

9 Complexity

a geographic “big idea”
and some consequences
in Europe



The Acropolis of ancient Greece, one of the early civilizations that was located on a peninsula with a narrow connection to the mainland

Contents:

Scroll down to read this
like a book, or, click on a
topic below to jump to a
section.

Europe as a GeoLab about complexity

Do counties “win” by conflict or cooperation? [Interactive 9.1:
Clickable Europe](#)

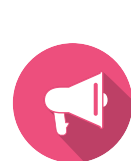
Consequences of complexity:

- 1: Peninsulas and ships
- 2: Concrete and cities
- 3: Need for trade
- 4: Mountain barriers
- 5: Vulnerable plains
- 6: Ports and colonies
- 7: Coal and industry
- 8: World wars
- 9: European Union

Putting it all together



*A clickable, interactive
version of the Europe
Map*



Introduction: Do countries “win” by conflict or cooperation?

Complex shapes and environments are important, because any big invention tends to make some places more valuable.

Which places get lucky? It depends on local conditions and connections.

That fact has consequences that can be seen when you look at many maps of Europe - e.g., maps that show cave paintings, ancient empires, forts and battles, mineral and energy resources, factories, trade routes, languages, religions, and especially political history.

Our goal in this chapter is to learn how to interpret maps like these.

Two notes that changed people’s lives

Dear uncle Toby:

I’m still in shock. Yesterday, a man came to our house. He said the Superhuge Oil Company would give us \$80,000 for the right to drill a test hole. If it strikes oil, the company will pay us \$3000 every month. Can you believe it?

On the same day, this note was on a desk in another house.

My dearest family:

Ever since the factory closed, I have been trying to find another job. We’re out of money, so I’m going to leave. I am really sorry.

Maybe the church or the government can help you.

Can you imagine anything worse than a father running away from his family?

Can you think of anything better than free money?

These two notes seem to be at opposite ends of a good-to-bad scale. They actually have something in common, however. They both describe people who gained or lost as a result of something that happened somewhere else – a discovery, invention, or company decision.



Question: What does this have to do with geography?

Answer: The same thing happens to places.

This fact is basis for the big geographic idea of this chapter:



Big Idea: In a complex world, every big discovery or invention tends to make some places more valuable while others become less desirable.

This idea has an important consequence: People often get lucky just because they happen to be in the right place at a key time. Other people get hurt because they were in the wrong place. This is the common message in the two notes at the beginning of this chapter.

Remember the big idea:

Any discovery or invention can help people in some places and hurt people in other places.

You can find examples of this basic principle all over the world.

It is especially obvious in Europe, for reasons we explore in this chapter. We will not focus on explorers, inventors, government officials, or military leaders. You can get that kind

of information from a history book or website.

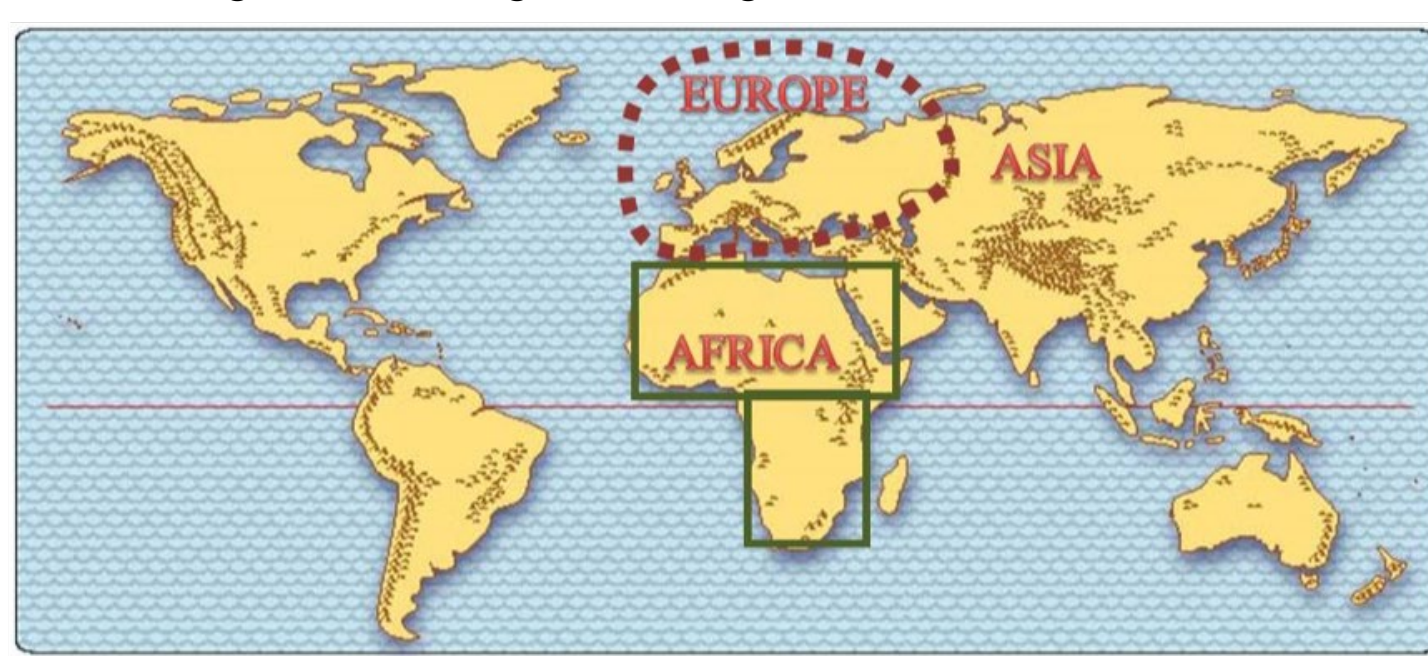
We will focus on the places that gained or lost as a result of discoveries or inventions.

