Faith and Fortune in the Creation of Our Modern World

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By

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I am grateful to the many authors whose works I have been able to use for building up the thesis of this book: modern society is a result of a series of chance events that happened in Europe from the end of the Roman Empire in the west to the 19th century. I also thank my friends and colleagues for constructively commenting on my ideas. Most of all, I thank my friend Bjorn Schumacher for reading the manuscript and his many valuable comments and criticisms. I thank my wife, Claudia Gravekamp, for reading early versions of each chapter and providing feedback, especially in making it more readable for the non-expert. Finally, thanks must also go to my editors at CSP for their help in producing the book.

PREFACE

At the end of the 19th century, most of the world had come under control of European powers. The question of why this had happened is easy to answer: Europe and its offshoot in North America, the United States, were in possession of superior technology that enabled them to develop manufacturing industries of a size and efficiency the world had never seen. This technology gave rise to economic resources and weaponry other inhabitants of the world could not even dream of, making resistance futile even by age-old, highly sophisticated civilizations—most notably, China. Only now, more than a century later, has the rest of the world started catching up and only by adopting virtually all European accomplishments. The West truly reshaped the world in its image.

The question of how the West became so dominant is more difficult to answer. We know that it started in northwestern Europe with an early focus on England. But why was it Europe that, around the turn of the 19th century, went through the explosion of technology development we now call the Industrial Revolution? Why didn't it happen in superficially more powerful and wealthier empires, such as the Roman Empire in the 1st century BC or China in the 9th or 15th century, under the highly successful Tang and Ming dynasties, respectively? Is it because Europeans are naturally smarter than non-Europeans and the Industrial Revolution was actually the natural end of a long process that led an entrepreneurial, creative, and adventurous people to discover far away countries, become rich, and develop the science and technology needed to drastically change economic life that had been stable for thousands of years? Did Europeans develop a unique culture that made such a process unavoidable? Or could the same process have happened elsewhere too? In this book, I have tried to answer these questions, essentially drawing two conclusions: First, the causes of European dominance had nothing to do with being naturally smart or having a superior culture, but everything with luck; second, the good fortune that led to the single most important transformation of human life since our species evolved in Africa several hundreds of thousands of years ago was not some isolated development that could and would have happened somewhere else if Europe would not have preempted it, but rather a remarkable series of fortuitous conditions, events, and processes. The

chance that this development would have happened anywhere or could happen again must be infinitesimally small.

Most people, especially in the West, don't see their success as luck or a series of highly unlikely events. Humans like to think in purposeful processes and prefer explanations in terms of clear underlying factors, such as the claims that Mozart was a gifted composer because musical talent ran in his family, the United States is an exceptionally successful nation because of its freedom, China owes its economic success to the wisdom of the communist party, and I won at blackjack because I have a system. For this reason, most explanations proposed to explain the success of the West are based on its unique culture and political system that fostered individual creativity, freedom, hard work, and the rule of law. These factors made the breakthrough of the 19th century inevitable—or so the story goes. But the reality, as I will explain in this book, is that Europe's success was a chance process driven by unique local conditions and a series of incredibly unlikely events that eventually all intersected in England around the turn of the 19th century.

Western dominance had major consequences and still defines societies to a large extent. For example, in their century of dominance, the Western states have brought many of the most precious objects of art to their shores. We now find them in the great museums and private collections of England, France, Germany, and the United States. Not coincidentally, the number one universal museum in the world is the British Museum in London, a true encyclopedic museum if ever there was one. Its sections on the Americas, the Islamic world, China and South Asia, Sub-Saharan Africa, Egypt and the Middle East, Greece and Rome, Mexico, Iran, Turkey, India, and Korea bulge from all the precious art taken through British might. Although London remains special, many European and North American cities offer showcases of art from around the world, much of it in private collections. Of course, encyclopedic museums are only found in the West. Great museums in the rest of the world, like the Topkapi Museum in Istanbul, the National Museum in Beijing, the Tokyo National Museum, the National Museum of Korea in Seoul, and the Shanghai Museum, are all almost exclusively focused on their own nation. Even then, they lack some major assets now in possession of museums or private collections in the West. India's most famous diamond, the Kohinoor, once part of the Peacock Throne of the Mughal Emperor, cannot be found in India, but is instead part of the British crown jewels. Sometimes, whole pieces of ancient architecture were shipped to Europe or the United States from around the world, from Egyptian temples and obelisks to Babylon's Ishtar gate in what is now Iraq. In 1860, French and British forces destroyed and plundered Beijing's old

Summer Palace, and today many of its original art works are in private collections and prestigious museums in the West. An estimated up to 10 million antiquities have disappeared from China since 1840; not all were stolen, but were most certainly channeled through the European and American art markets.

The encyclopedic world art collections unique to the West reflect only one aspect of their global dominance. Because of their success, which they didn't perceive as luck, it is not surprising that Europeans and later Americans began to consider their own culture as superior to that of other people around the globe. The term Orientalism was coined by Edward Said in his book of the same name[1] to denote Western exceptionalism. It is not limited to the arts. It shows in philosophy, with even the word philosophy used for European philosophy only. When something interesting comes from Africa or Asia, it must be denoted as that. In other words, it cannot be part of the canon, which is the Western canon. Orientalism also shows in politics. The West sees itself as the pinnacle of good governance, with its successful liberal democracies considered to be universally beneficial to humankind. As a baby boomer, I was raised in a society that took it for granted that the West knows best, with the rest of the world being expected to follow the guidelines from where the sun goes under to ensure that everything would be fine. This expectation is a bit different now, but not entirely. Europe and the United States still consider their shared culture of values, faith, and tradition as an unparalleled force for good and superior to those of their contemporaries. In his *The Clash of Civilizations and the Remaking of World Order*, Samuel Huntington underscored this moral superiority of the Western mind by contrasting it with the Orthodox (mainly Russia), the Eastern (mainly China), and the Muslim world.[2] In an article published in *The Nation* entitled "The Clash of Ignorance," the aforementioned Said considered it to be an example of racism.[3]

Today, almost the entire world has adopted Western civilization, which has changed Tokyo, Beijing, Seoul, and Lagos into London, Berlin, Paris, or New York. Western technology, architecture, clothing, and art have spread around the world, and today there is hardly a place on earth that does not look Western, provide the services Westerners are used to, and have inhabitants who behave like Europeans. Even the sandwiches served on Japan's bullet trains are British. In contrast, the West has adopted very little from the rest of the world, except food and even then usually in modified form. Beijing, Doha, Lagos, and Osaka have the indoor plumbing, electricity, transportation, and medical care invented by 19th-century Europeans. Europe's 19th-century technology burst has changed everything!

