

GEOPOLITICS: THE GREAT IDEAS

A one-semester high-school course on the great arguments about geography and power, read in the thinkers' own words: Thucydides on Athens and Sparta, Mahan's sea power and his coaling stations, Mackinder's Heartland and the Trans-Siberian railway, the Nazi abuse of geopolitics as a warning, Spykman's Rimland, Kennan's containment and the polar maps of the air age, each one weighed for its strengths and its failures, and ending with a capstone in which the student writes a fair, reasoned geographic analysis of one region.

First edition

"And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;" (Acts 17:26, KJV)

COURSE GUIDE

This is a one-semester elective for students in grades 11–12: 25 lessons in five units of five, finished in about 17 weeks. Unit 1 lays the foundations (what geopolitics is, Thucydides on sea power and land power, geographic determinism and its critics, how maps carry a point of view, and how to weigh an idea). Unit 2 reads Alfred Thayer Mahan on sea power. Unit 3 reads Halford Mackinder on the Heartland and looks plainly at how Ratzel's and Haushofer's ideas were twisted to serve Nazi conquest. Unit 4 reads Nicholas Spykman on the Rimland, George Kennan on containment, the Monroe Doctrine as a geographic idea, and the polar maps of the air age. Unit 5 is the capstone: the student chooses one region, gathers its maps and physical facts, sets out what Mahan, Mackinder and Spykman would each say, and writes a fair, reasoned analysis. Every lesson has a primary source, three worked examples, a practice set of 12 with answers and a written response. The first four units end with a 100-point test and a unit project, there is a midterm after Unit 3, and the course closes with the capstone presentation and a final exam.

Every lesson begins with **the story**: a real person at a real place on a real date. Pericles tells the Athenians to leave their farms and trust the walls and the fleet in 431 BC; Mahan, a naval officer teaching at Newport, publishes *The Influence of Sea Power upon History, 1660–1783* in 1890; Mackinder reads “The Geographical Pivot of History” to the Royal Geographical Society in London in January 1904; Theodore Roosevelt sends the Great White Fleet around the world in 1907; Kennan sends his “Long Telegram” from Moscow in February 1946. Then comes **the idea in the thinker's own words**, read closely, then **the map behind it**, drawn in the map notebook, then **how the idea was used** by statesmen and admirals, and finally **how to weigh it**: what evidence supports it, what it predicted, what happened instead, and what its critics said.

Geopolitics is taught here as a set of ideas to weigh, not a doctrine to accept. Each thinker saw something real (the cheapness of moving goods by sea, the defensive depth of a great continent, the importance of the coastlands between them), and each overreached. Technology runs through every argument: Mahan wrote in the age of steam and coaling stations, Mackinder feared what railways would do for land power, and Spykman and the air-age mapmakers asked what the airplane did to oceans that had once protected America. The ideas also carry a warning. In Germany between the wars, Karl Haushofer and others turned geography into a justification for conquest, and the course names that abuse plainly. Current events appear only as neutral, dated examples; the student is taught to present several views fairly and reach a reasoned judgment, not to adopt anyone's politics.

The faith thread runs underneath. Nations and empires are real, and their geography matters, but they are not ultimate. “Except the LORD build the house, they labour in vain that build it: except the LORD keep the city, the watchman waketh but in vain” (Psalm 127:1). In Daniel 2 the great image of gold, silver, brass, iron and clay stands for kingdoms that rise and fall, and Daniel praises the God who “removeth kings, and setteth up kings” (Daniel 2:21). Over it all stands the series verse: “And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before

appointed, and the bounds of their habitation;" (Acts 17:26). The strategist studies the bounds; the Christian remembers who set them.

WHO IT IS FOR

Written for students in grades 11–12 who read and write well and can sustain an argument over several pages. No earlier geography course is required, though students who have done Courses A–C of the School Launch high-school Geography electives will recognize many of the places, straits and railways. The math is light: distances, travel times, sea-lane lengths, choke-point traffic and comparisons of area and population, with every method shown in a worked example first. Students work independently, reading the primary sources and the lesson themselves; a parent or mentor checks the practice sets against the answers, discusses the written responses and the capstone with the student, and hears the final presentation. A globe, a good world atlas and the free online texts of the primary sources are all that is needed.