Our goal is to explore a few key ideas about the effects of inventions.

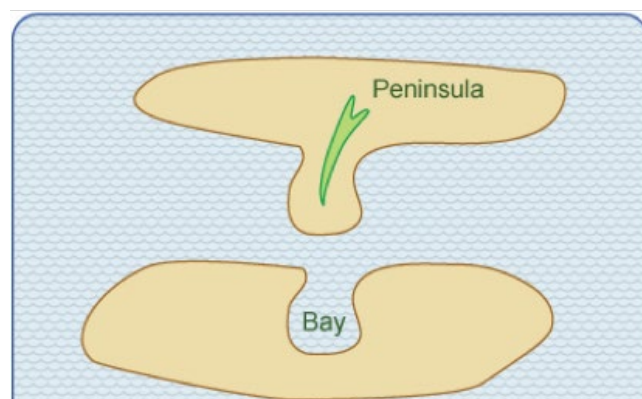
These ideas might help us when similar changes happen today.

Europe is a good place to explore the importance of inventions. It is a complicated area.

Look at Africa on a map. It has a fairly simple shape. It is basically two boxes – a big one north of a smaller one. Now look at Europe. It has a long coastline with many “ins and outs.” You could say it looks like an old glove, with fingers sticking out in several directions.



“Fingers” of land that stick out into water are called peninsulas. Similar shapes of water are called bays or gulfs or sometimes seas. A **peninsula** is a piece of land that has water on three sides. It is attached to land on only one side.



A bay is like a mirror image of a peninsula. It has land on three sides and is connected to a lake or ocean on only one side.

Compared to Africa, Europe has a lot of peninsulas and bays.

Consider these two facts.

1. Europe is less than one-third as big as Africa.
2. Europe has as many miles of coastline as Africa, plus Australia, plus South America.



Question: Why is the idea of shape important?

Answer: Because a peninsula is like a room with only one door. It’s easier to defend against an enemy army, because there is only one way for an enemy to come in. (Attacking peninsulas is easier today, because we have boats, helicopters, and drone missiles. This is one reason why these inventions changed history!)

Throughout most of history, Europe was a good place for different groups of people to live. Each group could have its own peninsula. In this easy-to-defend location, they could focus on inventing things to make life better on their little peninsula. Studying their inventions can help us understand the history of Europe.

It can also help us predict the effects of inventions today. This is a useful skill!

So what are some consequences of life on a peninsula?

[Jump to Table of Contents](#) [Previous Page](#) [Next Page](#) [Jump to Putting it All Together](#)



Consequence #1 The invention of good ships made life easier on peninsulas and islands.

The ancient Greek people lived on a small peninsula. The shape of their country helped the Greeks survive an attack by Persia.

Persia was an empire in Southwest Asia. It ruled the area that is now called Iran. In 300 BCE, Persia was the military “superpower” of the world. Most people were afraid of the Persians.

History books describe a famous battle near a place called Thermopylae. This battle was fought in a narrow area between a high mountain and a deep bay. It is marked by a red triangle on this map.

The mountain was like a “wall” across the “entrance” to the Greek peninsula.

Thermopylae was the “door.”

A small army in this narrow place was able to stop a much larger army, long enough to give Athens and other Greek cities time to prepare. In short, Thermopylae is a good example of the basic principle: location on a peninsula can make it easier for a small country to “protect its homeland.”



The big victory came later, and it depended on a key invention: ships with sails and oars.

These ships made it easier for the Greek people to get around in their country. Using their knowledge of the ins and outs of their country, the Greek navy was able to trap a much larger Persian fleet in a small bay just west of Athens. In this small area, the Greeks could attack the Persian ships one by one and destroy them.

Their ships also helped the Greeks build forts and trading posts on other islands and places across the sea. Their trading network helped the Greeks get even more wealth and power. Eventually, the Greek people formed one of the great civilizations of the ancient world. History books describe the Greeks as one of the very first democracies. A **democracy** is a government that allows people to choose their rulers.

We are not saying that democracy had to develop in a country of islands and small peninsulas. History is way too messy for a simple cause-and-effect statement like that.

