:

- Oranges are rich in vitamin C
- Vitamin C effectively prevents colds
- Oranges effectively prevent colds

This syllogism is logically correct, but that only means that its conclusion is as good as its premises. We have to test those premises in the real world. First, we can’t ascertain whether oranges are rich in vitamin C just by thinking about oranges. We have to analyze some oranges in a lab.

It’s even more challenging to test whether vitamin C effectively prevents colds. Inductive reasoning from examples may suggest a hypothesis: “I have been getting colds less often since taking my vitamin C tablets. Maybe the vitamin C is preventing colds.” An experiment is the best way to test this prediction. By comparing people who take vitamin C to those who don’t, a scientist can get a pretty good idea of the vitamin’s efficacy. The clearest and most convincing results will be mathematical, for example by describing percentages and time durations. Observations, induction, experiments, and mathematical modeling are key elements of what we now call the scientific method.

Ancient Greeks showed some mindfulness of induction and observations, but they were not good scientists by today’s standards. They proposed many laws of nature that were flat-out false but went unchallenged for millennia. Medieval Moslem scientists were more experimental and mathematical, and started overturning some classical ideas. * Renaissance Europeans continued developing science as a form of inquiry.

By 1650, it was well established that quality of knowledge is not measured by the person who expounds it but by the method he follows. Science was seen as an evolving body of hypotheses that lost or gained strength based on evidence. A hypothesis should also be falsifiable: it should make predictions that can be tested as true or false.  

* For example, Alhazen (who lived in Egypt in 1000) wrote a treatise on optics in which he demonstrated experimentally that light enters the eye from objects. This contradicted Euclid, Ptolemy, and Aristotle.
2. The scientific revolution

16th century Polish astronomer Nicolaus Copernicus used meticulous observations to propose the radical notion that the Earth goes around the sun. Copernicus’ model was imperfect, so much so that we might call his discovery a lucky guess. Nevertheless, it was confirmed, refined, and mathematized after another century of scientific observations. The power of science to uncover such a grand but invisible order made a great impression throughout Europe. The movement it inspired is now neatly summarized as the scientific revolution.

Since astronomy is mostly observational, it lent itself to early rapid development as a body of science. The same was true of anatomy. With dissections, scientists such as Vesalius and Harvey were able to discover basic realities about the structures and functions of organs.

The Renaissance’s trailblazing experimental scientist was Galileo. * He used man-made experimental setups to systematically force nature to give him answers. For instance, it is difficult to take precise measurements of falling balls, so Galileo slowed them down by rolling them down ramps. His observations led to broad laws of nature and mathematical descriptions of movement and solid / fluid mechanics.

The generation after Galileo saw a flurry of activity in many fields. Scientists made revolutionary discoveries in hydraulics, optics, electricity and magnetism, geology, and biology. The mathematics to describe nature matured very quickly into calculus and other advanced methods. Scientific academies and journals formed around each discipline. This accelerated the pace of science well beyond what isolated medieval thinkers had accomplished.

Isaac Newton † tied together many strands of scientific progress with mathematical principles. His universal laws of motion and gravitation were the most far-reaching. Aristotle had taught that Earthly objects have very different natures from heavenly objects. Newton showed that the same laws apply to motion in the heavens as on Earth. The moon’s circular orbit is a combination of straight-line motion in two directions: falling toward Earth (gravity, like an apple from a tree) and flying off tangentially into space (inertia, like a puck on frictionless ice).

Mathematical laws also greatly delimited the role of magic willpower in nature. If particles and planets moved in patterns that could be predicted on paper, nature’s laws seemed more like

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* Lived in present-day Italy in 1600
† Lived in England in 1700
indifferent properties of numbers than any divine plan. Post-Newtonian scientists spoke of a “clockwork” universe, one that did not operate at God’s whim but that could be precisely understood with close study.

Although Europe’s leading scientists up to and including Newton were devoutly Christian, some discoveries were starting to conflict with scripture or church doctrine. Churches banned numerous scientific works for heresy. Europe entered a confusing period when reason and authority gave different answers.

C. Probability and Statistics

Outside of clockwork and astronomy, most phenomena are complicated and difficult to predict. Probability is the reasoned way to deal with the unknown. In medieval thought, understanding the unknown was a matter of interpreting signs from nature. To determine whether a sick man would survive, an oracle might say that a flock of ravens foretells his death, whereas a doctor might say that death is more likely when the patient’s nose perspires. Obviously, some signs were more accurate than others. Signs led to the concept of evidence, and the reliability of evidence was called probability.