To understand how a series of coincidences and local conditions could completely change human societies everywhere on the globe in a very short time, we need to dig deep into history and not exclusively the history of Europe. Only a systematic analysis of all the factors involved will give us answers—answers that, as we will see, will also allow us to make some predictions as to where we go from here. How did Europe, which is no more than a small peninsula of Asia and a latecomer on the scene of world civilizations, manage to get such an extraordinary influence on the rest of the world that it could reshape it in its own image in less than a century? As I argue in this book, the dominant factor here was luck. Europeans were lucky to be in a subcontinent with a goldilocks climate: not too cold, not too warm, and well-watered by multiple great rivers. They were lucky to escape early domination by militarily superior powers, from the Roman Empire in the 5th century to Genghis Khan's Mongol hordes 8 centuries later. Europeans were lucky to always remain politically fragmented, from a great many statelets in the Middle Ages to several fiercely competitive nation-states in pre-modern times. They were also lucky with their unique geographical position on the Atlantic Ocean that allowed the capture of America and the Atlantic trade, creating a stream of new wealth. Most of all, they were lucky to have adopted a religion that managed to unify the highly fragmented medieval European landscape under its banner of individualism, reason, and equality under the law. Finally, they were lucky to stay out of the hands of absolute monarchies and discover the wealth-generating power of representative government dominated by merchant manufacturers. European culture was formed by these factors, but Europeans didn't create them. They were just lucky to be in the bull's eye of an incredible series of fortuitous events converging at the same time and place.

None of these factors, including how they came about and how they interacted, could be foreseen, and they certainly had nothing to do with a uniquely brilliant mindset. They were not deliberate, and the element of chance greatly superseded the element of choice. It can be safely stated that our modern society should never have come into existence simply because the chance of all these factors emerging and coming together at one place on earth was miniscule.

The progress of humanity over the millennia has been gradual, and societies in the early 19th century, including European societies, were the same everywhere, with virtually all people active in working the land and at most 10% of them in cities. The world would still be that way if many flips of a coin had not all gone in the same direction to meet each other at the right time and place and give further impetus to a process nobody could

foresee that led to the highly unlikely event of what we now call modernity. But this is what makes the story of how it all came about so incredibly interesting and worthy of being the topic of this book.

Part 1 describes how Europe made the switch from being a minor part of the Roman Empire to a society unified by its Christian belief system and how the foundations were laid for its future world dominance.

Chapter 1 reviews Europe's plunge into chaos in the 5th century after Rome's legions were no longer able to keep the barbarian tribes from the northeast at bay. It is a story of mayhem, a shattered culture, and a loss of societal norms that everyone had begun to take for granted. Yet it is also a story of the birth pangs of a new kind of society, a society that no longer looked at the ancient structures of a unified state for direction, but began to take initiatives, feeling for—as Deng Xiao Ping would later say when talking about how China had to climb out of its problem pit[4]—the steppingstones that had to bring them across the river.

Chapter 2 is the story of how Europe crossed that river. It all began with a massive transfer of power from what was once a central state, with an administration and a professional standing army, to a politically splintered Europe where war was endemic, cities were abandoned, and virtually all peasants, free or slaves, were bound to a great landowner as serfs. All these landowners were now occupied with warfare and left their serfs to their own devices as long as they provided the lord with food and services. This situation offered the serfs an incentive to increase production for themselves. Leaving Roman agricultural habits behind, they not only managed to carve out an existence for themselves, but also adopted a host of new agricultural technologies to make optimal use of the very fertile yet extremely difficult to work clay grounds of northern Europe. Against all odds, in times that were violent and devoid of the once-so-stable Roman state structures, these humble serfs began to increase production to a level unheard of even at the height of Roman civilization. As supercharging agriculture had always done, this growing production greatly increased population size, which doubled between 1000 and 1300 AD, reintroduced a division of labor, reinvigorated city life, and created increased wealth, artistic splendor, and higher learning. By halting the inroads of Asian steppe people, it also showed military expansion in the northeast, and Spain (the Reconquista), and the Crusades. During this period, we see how the economic and especially the political focus of Europe shifted from the Mediterranean to the north, with areas such as Flanders beginning to equal Italy in economic success. Politically, power was no longer in Italy but was now instead in Germany, France, Spain, and England.

It is important to see how easily this fortuitous development could have been prevented. If Charlemagne or any of his successors would have been able to establish a new, central administration, as in the old Roman times, the war lords would have been cowed and sent back to manage their lands. They would have begun to use slaves again who would, as in the past, lack any incentive to adopt or invent technology to increase productivity.