Interactive 9.2:
European Peninsulas

Here is what we are saying. If people want to try a different kind of government, it would help if they lived on a peninsula or island. That kind of land would be easy to defend (remember, this is before airplanes, which can cross mountains or bays as easily as flat land!)



Test your knowledge with this activity.

Can you think of another ancient empire that started on a peninsula in Europe?

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)



Consequence #2: The Romans used concrete to make life on their peninsula better.

Shortly after the Greeks, the Roman Empire started on another small peninsula in Europe.

It became the largest empire the world. One reason for their success is the simple fact that they invented a better kind of concrete.

Seriously!

The Roman Empire was famous (and feared) for its powerful army and navy. It was well known for its good roads. It had trading connections with places as far away as China.

But something as ordinary as concrete was a key part of Roman civilization.

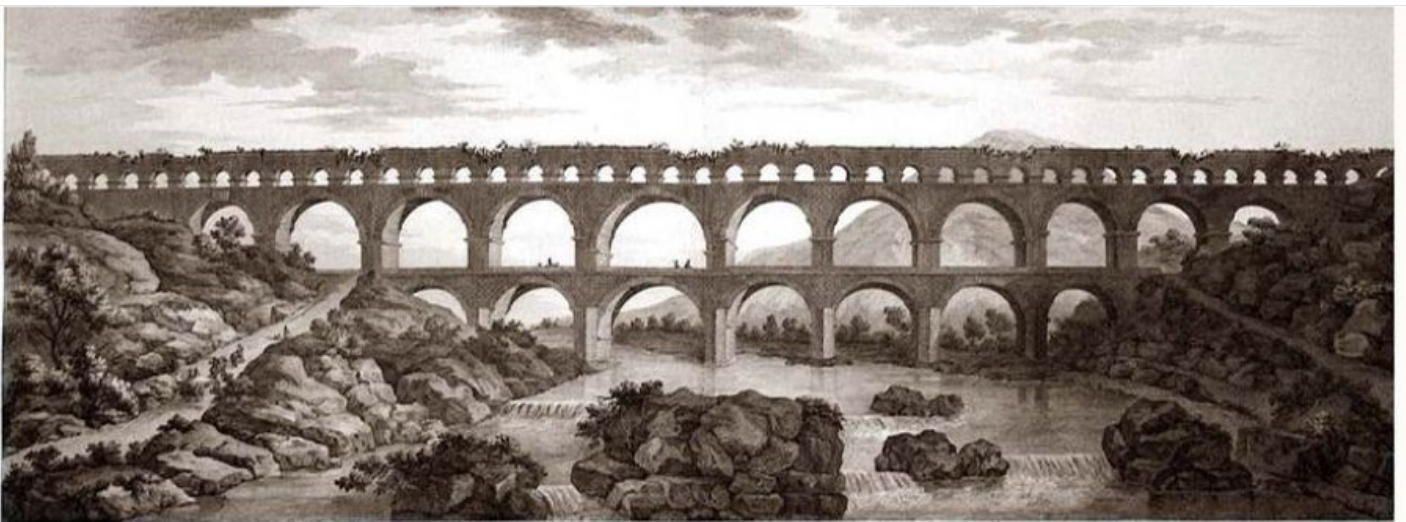
With concrete, Roman people could build larger buildings. They could build high walls and strong bridges. Some Roman buildings have survived storms and earthquakes for 2000 years.

Perhaps even more important, concrete could help people build cities in a place where the summer is really dry.

Rome has a climate that is like California. Both places are located near the coast, about 35 to 40 degrees of latitude away from the Equator. As a result, both places have mild, rainy winters and long, hot, dry summers.

The invention of concrete made it possible to build two really useful structures:

1. Tanks could store water without leaking, even in a place that has earthquakes.
2. Aqueducts could carry water long distances. Look at this old painting:



The Pont du Gard aqueduct was part of a system to carry water 31 miles from a mountain spring to a Roman city on the shore of the Mediterranean Sea. To get an idea of its size, notice the people walking on the road on the left side of the painting. (This is a photograph of a famous 1804 painting by Charles Louis Clerisseau.)



Do an internet search to see pictures of the Pont du Gard aqueduct today.)

Aqueducts like this helped make the peninsula of Italy a good place to live, in spite of the hot, dry summers. Ancient cities like Rome and Naples are like the modern cities of Los Angeles and San Diego. They all depend on aqueducts to bring water from distant mountains.

In short, the invention of concrete was really important. It helped make it easier to live in a place that has a pleasant winter but a long, dry summer. A long aqueduct is also a good illustration of the next effect of a complex environment:

In a complex area, a small peninsula seldom has all of the resources that people want.

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)



Consequence #3: If you live on a small peninsula, you have to trade (or raid) to get things you cannot grow or make in your homeland.

A small peninsula may be easy to defend, but it is not likely to have a lot of different natural resources. It might have some good farmland, or some coal, or iron ore, or tall trees. It is not likely to have all of these resources. As a result, people who live on a peninsula usually have to trade (or raid!) to get the things they want.