17th century mathematicians realized that some probabilities could be quantified by counting equally likely events. Tools of chance – dice, playing cards, roulette wheels – provide the simplest illustrations. There are about 3,000,000 ways to deal a poker hand. Roughly 5,000 of these hands constitute a flush. Thus, the probability of getting a flush is 5,000 / 3,000,000 or about one in 600. Interpretation 1: In a casino full of 600 gamblers, about one of them would hold a flush. Interpretation 2: It is rational for a gambler to bet $1 for a $600 prize in the event he is dealt a flush. Understanding these interpretations helped make lotteries, insurance, law, and pensions fairer and more efficient. Managing risk wisely became an integral part of capitalistic investment, wealth management, and state budgets.

An essential step in calculating probabilities is to have accurate tallies of data. For instance, if the state issues annuities to millions of men, it needs to know the probability that each

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* Renaissance science directly conflicted with ancient Greek science much more than with the bible, which is much vaguer and less falsifiable. However, the Church had gone to great lengths to integrate ancient Greek science and philosophy into its dogma.

† Pascal, Fermat, Leibniz, Huygens, and Bernoulli were some of the pioneers in this breakthrough.
man will survive each year to collect his payment. This probability is determined by examining voluminous record books. **Statistics**, the study of data, was pioneered concurrently with probability. The earliest known case study was John Graunt’s analysis of England’s *Bills of Mortality*. This tome listed christenings, deaths, and immigrations through the centuries. Graunt was able to determine fundamental facts such as that England’s children were born 51% male, and that plagues rarely lasted more than two years.

Without examining data, such valuable but subtle truths would otherwise be invisible. Most people get their understanding of the world through direct personal experience. Any one person’s experience, though, is too limited and biased to get the full picture of reality. Conventional wisdom, too, can be mistaken. For instance, the English once believed that plagues struck whenever a new king was crowned. Data proved that this was false superstition. Science and society have become increasingly data-driven ever since – a characteristic that is only accelerating in the computer age.

**IX. Summary**

When you hear the phrase “world history”, you may well think of the contents of this chapter. This is the chronology that has been passed down to us in school. The reason we associate world history with the past few millennia has as much to do with the realities of history as the history of reality.

On the affirmative side, this was an age of profoundly influential changes. The most powerful institutions 1,000 years ago were empires and world religions. Although they often clashed at the margins, they unified kingdoms into ever-larger blocs, alliances, and cultures. By 1700, trade and international affairs were consciously global. Virtually everyone lived in a society that had been transformed by a major empire or religion, whether a Brazilian Catholic or a Chinese Buddhist.

Empires and nation-states were the highest recognized form of sovereignty. Their disputes were settled more by contests of strength than by rule of law. Competition often brought out the best and worst of nations. This was shown time and again, from the Chinese warring states to the Greek and Mayan city-states. Seafaring empires such as England, France, and the Netherlands engaged in an accelerating cultural competition. Their rivalry produced wonders such as capitalism and the scientific revolution, but, as we know, they were engaged on a fatal collision
course. The 30-Years War and other ostensibly “holy” wars set the pattern that would continue until the empires finally destroyed each other in the 20th century. The change that Europe brought to Africa and the Americas is an extremely mixed legacy, still among the most divisive historical issues today.

There is another, very pragmatic reason that history courses focus on the last few millennia. Before recent sciences such as archaeology and paleontology, the only window into the past was written records. Writing and reading became commonplace only in the 1st millennium. The ancient Greeks and Chinese had particularly good scripts, so we often think that history began with them. With an exclusive reliance on ancient writings that fade out gradually beyond -1000, it is easy to get the false impression that this was a magical time when human affairs themselves emerged from a void. As we have seen in Chapters 3 – 4, though, institutions such as government, law, and religion were already highly advanced by that time. Surely Confucius, Jesus, and the Buddha were not the first people to talk about human decency, but, since their wisdom was among the earliest on record, they were given immense credit and accorded super-human qualities. The oldest written scriptures of the Jews and Hindus – the bases of all surviving world religions – date from this period and purport to describe the creation of the world. With no earlier texts to refute them, they were literally taken as gospel.