Chapter 3 shows how the Christian religion began to dominate the Middle Ages and became the engine behind a unified European society, then called Christendom. Christianity was unique among the world's religions because it placed the individual front and center and did not consider tribe or clan, rich or poor, male or female as different before God. Making optimal use of a politically splintered Europe, a series of strong popes made the Church of Rome so powerful that it could order even kings around just by threatening them with hell and damnation if they did not obey. In the 12th and 13th centuries, the Christian belief system unified a politically fragmented Europe. As the inheritor of Greek and Roman intellectual life, only the Church could muster an administration capable of ruling all Europeans. Considering the Church superior to secular rulers, the Christian leadership created an organization with a legal system based on individuals under God and His representative on earth, the Pope. This made Europe unique in the sense that there was no central, secular ruler to claim control of both the law of the land and the faith of their citizens. Importantly, Church rules against concubinage, divorce, and cousin marriage obliterated extended families, which promoted individualism. Individualism and a law system that was and still is independent of the secular state promoted trust in strangers (through legal contracts) rather than the ancient focus on family, clan, and tribe. In time this would lead to the Western mentality as we still know it, promoting individualism above collectivism and ample connections with non-kin as in joint-stock companies. At the same time, it was also the Church that developed the first universities, generating a community of scientists who traveled from city to city to teach and investigate God's creation. It was at this point, not during the later Renaissance, that our current global scientific community was born, with its focus on logical thinking and the use of reason, as first espoused by Peter Abelard (1079–1142), who argued that everything should be investigated, from the existence of God to the laws of motion. Strongly deviating from ancient Greek and Roman views, the focus was now practical, seeking material explanations by studying concrete objects rather than abstract entities. All later giants of science, from Newton to Pasteur and Einstein, would stand on the shoulders of these men in working out their own theories

that would collectively build the technological powerhouse currently driving human society across our planet.

It is important to realize that the victory of the Church in Europe's Middle Ages was unusual and highly unlikely to have happened at all. Throughout history, religion was very much a state affair, and the secular leader was also the religious leader. The power grab by the popes of Rome should never have happened. The fact that it did and was successful had everything to do with good fortune—the good fortune of a fragmented Europe with no strong secular leader, the good fortune of a Church monopoly on learning, and most of all the good fortune of a generation of Church leaders who genuinely wished to enforce Church rules on all Europeans. We owe them the strict separation of church and state, European individualism, and a rule of law that remained independent from the secular rulers also after the Church began to lose control.

Part 2 describes how Europe from the 15th to the 19th century began its triumphant path to become the ruler of the world, reaching its apogee in the 20th century with its offshoot, the United States.

Chapter 4 describes how, in the 16th century, Europe transformed itself from a subcontinent unified by one belief system to simply a geographical entity of dynastic states, mostly Protestant in the north and mostly Catholic in the south. During this time, Europe used its fortunate geographical position to capture the great price of the Americas and opening sea routes to Asia, establishing trading posts from India to Indonesia and China. A great stream of riches now began to flow, initially mostly from the Americas, into Europe, from gold and silver to sugar and tobacco. A manufacturing industry was established to serve the American colonies. Economic power in Europe now definitively shifted to the northwest, leading to the birth of the first capitalist state, the Dutch Republic, gaining independence from the Spanish Habsburg Empire after an 80-year struggle (1568–1648).

An oligarchy of rich merchants, the Dutch Republic turned itself into the premier trading nation of the world and a thoroughly bourgeois state during the 17th century. From the beginning of its existence, the republic had to fight the most powerful European states, most of which were absolute monarchies. Meanwhile, the Dutch Republic showed for the first time why an open, capitalist, and representational state is ultimately much stronger than authoritarian states by invading England in 1688, turning it into an even mightier copy of itself.[5] England took over the torch of capitalism and became a constitutional monarchy, with power mostly in the hands of a parliament that favored business. Lucky with its American colonies and

even luckier to get its hands on the fabulous riches of India, England would develop into the most powerful European nation by the end of the 18th century.

The important lesson from this chapter is again that things could easily have gone the other way. Any outside observer would have expected the authoritarian states of Spain and France to be the most likely victors in the European conflicts of the 17th century. Instead, it was the small Dutch Republic that snatched victory from the jaws of defeat.

While Chapter 3 recounts how modern science in its rudimentary form was conceived by the Christian Church as a duty to accurately explain God's creation following the rules of reason and logic, Chapter 5 describes the progress from the 16th to the 19th century in generating the scientific knowledge base that would be instrumental in developing the technology that made the jump to a modern society possible. This jump could not have happened without the streams of wealth flowing from the Americas and later from Asia as well, but its basis was the increasingly sophisticated method of knowledge gathering that originated in the Christian monasteries and cathedral schools of the Middle Ages.

Chapter 6 tells the story of how Europe would use its growing colonial wealth, in combination with its individualistic outlook, rule of law, and scientific infrastructure, to foster technological innovations that would lead to the Industrial Revolution and the largest economic growth the world had ever seen. England had come out of the 18th century as the most fortunate state. Flush with capital from its rapidly growing colonies in America, its East India Company, almost by accident, gained control over most of India. What followed was state-wide plunder and one of the largest wealth transfers ever. Before Britain took over, India accounted for 32% of the world's gross domestic product (GDP); when Britain left in 1947, this number had shrunk to 4%.[6] Using all this cheap capital and unhindered by an absolute monarch, England's merchant manufacturers began to invest in labor-saving technologies to make more with less. Mechanization of the textile industry was first. Domestic workers who lost their job opposed such efforts, but their opposition was repressed, with military force, when necessary. Making full use of its colonies as captive markets, Britain could soon afford free trade. The rest of Europe and the United States soon followed and, with all critical factors now in place, a sustained development of new technology began to change life as people had known it for millennia.

While initially leading to the destitution of many workers, the stream of new technology—ranging from the steam engine to electricity—soon began to generate many new jobs, from operators of the new factories

to office workers. This shift heralded the era of modern capitalism, operating smoothly alongside activist government and stakeholders, such as labor unions, to create a dynamic economy in which most could find a niche. Improvements in agriculture ended the recurrent famines, and an increasing understanding of the basis of disease began to result in an enormous reduction in mortality—most notably, childhood mortality. The resulting population explosion further cemented the position of the West as the ruler of the world. However, soon after the turn of the 20th century, fertility in the rich Western countries began to decline following the shift from a high mortality, high fertility society to our modern low mortality, low fertility society. For the first time in human history, anywhere in the world, poverty was essentially eliminated and everyone had a high chance to live out the natural lifespan of the species in relative health, wealth, and safety. Although the result of a multitude of chance events, this transformation of human society owed much to the precipitous rise in scientific knowledge—a rise that had begun in the Middle Ages under the auspices of the Roman popes, greatly accelerated in the 17th century, and reached its apotheosis in the early 20th century in the United States. The broad, ever-expanding scientific knowledge base kept the technology explosion going.