Greece and Rome built trading posts in many other places. This simple map shows these with small G's and R's.

Roman traders brought:

- tin from the island country we now call Great Britain,
- copper from Spain,
- grain from North Africa,
- gold from West Africa,
- perfume from southern Arabia,
- pepper and spices from India,
- horses from central Asia, and
- silk from China



The Romans also recruited soldiers, builders, artists, and other workers from distant lands. Many of the strongest and smartest people in the ancient world moved to Rome to make their fortunes. Roman citizens also moved away to many other places. They went to do jobs as traders, builders, governors, and tax collectors.



Big Point: Long-distance trading always involves more than just the exchange of goods.

Trading also helps people and ideas go to other places.

The big question is: who gains the most when people trade? It is an important question, because that place will become more powerful as a result of the trades.

We need to ask the same question to understand the effects of trade in the modern world!

The main point of this page is simple: trade was an important part of the Roman economy.

It continues to be an important part of economic geography today.

A lot of Roman trade was by ship on the Mediterranean Sea. In fact, the Romans had a nickname for the Mediterranean. They called it “Mare Nostrum” – which means “our sea.” They traded by ship because it was hard to travel from Italy on land.

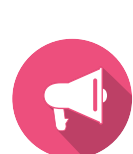
This is because of the next consequence on our list.

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)



Consequence #4: The geologic forces that made peninsulas also made a lot of mountains. These divide Europe into many small areas.

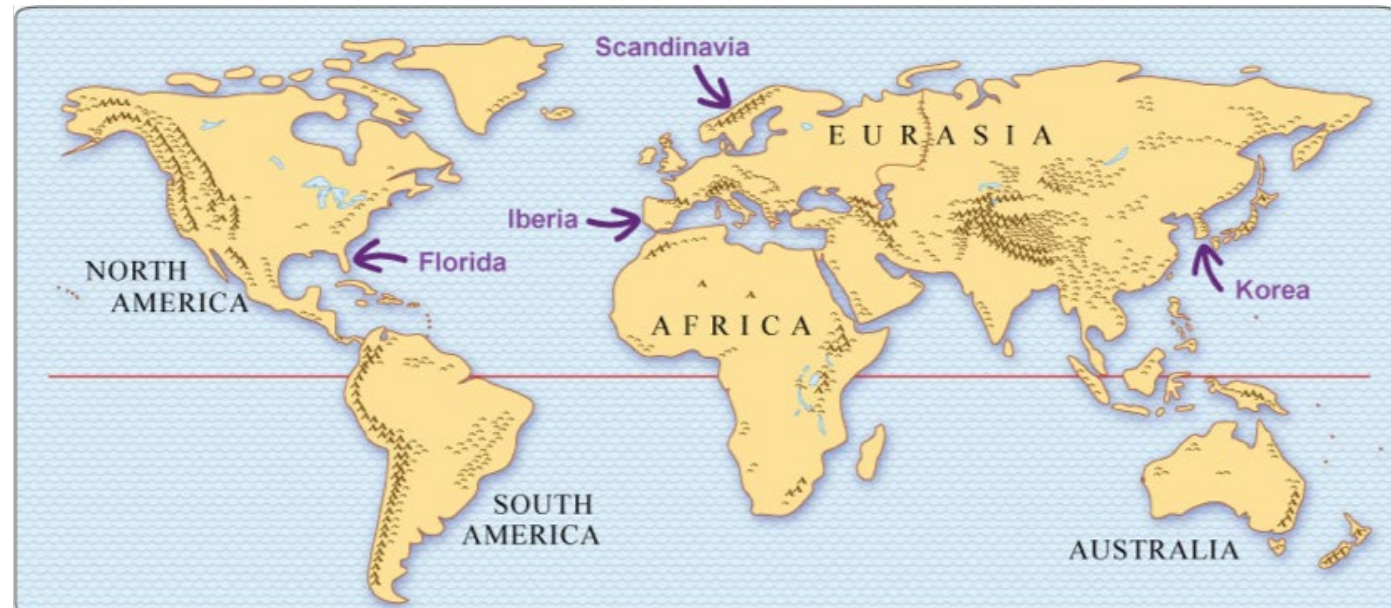
Look at a simple map that shows the mountains of the world (and four famous peninsulas).

You can see that Australia has only one big mountain range – a long line near the eastern edge of the continent. Almost all of the land to the west is low and dry. Very few people live there.

The high mountains of South America are in a long line near the west coast. The chapter on South America tells you how these mountains were made. Much of the rest of South America is a low, flat plain, covered by the tall trees of the Equatorial rainforest.

Africa has only a few small bunches of high mountains.

In short, these three continents have fairly simple patterns of mountains. None of them has high mountains that cut across the middle of the continent and divide one part from another.



Europe is different. It has many separate mountain ranges.

Some are like the “backbones” of peninsulas. For example, the Scandinavian peninsula has a line of mountains on the border between Norway and Sweden.