The quiet counterrevolution was the progression of rational thought. Ancient Greeks understood logic and the nuances of language. Millennia later, science and statistics gave scholars techniques for understanding nature. The world looked much the same at the end of Chapter 3 as at the beginning, but it had reached the threshold of modernity and was ready to cross over.
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X. Citations


4 Howe, op. cit. at 14.


12 Finkelstein and Silberman, op. cit., Chapter 2.


15 This thesis is fleshed out by Reza Aslan in Zealot: The Life and Times of Jesus of Nazareth, Random House (2013), esp. pp. 120 – 121 and Ch. 12.
None of the gospels except John, the last written, refers to Jesus as “God”. Dom Henry Wansbrough, “What Did Mark Think of Jesus?” Tutorial Essays for Oxford BA in Theology, https://web.archive.org/web/20161129135401/http://users.ox.ac.uk/~sben0056/essays/markviewofjesus.htm, paragraph 2 (c. 2012, accessed and saved 9/14/19). See also Gustavo Vazquez Lozano, Jesus of Nazareth: The Historical Search for the Christian Messiah, 2016, Charles River Editors, eBook version, location 239, which shows the progression of describing Jesus from an earthly preacher in Mark (earliest gospel) to a divine figure in John (latest gospel).


Hans Wolfgang Schumann, The Historical Buddha, Penguin / Arkana books (German, 1982, translated by M.O. Walshe, 1989), p. 192

Schumann, ibid. at 33 and 79


Two well-known examples are Kings Bimbisara and Pasenadi.


Schumann, op. cit. at 139 - 144


Most of the facts in this paragraph are from Li Feng, Early China: A Social and Cultural History, Cambridge University Press (2013), Chapter 11.


37 Paul S. Ropp, China in World History, Oxford University Press (Kindle eBook edition, 2010), location 1115.

38 Ropp, ibid. at location 1268


40 Paul S. Ropp, China in World History, Oxford University Press (Kindle eBook edition, 2010), location 1684 - 1695

41 Ropp, ibid. at 1707


43 Mongol Empire map by Ali Zifan (CC BY-SA 4.0, https://creativecommons.org/licenses/by-sa/4.0/), https://commons.wikimedia.org/wiki/File:Mongol_Empire_(greatest_extent).svg (accessed and saved 9/18/16, archived 10/14/19).

44 European map “Odoacer’s Kingdom of Italy in 480 AD” by Thomas Lessman, World History Maps (10/02/2008), (CC BY-SA 3.0, https://creativecommons.org/licenses/by-sa/3.0/), https://en.wikipedia.org/wiki/File:Odoacer_480ad.jpg (accessed and saved 10/05/16, archived 10/14/19).


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67 Barbara Mundy, “Water and the Aztec Landscape in the Valley of Mexico”, *Mexicolore* (3/24/12), 

68 Staff writer, “Economy of the Inca Empire”, Boston University / Peru Cultural Society, 

https://books.google.com/books?id=pDjIc1ws158C&pg=140 (accessed and saved 10/05/19).

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71 Tunde Fatunde, “Scholars focus on the Arab trans-Saharan slave trade”, *University World News*, Issue 217 (4/13/12), 

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78 Tryntje Helfferich, *The Thirty Years War: A Documentary History*, Hackett Publishing (Kindle eBook edition, 2009), location 211.

79 Matthew White, “Selected Death Tolls for Wars, Massacres and Atrocities Before the 20th Century” (2012), 
http://necrometrics.com/pre1700a.htm (accessed and saved 12/01/16, archived 10/16/19). These metrics are clearly rough estimates, but the tallies show that Europe never experienced anything close to the scale of the 30 Years War since the Roman Empire.

80 Helfferich, *op. cit.* at location 240, supported by Documents 20 and 28 within the same book.

81 Helfferich, *ibid.* at locations 364 – 371, with citations to the original source documents translated by Helfferich in the same book.

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87 It was called the encomienda system, and it is easy to find in encyclopedias and general-interest websites.


91 See e.g. Philip T. Hoffman, Why Did Europe Conquer the World? Princeton University Press (2015). Hoffman defends the thesis that Europe’s empowerment in the Renaissance was spurred by the continent’s unique form of military rivalries.

92 Michael Shenfelt and Heidi White, If A, Then B: How the World Discovered Logic, Columbia University Press (2013). Chapters 1 and 2 give a unique discussion of how Aristotle’s formulation of logic was influenced by his environment. Section 2.5 in particular discusses “The Separation of Logic from Rhetoric”.


96 Scientists on the Catholic church’s Index of Prohibited Books included Kepler, Galileo, Descartes, Francis Bacon, and Pascal. For the Church’s arguments against Galileo, see Ernst Krause, “The Struggle Regarding the Position of the Earth”, The Open Court 14(8):449-474 esp. at 459 (August, 1900), http://opensuc.lib.siu.edu/cgi/viewcontent.cgi?article=1214&context=oecj (accessed, saved, and archived 10/12/19).