The Epilogue addresses two final issues: (a) what can the history of how modernity came to pass tell us about our future and (b) how likely is it for modern societies to emerge in the first place? Regarding the first question, it has been argued that innovation in the West has merely been a window in time that opened in the 19th century and closed again in the last half of the 20th century.[7] Although technological improvements have by no means ceased, the time of breakthrough inventions is over; this applies to the catch-up nations as well. Indeed, there is no evidence that Japan, South Korea, or China will take over the torch of innovation from the West.

The second question is more difficult to answer, but in view of the great many chance events that underlie the one successful transition from an agricultural into a modern, industrial, and postindustrial society, it seems not at all likely to have happened elsewhere, on other Earth-like planets. This contrasts with the milestones that led to intelligent life on Earth. Indeed, the emergence of life itself in Earth-like environments is likely[8] and, based on the enormous diversity of life created from the dual principle of mutation and natural selection, chances were also high that among the myriad of life forms on our planet sooner or later a supremely intelligent organism like Homo sapiens would emerge amidst many other intelligent organisms. That some humans would subsequently discover agriculture is also not farfetched given the fact that it was discovered multiple times at

multiple places on Earth.[9] However, based on the sequence of events narrated in this book, the chance that anywhere on this or another Earth-like planet a modern, advanced society would emerge is extremely unlikely. There were simply too many low-chance events that all had to come together at one time and place. Indeed, we may well be the only advanced civilization in the universe, which would explain why superior alien life has never contacted us.

Of the 200,000 years humans have roamed this planet, only the last century or so has seen the major improvements in living conditions that all of us are now used to. Food security, improvements in hygiene, and better medical care have led to an increase in global life expectancy from a miserable 25–30 years to 72.8 years in 2019 (World Population Prospects, United Nations, New York, 2022). We would never have seen this happening were it not for the faith and good fortune of a diminutive group of people on the fringe of Eurasia. It's up to all of us to foster this gift from history and extend it to all members of Homo sapiens.

This book is not based on primary scholarship. It is a synthesis of what others have written before me while my own contributions are limited to interpreting the events that unfolded as written down by others over a large time frame. The sources from which this book draws were chosen by me, which makes for a biased view. In this respect, I am sure that I must have left behind many valuable sources of facts, analyses of events, and valuable opinions. Needless to say, the choice of literature is my own, as are any logical errors in interpreting the historical facts.

New York, January 1, 2024

Notes

[1] Said, 1979.
[2] Huntington, 1993.
[3] Said, 2001.
[4] Vogel, 2011.
[5] Israel, 1995; Jardine, 2008.
[6] Maddison, 2007.
[7] Vijg, 2011; Phelps, 2013; Gordon, 2016.
[8] Whitmire, 2023.
[9] Carey, 2023.

PART ONE:

FOUNDATION

CHAPTER 1

ORIGIN

The proverb "all roads lead to Rome" may originally have referred to the Roman Empire's roadways, which 2,000 years ago radiated outward from its capital to the borders of the empire. But it is equally applicable for defining Europe in the Middle Ages as the lands were united under the pope in Rome, whose influence radiated to most of the lands we now recognize as Europe. These lands did not include Greece and the parts of southeastern Europe under Byzantine and later Turkish control; it also did not include Russia. Naturally, some may think it absurd to leave Greece out, considered by many to be the birthplace of Europe. However, although Greece made major contributions to European philosophy and science, it played no role in the rise of Europe as the birthplace of our modern society.[1]

Europe is often considered the product of three main factors: (1) the Germanic heritage of most of its people; (2) the sophisticated Greek–Roman civilization that continued to influence Europeans long after the collapse of the Roman Empire; and (3) the Christian religion that had its origins in Asia but would become closely associated with Europeans. As we shall see, of these three factors, Christianity in the form of the Church of Rome would provide the most critical contribution to the individual-based dynamism in Europe that would herald modernity in the 19th century.

Europe is small, covering roughly 2% of the earth's surface, and is not even a true continent, but rather part of Eurasia. The name Europe comes from Europa, a Phoenician princess abducted by Zeus, the king of the Greek gods. Unable to resist the beautiful princess when he located her on the beach of what is now Lebanon, Zeus changed himself into a white bull and persuaded Europa to climb on his back. Swimming away, he took her to Crete, where she gave him three sons. One of them was Minos, who later became king of Crete.

Some say that the word Europa is derived from the Phoenician word "ereb," which means "where the sun sets," or west. For the Phoenicians, who were great sailors, most of Europe was a dark continent. The exception was Greece, which had a great civilization as early as 1600 BC, the time of Homer's *The Iliad* and *The Odyssey*. A seafaring people themselves, the Greeks colonized southern Italy as early as the 8th century BC, but considered everything further north and west as barbarian.

Greeks called themselves Hellenes, and it took until the 18th century before the Europeans themselves began to refer to Europe as a geographical entity. If they gave themselves a name in the Middle Ages, it was "Christendom," underscoring the important role of the Roman Catholic religion in the rise of Europe. Before discussing the origin of Europe as we now know it, I will briefly review where Europeans came from, how most of them became subjects of the Roman Empire, and how this empire eventually collapsed and left them to fend for themselves.