Other mountain ranges are like “fences” that cut across peninsulas. Remember Thermopylae, the “doorway” around a mountain wall in northern Greece? The Alps are a much higher wall that separates the Italian peninsula from the rest of Europe. The Pyrenees are like a fence between the main continent and the Iberian Peninsula (Spain and Portugal.)

Still other mountain ranges cut across eastern Europe. The Carpathian Mountains, for example, form a backwards “C” shape on the map. The Transylvanian Alps are an east-west barrier across Romania. And so forth

You do not have to memorize all these names. You can always look them up in an atlas. It is important, however, to remember the generalization:

Europe has many separate groups of mountains – more than most other areas of similar size.

These mountains helped to divide Europe into small areas where people could live in separate groups. This fact was important many times in European history. To see why, we might look at what happened in places that were not protected by mountain barriers. But first, here is a note about mountainous countries.

The Small Mountainous Countries of Europe

Compared to Africa, Australia, or South America, Europe has more separate areas of rugged mountains. You could picture every small valley in a mountainous area as a kind of peninsula. Mountain valleys usually have only one easy entrance.

Putting those facts together can help you understand another fact about Europe:

Europe has always had a number of small mountainous countries. These could stay independent while large empires struggled for power.

Switzerland is the most famous small, independent country. It is a land of snow-capped mountains, glacier-made lakes, ski resorts (and a world banking center!) Switzerland is an unusual country, because it does not have its own language. Instead, it has three official languages. Each one is shared with a neighboring country – Germany to the north, France to the west, and Italy to the south.

Even though Switzerland does not have a common language to unify it, this mountainous country has been an independent democracy for centuries.

It also has one of the highest standards of living in the world.

Other small mountainous countries include

1. Andorra, in the Pyrenees between Spain and France,
2. Luxembourg, in the Ardenne Hills between Belgium, France, and Germany,
3. Liechtenstein, in the Alps between Austria and Switzerland,
4. Slovenia, Serbia, Croatia, Bosnia, Kosovo, Albania, and Macedonia in the highlands between Greece and the rest of Europe,
5. And, to the east of this map, Armenia, Azerbaijan, and Georgia are located in the Caucasus Mountains between European Russia and the Asian countries of Iran and Turkey.



You do not have to memorize the names and locations of every tiny country

in the world. It is important, however, to realize that small, independent countries are more common in rugged mountainous areas than in large flat plains.

You already know one reason why. It is harder to attack a mountainous country

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)



Consequence #5: Places located on fertile plains can be very vulnerable to attack.

So far, we have seen that people often chose to live on a peninsula or in a mountain valley. Why? Because a homeland was easier to defend when attackers could come from only one direction. (Remember, we're talking about long before helicopters and guided missiles.)

To see the value of a protected location, we could look at some places in Europe that were not on a peninsula or in a mountain valley.

One classic example is the country we now call Poland. The Polish people live on the North European Plain. The weather there is good for farming. Unfortunately, their land is a nearly flat plain. As a result, enemies could easily attack from many directions.

The list of people who invaded Poland in the past is like a list of great historic conquerors. The list includes Huns, Slavs, Vikings, Mongols, Napoleon, the Nazis, and the Soviet Union. You can read more about them in a history book or website. Here, we want to make a simple geographic point. The Polish people ruled their own homeland for only a small fraction of the last 2000 years. The rest of the time, they were part of the empire of some outside power.

It was just too easy for armies to invade their land.

These maps show Poland at four times when it was not ruled by some outside power.

1000 CE



1570 CE



1938 CE



2010 CE



Southeastern Europe has a similar story. It has several areas of rich, flat land. Many outside powers invaded these areas. Invaders included Scythians, Huns, Vikings, Mongols, Crimean Tatars, Ottoman Turks, Nazis, and the Soviet Union.

Several inventions made it easier to attack people on flat land. These inventions include horse saddles, chariots, bows, and arrows. These were all invented (or improved) by people who lived in grasslands or deserts.

Later, people invented cannons, rifles, and tanks. Like chariots, these are easy to use in open, treeless areas. They are less effective in dense forests or steep mountains.

This chapter might give you the impression that European people spent a lot of time fighting wars. That is exactly right. The geographic point is that this long history of war was "helped" by the complex shape of Europe. This shape made it easier for people to form many small independent countries on peninsulas and in mountain strongholds. They could defend their land from other armies, and they could attack people living in places that had less protection.

Two new inventions, however, will change the balance of power in Europe in the 1400s.

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)

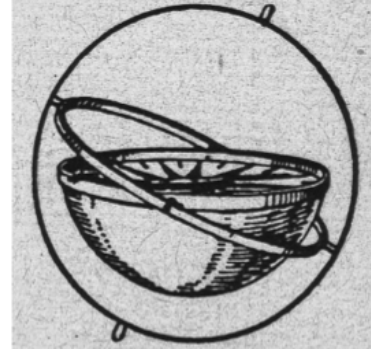
Consequence #6: Navigation tools helped several coastal European countries to become worldwide colonial powers.

A magnetic compass is piece of iron that points generally toward the north. People in China discovered the scientific idea more than 2000 years ago.

Science note: At first, people did not use compasses for navigation. Rather, they used them to help align houses with “the great forces of the world.” This is a practice called feng shui (fung shWAY). There is some evidence that the Olmec people of ancient Mexico also invented something like a compass and used it in a similar way. A web search can show you how feng shui is having a kind of revival in modern times.

Eventually, Chinese sailors began to use compasses to aid travel. This helped them travel to Africa, Arabia, and Australia. The idea of the compass reached Europe about the year 1200.

A compass can point north, but it cannot tell you where you are. To find your latitude, you need to measure the angle of the sun above the horizon. This can tell you how far north or south of the equator you are.



About 150 BCE, the Greeks invented an angle-measuring tool called an astrolabe. At first, only astronomers used them. In the Middle Ages, Muslim people used a similar tool to figure out how to face toward Mecca in order to pray. Europeans borrowed the idea and used it to help guide their ships.



Along with better sails, the new navigation tools allowed long-distance ocean travel. That tipped the balance of power in Europe. It made places with good harbors more valuable.

The first ocean explorers came from rich, old Mediterranean port cities like Venice or Genoa. Around 1400, people who lived on the west coast of Europe started to take advantage of one fact: They were located close to “good” ocean currents.



Look at the map. Sailors from western Europe could start by “riding the current” south along the coast of Africa. Then, the Trade Winds and ocean currents could push them west, across the ocean to America.

Then they rode the Gulf Stream northeast along the east coast of North America. Winds from the west then pushed the ships back to Europe.

A different set of winds and currents could help them continue south around Africa (to get valuable spices from India and Indonesia).

By the middle 1500s, European countries were claiming colonies on other continents. A **colony** is a distant area that a country captures and claims as its own.

Global comparison: In the 1500s, Europe had dozens of small countries.

Things were very different on other continents. In East Asia, the Ming Dynasty ruled much of what we now call China. The Mughal Empire was gaining control over most of South Asia. The Songhai Empire ruled much of West Africa.

In these places, a lack of mountains or other natural barriers made it easier for a single ruler to control a large area. Large empires, in turn, had plenty of resources. As a result, they did not need to travel across the oceans to find more land.

Conclusion: Europe was a bunch of small, separate countries, with a long history of fighting each other. With new navigation tools, however, fleets from coastal European countries could claim colonies on other continents.

So - - - ships and colonies changed the balance of power in Europe, and the world.

People from European peninsulas could cross the oceans to get things. These things included gold, silver, cotton, and spices. They also wanted wood from rainforest trees. (This kind of wood was good for building ships, because it did not rot as fast as wood from European trees.)

People may still argue about the details, but no one can question the overall result:

Starting in the 1400s, European countries conquered more than ¾ of the whole world.

This worldwide exploration and colonial conquest is a historic fact. It has many effects that we can still observe today. For example, political borders, languages, and religions on every other continent are strongly influenced by the colonial activity of European countries.



This map is from a “clickable” computer file that lets you turn the colonies of individual countries on and off. You can study them separately, or show pairs together. This makes it easier to see where wars were likely (like between Britain and France in North America).

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)



Consequence #7: Steam engines and power looms tipped the balance of power again.

Different areas in Europe were not just separate politically. They also had separate economies. As a result, they did not all follow the same path during the Industrial Revolution. In the **Industrial Revolution**, people began using power tools in factories. This started in the middle 1700s, when steam engines became widely used.

Economic growth was based on resources and inventions. Here are some examples:

steam engines and power looms (England)