Before Europe

Europe was populated as early as most other parts of the globe. Humans as a species (i.e., Homo sapiens) found their origin in Africa, probably between 500,000 and 700,000 years ago, as determined from genetic studies.[2] Approximately 120,000 years ago, groups of humans began to move out of Africa into Eurasia to spread both east- and westward to populate what is now Asia and Europe, respectively (Fig. 1).[3] The Americas were the last to be populated by Homo sapiens (from Asia) around 15,000 years ago. The

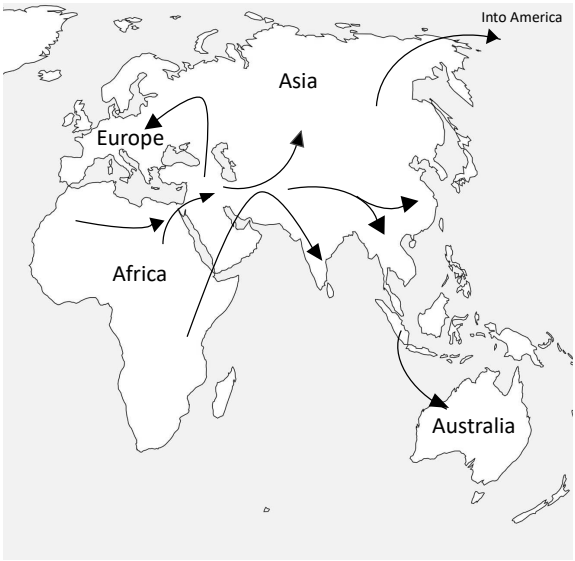

Fig. 1. Modern humans dispersed from different places in Africa into Europe, across Asia, and into Australia and the Americas. This happened in different waves between 120,000 and 25,000 years ago. Figure made by Claudia Gravekamp.

exact timing of both the origin of humans and their spread outside Africa remains uncertain.

Once out of Africa, humans spread far and wide, initially as one of multiple Hominin species and ultimately as the only one to survive. As we know from the famous rock paintings in the south of France and Spain, fairly high-cultured inhabitants of Europe go back at least to the Cro-Magnon people about 30,000 years ago. This has often been considered a sign that Europe was one of the first geographical areas showing some level of civilization but, in reality, it is more a sign that archeology was practiced in Europe well before anywhere else. Indeed, recently, cave paintings have been found in Mongolia, Indonesia, and India. The Indonesian findings revealed a rock art panel in a cave depicting several human figures hunting wild animals. The panel has been dated to at least 45,500 years ago (Fig. 2),[4] making it the oldest advanced art piece in the world and suggesting little difference between Asia and Europe in the timing of their development.

Fig. 2. Detail from the Leang Tedongnge rock art panel, Indonesia, showing a wild pig. The rock painting is 45,500 years old. Credit AA Oktaviana-01.

If there ever was some superiority in civilization in Europe as compared to the rest of the world, it disappeared pretty quickly because the first agricultural and city cultures were practiced not in Europe, but in the Middle East, India, and China. Compared to the great civilizations of the river valleys, such as the Nile, Euphrates, Tigris, Indus, and Yellow Rivers, some of which arose as early as the 4th millennium BC,[5] Europe was indeed barbarian territory. The irrigation agriculture in the river valleys of the Middle East, China, and India led to enormous surpluses and flowering

empires with monumental architecture and big cities. This positively affected some of their neighbors that lacked irrigation agriculture but developed into dynamic trading nations, showing the power of trade as a factor in economic growth. Examples are Phoenicia (now Lebanon), Greece, and the coastal areas of the East and South China Seas and the Indian Ocean. All the early river valley civilizations participated in large maritime trade networks.[6]

Europe practiced subsistence agriculture only from around 3,500 BC onwards. This was imported from the Middle East, probably Turkey, and spread as far west and south as Britain and Spain.[7] City cultures in Europe only began to arise during the first millennium BC, in southern Italy as colonies of Greece. Further north in Italy, cities also began to develop, although they were much less monumental than in the south. Rome was one of these cities, and it would eventually become the dominant power in Italy. Initially, Rome was just one of many simple city-states going to war every spring when the harvest came in. Usually these were fairly small-scale affairs whose scope was short-term gain. At some point, the Romans changed the game; instead of just plundering a conquered city, they turned it into an ally that was expected to provide troops the next time Rome went to war. This proved a successful formula because it significantly increased the size of the army and, therefore, the chance to win the next war. Soon this new strategy made them master of Italy, eventually resulting in an empire, which in the first century AD already stretched from Scotland to Iraq and from Holland to northern Africa.[8]

The Roman Empire proved extraordinarily durable, and its story has been told numerous times. In the history of Europe, the Roman Empire was important because a large part of what we now consider Europe became prey to the expansionist Romans more than 2,000 years ago when not only the entire Mediterranean Basin came under their control, but also northwestern Europe, including Britain, the Low Countries, France, and southeastern Europe. Everything east and north of the Rhine and Danube Rivers remained the territory of mostly Germanic tribes (Fig. 3).

The European lands conquered by Rome's legions were typically occupied by the richest and most sophisticated of the "barbarian" tribes in what we now know as Europe. They were Celtic tribes that had expanded from central Europe to France and the Low Countries, Britain and Ireland, Spain, and northern Italy. Celtic civilization was sophisticated, producing advanced iron implements, which gave them a relatively productive agriculture and a society worth conquering from the Roman point of view. The areas further north and east in Europe, occupied by Germanic tribes, were distinctly less advanced and never brought under Roman control.

Fig. 3. The Roman Empire at its greatest height in 117 AD, shown in black, stretching from England to Iraq and from Romania to North Africa. Creative Commons Attribution-Share Alike 3.0.

Nevertheless, the Romans maintained close contact with the Germanic tribes immediately bordering the empire, remaining mostly friendly in nature to provide the Romans with food, although they sometimes turned unfriendly. The most notable example of the latter is the annihilation of three Roman legions in the German Teutoburg forest in 9 AD by Germanic fighters led by Arminius. Although the Romans took their revenge in several punishing expeditions, the emperor decided that the Rhine was good enough as a border and everything northeast of it was simply not worth the military expense.

The name Arminius, which is Latin and distinctly non-Germanic, suggests his close connection to Rome. Indeed, he spent his youth in Rome as a hostage, where he received a military education that he optimally used in his later conflict with the power that helped raise him. Such a Roman connection was very common for elite members of the tribes just across the border and inevitably increased their level of sophistication in terms of organizing themselves in rudimentary state systems. Apart from this increased political savviness, the extensive cross-border contacts helped the once dirt-poor Germans from across the Rhine develop economically, with increased food production and tool making. In turn, this led to increased population densities resulting in groupings that began to resemble true states. Eventually

this turned them into dangerous enemies, not much less militarily capable than Rome itself, which laid the groundwork for the demise of the superpower.[9] But that had to wait several hundreds of years.

As part of the Roman Empire, Europe shared in a free trade zone of 2 million square miles and about 60 million people that not only covered Europe but also northern Africa and the Middle East, with the Mediterranean Basin as its center. Although it was never meant to be a "nation," in the year 400 AD, a Roman citizen in the German city of Cologne (*Colonia Agrippina*) lived much the same life as his/her contemporary in London (*Londinium*), Paris (*Lutetia Parisiorum*), Cordoba (*Corduba*), Ljubljana (*Emona*), or Sofia (*Ulpia Serdica*), to mention only a few European cities. He or she could travel along well-maintained roads, many of them paved, protected by a professional army of about half a million men. Agriculture was by far the majority occupation, yet a well-developed cultural and political life was centered in the cities, which were all organized in very similar patterns around a forum, the central city square, where the major civic buildings were located. They had public sewers and running water delivered through aqueducts, sometimes even extending to private dwellings of the very rich, and many cities had public baths and an open-air theater.

This would all change after the year 400 AD. On December 31, 406, bands of Germanic tribes, Vandals, Alans, and Suebi, crossed the Rhine at Mainz (*Mogontiacum*), probably driven by one of the onslaughts of the Huns, a militarily superior Asian steppe people who began invading the territory of the Roman Empire and its neighbors at the end of the 4th and beginning of the 5th centuries. Roman military capacity at the Rhine was insufficient to prevent a large-scale invasion, which appears to have been unexpected. In 410, the Roman emperor Honorius called the Roman legions back from Britain.

Roman Europe was soon occupied by barbarian Germanic tribes, such as the Saxons in Britain, the Franks in Belgium, and the Goths in Spain and the south of France. The rich province of Africa went to the Vandals. These losses led to a diminution of tax revenues, which no longer allowed maintaining a large professional army as part of a strong governmental organization. Eventually this led to the fall of the Roman Empire in the West, the disintegration of society in the lands we now call Europe, and, later still, the emergence of a wholly new society that would eventually dominate the world militarily, politically, economically, and—most of all—technologically. How that happened is the topic of this book.

The causes of the fall of the Roman Empire (in the West) are still debated. It seems beyond belief that such a sophisticated society, capable of

administratively controlling a huge territory while managing the skills of building the monumental structures we still admire and who had a fresh water supply, sewage systems, a road system, and literature and visual arts that in many respects are still unmatched, could collapse so quickly. As so often happens when something is not immediately understood, various conspiracy theories were put forward, from lead poisoning (lead was used in water pipes and amphorae for storing wine) to over-taxation and inflation. In his *Decline and Fall of the Roman Empire*, published at the end of the 18th century,[10] British historian Edward Gibbon describes a gradual decline from the moment the empire reached the zenith of its power in the early 2nd century AD. He and others after him noticed decline at all levels: from the sculptures on Constantine's 315 AD triumphal arch that were taken from the one Titus had put up nearby almost two centuries earlier to the decline in literature, which around 400 AD was argued to merely summarize works from ancient predecessors, and an economy that did badly because taxes were increasing all the time. In reality, very little evidence supports a decline. The empire did very well as late as 400 AD. Excavations testify that, in many places, the economy blossomed and that, artistically, what Gibbon considers to be degenerate art was simply a style switch that, in other respects, was not inferior to its predecessors several centuries earlier.[11]

For contemporary witnesses, the Roman collapse never even occurred. Although in the 4th and 5th centuries there was the same lamentation as in the 1st and 2nd centuries about moral decay and declining virtues, there was probably nobody who could even imagine that the empire was collapsing. There had been periods of instability in the past, but these were always local. We now know that the western part of the Roman Empire was permanently lost in the 5th century, yet many contemporary observers considered this only temporary—if they considered it lost at all. Indeed, many Germanic successor states continued to pay homage to the emperor of the eastern part, which continued, and in the 6th century the brilliant Emperor Justinian even managed to recapture many of the lost territories in Africa, Italy, and Spain. There is no evidence that even the invading barbarian tribes wanted to destroy an empire they venerated. Most barbarian leaders had been trained in the Roman army, had received both money and honors from the emperor, and had often converted to Christianity after this became the Roman state religion in 380 AD (Chapter 3).

Gibbon claims that Christianity was a major factor in the demise of the empire. According to him, Christianity inspired the loss of productive people, who preferred to withdraw from society to contemplate their religion, increasingly embrace a tendency toward celibacy, and spend resources on building churches, thereby mellowing what was once a fierce, militaristic

attitude that led to one victory after another. Gibbon, of course, was a child of his time and, at the end of the 18th century, the philosophers of the "enlightenment" no longer held religion in high favor. This would culminate in the French Revolution, which abandoned religion altogether. In reality, it is doubtful that the shift toward non-productive church investments or labor leaking away to the monasteries was such a dramatic factor in society. After all, extensive resources had always been spent on the Roman state religion, and most Christians did not hold celibacy in such high regard that they adopted it for themselves. Indeed, Augustine (Saint Augustine; 354–430), a doctor of the Church who later advocated the abandonment of sex as the greatest virtue, enjoyed lots of it as a young man as he never stopped apologizing for it (Chapter 3).

The truth is that there simply is no strong evidence that Rome fell because of internal weaknesses, such as high taxes, Christianity, or lead pollution. It is true, of course, that Roman society had become primarily civilian and peace loving, very similar to the Chinese Empire on the other side of Eurasia. However, that had already happened 400 years earlier and was not a hindrance to some of Rome's great military triumphs, such as conquering Britain in the 1st century and Dacia (modern Romania) in the 2nd century. The most likely explanation is much simpler and can be illustrated as follows.