weaving machines (France),

microscopes and telescopes (the Netherlands),

electric batteries (Italy),

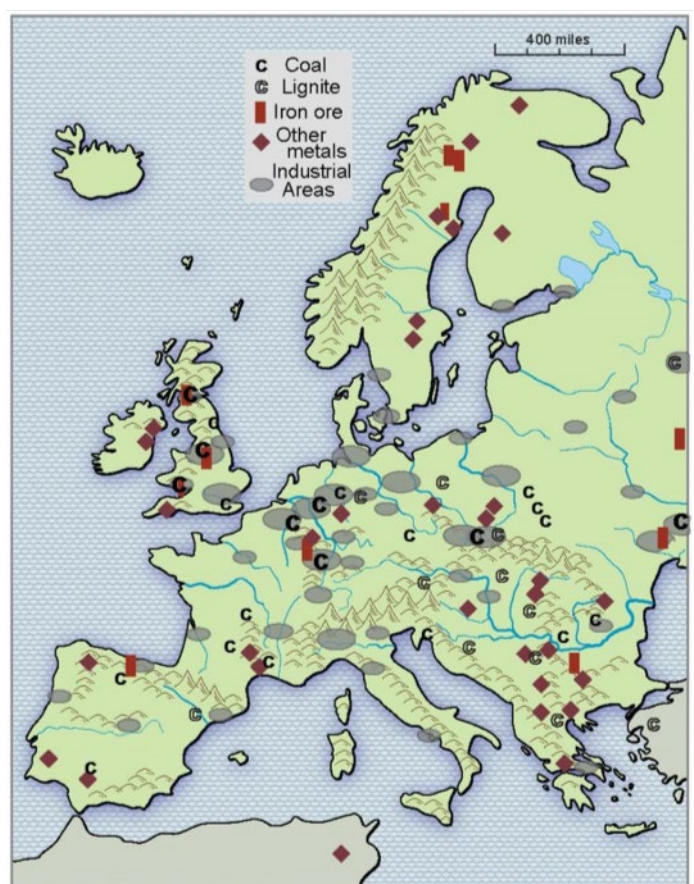
diesel engines (Germany),

chemical fertilizers (Germany)

Inventions do not happen in a vacuum. They occur in places that have certain conditions. If conditions are good, inventions can help business grow. But conditions are not equally good everywhere. We have already seen that mountains can make travel difficult. This effect was important in European history, but it is not the only effect of mountains. The geologic forces that make mountains can also form deposits of valuable minerals. (The chapter on South America has more about this.)

In short, a complicated geologic history gave Europe two things:

- a lot of mountains, bays, and peninsulas,
- and
- many separate mineral deposits.



Coal mines, for example, are important in 10 different countries

of Europe. 16 European countries have significant amounts of metals. Many of these mining areas supported separate industrial areas.

Europe had four “big winners” during the Industrial Revolution. These are:

1. the Midlands area of England,
2. the Ruhr Valley of Germany,
3. Silesia in southern Poland, and
4. the Donbas area in Ukraine.

These four places had coal and metal ores that were close to each other and easy to mine.

In time, European factories helped European armies and navies to become stronger than the military forces in other parts of the world. This helped Europe during the age of colonialism, but it became a problem in the 20th century. This is the next consequence on our list.

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)



Consequence #8: European rivalries started two World Wars in the 20th century.

In this chapter, we have examined the historic influence of inventions in a complex area. From strongholds on islands, peninsulas, or areas surrounded by mountains, different groups of European people often fought against each other. During these wars, different rulers often gained control of places that were harder to defend. These hard-to-defend places include Poland, the Low Countries (Belgium and the Netherlands), or the plains near the Black Sea.

Then people invented better ships and navigation equipment. The balance of power shifted. Coastal countries with good ports became more important. They ventured across the oceans and claimed colonies on other continents.

Then, with the invention of steam engines and blast furnaces, places that had coal and metal ore became more powerful.

The stage was set for the World Wars in the 20th century.

Both World Wars started as struggles between European countries. Their armies included soldiers from their colonies. The war also spread through trade links. Finally, some countries joined the wars in other regions. One example is the Japanese invasion of mainland Asia. (Here, it is worth noting that Japan was an island power like Great Britain. Like Britain, Japan was fairly safe from attack for thousands of years, until people made stronger navies.)

The policy of the United States at this time was isolationist (“like, don’t get involved”).

Then came the sneak attack on Pearl Harbor in 1941. That attack used ships that could carry airplanes. The invention of aircraft carriers is another example of this chapter’s big idea!

This big idea is how inventions help some places. We’ve already noted some examples:

- Sailing ships made the Greek peninsula a better place to live.
- Concrete helped make large Roman cities possible.
- Horses, chariots, cannons, and tanks made flat countries like Poland easy to attack.
- New navigation tools helped coastal countries get colonies across the ocean.
- Coal mining, iron furnaces, and steam engines started the growth of industrial areas.
- Aircraft carriers made it possible to attack even isolated islands like Hawai’i.

As noted above, both World Wars started in Europe. In the 1900s, however, Europeans had connections with other places all around the world. Troops from America, for example, fought in Europe, Africa, Asia, and the Pacific Islands.



1918 government map showing the countries in World War I. People from the gray areas on the map were on one side. People from the areas with black color were on the other.

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)

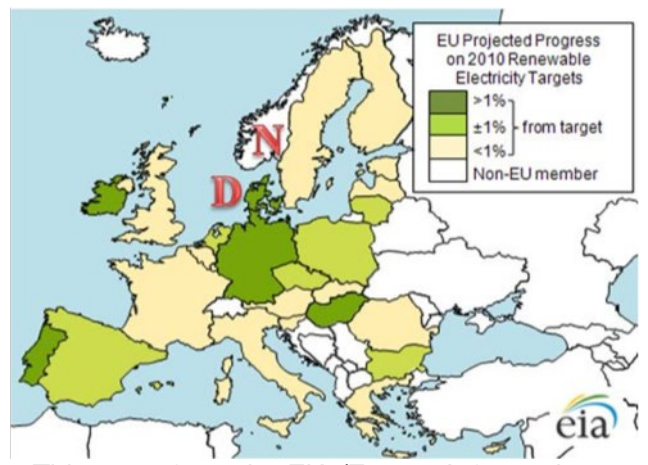
Consequence #9: Ancient divisions make it harder to unite Europe in the 21st century.