In 1898, British General Sir Herbert Kitchener defeated an army of the Mahdi in Sudan.[12] Despite an overwhelming majority, the Mahdi cavalry was mowed down by the British infantry equipped with modern rifles, machine guns (the famous Maxim guns), and artillery. The attackers did not even get close to the British trenches, and the outcome of this battle, like so many others in this imperialist age when Europeans could do almost anything they pleased with the inferior forces of their African and Asian opponents, was never in doubt.[13]

The great superiority of British forces in the 19th century is in striking contrast with the almost entire lack of advantage in military technology of imperial Rome over their barbarian opponents. Rome's fall in the west (and its almost fall in the east) was purely a military matter. Indeed, despite its highly sophisticated civilization and its visually stunning cities and architecture, Rome was, as the bible says it best with its four kingdoms of Daniel's prophecies, a colossus on feet of clay. Although its accomplishments were truly outstanding, they were all based on technology that was not any better than what its barbarian neighbors could bring to bear. Rome's armies were well-trained and usually well-led, yet in contrast to 19th-century Britain, they regularly lost battles against much less sophisticated people. This happened early in its history, such as around 100 BC, when the

migration of two Germanic tribes, the Cimbri and Teutones, into southern France and northern Italy caused great consternation among the Roman citizenry. Eventually the Germanic armies were annihilated by the famous Roman general Marius, but not before they had managed to wipe out an entire Roman army. It also happened as late as 378 AD, when another migrating Germanic tribe, the Goths, defeated and killed Emperor Valens at Adrianople (currently Edirne in European Turkey). Numerous such occasions occurred. As the saying goes, Rome lost many battles but never a war—until it did in the 5th century, which only led to the loss of the western part of the empire. The eastern part would go on until its capital, Constantinople, was taken by the Turks in 1453.[14]

The immediate reason for the fall of Rome in the 5th century was the emergence on the scene of the aforementioned Asian steppe people, the Huns. Roman troops had never had technological superiority over the armies their barbarian counterparts could bring to bear, yet they had also never experienced an opponent superior to them in terms of weaponry until they faced the Huns. The Huns were masters of cavalry who trained from early childhood to shoot from the saddle with their composite reflex bows.[15] A Hun army could inflict severe damage to Roman infantry ranks while staying out of reach. The Romans tried to emulate this tactic but, like the Chinese armies when confronted by similar steppe people, they could never train soldiers starting in youth and therefore would always remain inferior.

But even the weaponry of the Germanic neighbors of the empire was not inferior to that of their culturally superior imperial neighbors, which had not made much technological progress since the Roman Empire was founded early in the millennium. As the example of Arminius has already shown, the Germanic tribes quickly learned from their interactions with the superior state along their southern and western borders. Rome had been able to deal with barbarian invasions in the past (albeit never easily!), yet the case has been made that highly civilized empires are doomed to go under sooner or later because they are unable to prevent their neighbors from learning from them.[9] The inevitable result was generating competing powers at the borders. In that sense, it is easy to recognize a repeated pattern of the emergence of barbarian client states, the further development of which eventually undermines a much more sophisticated power, provided this power has no real technological advantage. Indeed, unlike the British in the 19th century, the Romans didn't have machine guns! (Of course, even a great technological advantage can be overcome when competitors make it their own, which is what Europe and the United States are now experiencing with the rise of Asia.) The lack of a technological advantage of the Roman military was especially lethal when Roman commanders made strategic and

tactical mistakes. Still, superior organizations and a healthy dose of luck do count, as can be seen in the fate of the eastern part of the empire, which as previously mentioned would exist until 1453—another 1,000 years.

Interestingly, a very similar pattern is seen around the same time in the large and sophisticated empire at the other side of Eurasia: the Chinese Han and its successor, the Tang Empire. China was also a powerful and highly civilized state surrounded by barbarian steppe people. Its rulers also established client states at their immediate borders, with a combination of military incursions to punish aggression and subsidies to buy them off. At the end of the day, neither the Han nor the Tang Empire could prevent the invasions that led to their fall.[16] However, whereas in Asia the barbarian steppe people would absorb the Chinese state and simply elevate their own leaders to the emperorship, nothing of the kind happened in Europe. Indeed, the Asian steppe people were nomads and not interested in settling themselves in China as farmers. They did bring their families over, but only after their military successes allowed them to overtake the empire and rule it themselves. The Germanic tribes in the West were farmers looking for land. They wished to settle the empire themselves with their families, which they did.

After the collapse

The history of medieval Europe formally begins with the fall of the Western Roman Empire, which is dated as 476 AD, when Odoacer, a Germanic chieftain, ended the reign of the last emperor of the west to establish a short-lived kingdom in Italy. Although few must have realized that Rome was really over, for Europe the Early Middle Ages had begun, marking the first period of our narrative. It would be a time of chaos, extreme violence, uncertainty, and fear. Europe would not only survive during this time of upheaval and mortal existential threats, but also begin to lay the foundations for its future grandeur. It is generally the year 1000 that is seen as a turning point, signifying the beginning of European civilization (Chapter 2).

Different Germanic tribes captured different parts of Roman Europe. The Saxons invaded Britain, bringing most of that country under their control early in the 5th century. We have the stories of King Arthur and his knights to tell us about that period. Derived from Welsh and English folklore in the early Middle Ages, these stories describe the heroic wars of the legendary King Arthur as the leader of the Celtic resistance against the Saxon invasions after the Roman legions had withdrawn.[17] In the 12th century, Chrétien de Troyes and others added the stories about individual knights, most notably Lancelot and the Holy Grail.[18] The Arthurian legends

became medieval bestsellers and remained popular, with various twists on the original stories. Our own times show that taste has not changed much as there are a great many movies about King Arthur, his valiant knights, his beautiful wife Guinevere, and his loyal advisor-magician Merlin. Many more will undoubtedly follow. Examples of some of the better movies on the topic are *Lancelot of the Lake* by Robert Bresson (1974), *Monty Python and the Holy Grail* by the Monty Python group (1975), and *King Arthur* (2004) by Antoine Fuqua. This last one is interesting because it weaves the withdrawal of the Roman legions from Britain into the story. King Arthur (Clive Owen) is a Roman officer with British blood who is convinced by the beautiful British Guinevere (Keira Knightley) to stay with his officers (the knights!) behind Hadrian's Wall and defend the British people against the Saxons. After his victory, Merlin and Guinevere (whom he marries) proclaim him king of Britain.

None of the other parts of Europe can claim such a rich palette of stories about the Germanic invasions. The Eastern Goths under the brilliant Theodoric conquered Italy from Odoacer in 493 AD and established a kingdom that stretched to the south of France and Spain. But Theodoric had no successor and, after his death, his people were confronted by East Roman Emperor Justinian. Justinian's generals managed to first reconquer Africa from the Vandals and then invade Italy. After a ferocious war with the Goths, Italy was taken and, later, southern Spain as well. For a short while the Roman Empire seemed on the verge of being restored, with the invasions becoming merely another memory of the occasional periods of upheaval. But this was not to be, and Italy was soon lost again—this time to the Lombards in the 7th and 8th centuries.

The most successful of Germanic kingdoms in the former Roman territories in Europe proved to be that of the Franks.[19] Originally settled in northern France and the southern Netherlands, they were united as a true kingdom by Clovis in the 5th century. Clovis then converted to Christianity. In the 6th century, the Franks also captured the Burgundian and west Gothic kingdoms in southern France. The Western Goths then moved to Spain, where they would settle. In the 6th and 7th centuries, the Germanic tribe of the Lombards moved into northern Italy and began to infringe on the Byzantine territory shortly after these Eastern Romans, now kept busy with invasions along their eastern borders, had taken Italy back from the Eastern Goths.

As was custom among the Germanic tribes, after the death of the ruler, the kingdom was divided among his sons and land was frequently donated to loyal retainers. This happened after Clovis' death and, under his successors of the Merovingian house, there rarely was a unified state.

However, sometimes they had a stroke of luck in the form of a sole male heir who was also capable. An example is Chlothar II, who reunited the Frankish kingdom in 613, as immortalized by Richard Wagner's opera cycle *The Ring of the Nibelungen* (itself loosely based on an epic German poem from about 1200 AD), in which the violent queen Brunhilde of Austrasia (the German part of the Frankish kingdom) got herself into a feud with a rival queen and was eventually killed by Chlothar, who had her pulled apart by four horses.

The 7th century saw the birth of a new empire in the east: that of the Arabs. After Mohammed united the Arabs under the banner of Islam—a new religion and the fourth monotheistic one, after Judaism, Zoroastrianism, and Christianity—these desert people proved formidable fighters who managed to conquer not only Persia, but also Syria, including what are now Lebanon and Israel, as well as Egypt. Egypt was a particularly major loss for the Eastern Roman Empire (now also called the Byzantine Empire) because it had been providing much of their grain supply. Nevertheless, they held out, mostly because of the strength of their capital city, Constantinople, which was not only strategically located as the pivot between the Black Sea and the Mediterranean Sea, but could also boast the best city defenses outside China. Europe also suffered. After Africa, the Moslem armies captured Spain from the Western Goths and even penetrated France, where they were finally stopped by a Frankish army led by Charles Martel at Tours in 732 AD. Arabs also captured Sicily and raided the coasts of northern Italy and southern France. They would continue to do so until deep in the European Middle Ages.

In the 8th century, the situation in Europe stabilized with two of the current multiple states in existence, at least in rudimentary form: England and France. France, the land of the Franks, was by far the most powerful of the two. It was still ruled by the Merovingian house established by Clovis. As previously mentioned, it had managed to extend its territories to the south at the expense of the Burgundians and Western Goths and also began to make inroads to the east to eventually subjugate the Alamanni (at either side of the Rhine). When Merovingian rule came to an end, it opened up yet another brief period in early European history where reunification under a powerful Roman emperor became a serious possibility.

The Carolingian renaissance and its aftermath

Charles Martel, who stopped the Arabs near Tours, managed to greatly expand the territory and military power of the Frankish kingdom, heralding what is now called the Carolingian Renaissance. He was in fact not the king,

but a servant of the king of the Franks with the title of mayor of the palace. He was the de facto ruler of Frankish territories from about 720 AD. Charles' son Pepin unceremoniously sent the last king of the Merovingian house off to a monastery and formally took the reins into his own hands. But it was really Pepin's son Charlemagne who would create what many thought of as a renewed Western Roman Empire. It should be noted that luck had it that these rulers had only one son to inherit the kingdom, which therefore remained united for a long period of time, i.e., from 720 to 840, when Charlemagne's sole successor, Louis the Pious, died and the kingdom was subdivided among his sons (below).

Charlemagne greatly extended the lands he inherited from his father. He conquered Saxony in northeast Germany, Bohemia (the current Czech Republic), and the territories of the Avars, another steppe people who, in the 6th and 7th centuries, seriously threatened the Eastern Roman Empire's capital Constantinople and eventually settled along the river Danube, east of Bavaria. He also fought the Moors in Spain and made inroads into their territories just across the Pyrenees. Finally, Charlemagne captured northern Italy by defeating the Lombards, who had been thorns in the side of many a pope.

As will be detailed in Chapter 3, the popes in Rome had built an alliance with the Carolingians by suggesting that Charlemagne's father, Pepin, take over power from the Merovingian dynasty and take the crown himself. Pepin was elected king of the Franks by the nobles and shortly thereafter anointed by Pope Stephen II in the Basilica of Saint-Denis, near Paris. The alliance between the popes and the Carolingian house culminated in the crowning of Charlemagne by Pope Leo II as the new Roman emperor in the year 800 (Chapter 3).

Charlemagne was as religious as his father and grandfather. He made sure that everyone in his territories adhered to the guidelines of the Christian religion—by force, if necessary. He greatly improved education, especially among the clergy, and under his rule Europe regained an intellectual basis that it had lost with the collapse of the Roman Empire. Politically, Europe after 800 seemed to be in good shape. It was unified (except for Britain, most of Spain, southern Italy, and Scandinavia), had cultivated a new intellectual elite, and had one religion. Hence, a contemporary observer could be forgiven for thinking that the old Roman times had returned. But this was deceptive. Kings of Germanic tribes were not the same as Roman emperors or rulers of the great states in Asia. In early Europe, kingdoms could and were easily generated and again eliminated. This overturn stemmed from the early days, when even a fairly small island like Ireland could have hundreds of kings, each presiding over a small piece