Ancient divisions make it harder to unite Europe in the 21st century.

After the horrors of World War II, many European leaders decided that things had to change. They tried to invent a new kind of government, in order to prevent future wars. The result was the European Union. The EU removed trade barriers. It made it easier to travel from one country to another. It even made new money for people to use anywhere in Europe.

Some people would like to see a kind of United States of Europe. They think Europe needs a “supra-national” union (a government that has authority above individual countries). Others point out that the countries of Europe still have their own languages and cultures. They are more independent than states in the U.S.



This map, from the EIA (Energy Information Agency), shows how countries of the European Union are cooperating to solve problems (like the fact that Europe has to import a lot of its oil and gas).

Building the European Union is complicated by the old divisions within Europe. While I was writing this chapter, the southern countries (Greece, Italy, Spain, and Portugal) had trouble paying their debts. They asked the EU for help. The governments of Germany, France, and other northern countries are debating how much they should pay to solve the debt problem. Meanwhile, several eastern countries recently joined the Union. They were asking for more help from western countries. They were afraid of threats from Russia, still farther to the east.

At the same time, all of Europe has to face new challenges. These include climate change, energy, terrorism, and the flow of migrants and refugees from poorer parts of the world.

Consider the energy issue. Most European countries have to buy oil from other countries.

As a result, many people are trying to find ways to heat houses and run cars with less oil.

One answer is a recent agreement between Denmark and Norway

(D and N on the map. These peninsulas were the homelands of the Vikings!)

Today, Norway is a major oil producer. Even so, it has decided to have a high tax on gasoline. This tax encourages people to use less oil.

Meanwhile, Denmark also has high taxes on gasoline. It used some of this tax money to build wind turbines. On windy days, Denmark makes more electricity than it uses. It can sell some to Norway. Then, on calm days, Norway can release water through its hydroelectric dams and make electricity to sell back to Denmark.

Designing, building, and maintaining this system has created many high-paying jobs. Ideas like this are part of the reason why these countries have high income and low unemployment. Other countries will have to find other solutions, however. That is another consequence of the big idea of this chapter: Complex problems require solutions that fit local conditions.

[Jump to Table of Contents](#)

[Previous Page](#)

[Next Page](#)

[Jump to Putting it All Together](#)

Summary: How can the big idea about complexity help us understand Europe?

Ultimate cause: The area called Europe had a very complex geologic history. It has many mountain ranges of different ages. Compared to other continents, Europe also has a much longer coastline, with more “ins and outs” (deep bays and long peninsulas).



Big idea: In a complicated area like Europe, any big discovery or invention can increase the value of some places and decrease the value of other places.



Study area: Europe is a good place to study the effects of inventions in a complex environment. Several times in history, an invention made some parts of Europe much more valuable than others. This often led to a great change in the balance of power.

Consequences of geologic complexity

1. Peninsulas and ships

The invention of good ships made it easier to live in (and defend) a country like Greece, which is made out of peninsulas and islands.

2. Concrete and cities

The invention of concrete made life on the peninsula of Italy better. Ordinary concrete was thus a key part of the foundation for the Roman Empire.

3. Need for trade

If you live on a small peninsula, you probably have to trade for things you cannot grow or make in your homeland.

4. Mountain barriers

The same geologic forces that made peninsulas also gave Europe a lot of separate mountain ranges. These divide the area into many small areas.

5. Vulnerable plains

Places located on flat, fertile plains tend to be vulnerable to attack.

6. Ports and colonies

The invention of navigation tools helped several coastal European countries claim colonies on other continents.

7. Coal and industry

The invention of steam engines and power looms tipped the balance of power in Europe. These inventions helped make Germany and England more powerful.

8. World wars

Long-standing rivalries among small countries in Europe started two World Wars in the 20th century.

9. European Union

Ancient divisions make it hard to build a united Europe in the 21st century.



Putting it all together: Europe has a complicated geologic history. This gave it a complex shape with many peninsulas, bays, and mountain ranges.

The geologic complexity also provides a lot of mineral resources, which are scattered in many different areas in Europe.

Inventions helped make different parts of Europe more successful at different times in history. As a result, the balance of power in Europe has shifted many times in the past.

People in Europe are trying to learn a lesson from history. They want to prevent future wars by starting many kinds of political and economic cooperation. Another goal is to keep high standards of living. To do this, Europeans must solve problems of energy, climate change, terrorism, and the flow of migrants and refugees from poorer parts of the world.

Interactive 9.3: Big Ideas Review



Review the Big Idea of Chapter 9 with the accompanying presentation.

Peninsula

a piece of land that has water on three sides. It is attached to land on only one side.

BACK

Democracy

a government that allows
people to choose their rulers.

BACK

Colony

a distant area that a country captures and claims as its own.

BACK