HOW TO USE THIS COURSE

The weekly rhythm. Each lesson takes three sessions of about 50 minutes. Session 1: the warm-up, the story and a close reading of the primary source. Session 2: map work in the map notebook and the worked examples. Session 3: the practice set, checked against the answers, and a written response of one or two paragraphs. Units 1–4 each end with a test day and time for the unit project; the midterm after Unit 3 and the final each have a review day. At five sessions a week the 25 lessons, four unit tests, midterm and final fill about 17 weeks, one semester, with the capstone taking the last four weeks.

Read the thinker, then weigh him. Every great idea in this course is taught the same way. First state it fairly, in the thinker's own words, so well that he would recognize it. Then ask four questions: What geographic facts is it built on? What did it predict? What actually happened? What did the critics say, and were they right? The ✪ lessons add a fifth: what did the steamship, the railway or the airplane change? A student who can do this for Mahan, Mackinder and Spykman can do it for any argument about power and place.

The map notebook. Use one bound notebook, ideally with graph paper, for the whole semester. Each unit has a main map: sea power and land power in the ancient world, the world's naval bases in 1900, Mackinder's pivot area, and the Heartland and Rimland compared, ending with the capstone map set. Draw them by hand, with a title, a scale, a north arrow and a key, and add a short note on what the map shows and what point of view it carries. Every map argues for something; learn to see what.

Worked examples and practice. Each lesson has three worked examples in map reasoning: how much shorter the voyage from New York to San Francisco became through Panama, how far a coal-fired cruiser could steam between coaling stations, how long a railway took to move an army across Siberia compared with the sea route, how much of a region's trade passes one strait. Cover the solution, try it yourself, then compare line by line. The practice set of 12 has answers; check them the same day and rework every miss.

Unit tests, unit projects and the capstone. Each test in Units 1–4 is worth 100 points and mixes map questions, short calculations, identification of thinkers and terms, and one essay that weighs an idea. Each unit also has a project: one region drawn on three projections with different centers, Mahan’s ideal network of bases mapped and evaluated, a written dialogue between Mahan and Mackinder, and the Cold War redrawn on a polar projection. Unit 5 is the capstone: a paper of about 2,000 words with its own map set, presenting several views of one region fairly and reaching a reasoned conclusion, followed by a short presentation.

Where it fits. This is Course D of the School Launch high-school Geography electives and the natural last course. Course A, *Geography and History*, shows why borders fall where they do; Course B, *Geography and Commerce*, follows the sea lanes and straits; Course C, *Technology Overcoming Geography*, follows the ships, railways and cables that Mahan and Mackinder argued about. Course D asks what all of it means for power. It also sits beside the School Launch Engineering and Business high-school courses: Engineering explains how the steamship and the railway work, Business explains why trade follows the cheapest route, and this course asks who controls those routes and why it matters.

SCOPE AND SEQUENCE

Unit 1: Foundations (Weeks 1–3)

What geopolitics is and what it is not: Thucydides on Athenian sea power and Spartan land power, the long argument between geographic determinism and its critics, how map projections and centers carry a point of view, and how to weigh an idea by evidence, prediction and counterexample.

Unit 2: Mahan and Sea Power (Weeks 4–6)

Alfred Thayer Mahan’s 1890 argument that command of the sea decides the fate of nations, his six elements of sea power, his influence on Theodore Roosevelt, the Great White Fleet and the Kaiser’s navy, the coaling stations and canals his argument required, and what airplanes and submarines later changed.

Unit 3: Mackinder and the Heartland (Weeks 7–10)

Halford Mackinder’s 1904 “pivot” paper and his 1919 Heartland dictum, why the Trans-Siberian railway worried him, how Ratzel’s and Haushofer’s ideas were twisted to justify Nazi conquest, and how Mackinder revised his own view in 1943. The midterm follows this unit.

Unit 4: Spykman, Containment and After (Weeks 11–13)

Nicholas Spykman’s Rimland, George Kennan’s containment read as a geographic idea, the Monroe Doctrine’s hemisphere and two oceans, the polar maps of the air age, and the Cold War map with its critics.

Unit 5: Capstone (Weeks 14–17)

The student chooses one region, gathers its maps and physical facts, sets out what Mahan, Mackinder and Spykman would each say about it, writes a fair and reasoned analysis that presents several views, and presents it before the final exam.

MATERIALS

- **A globe:** Any size, as long as it turns freely. Used for the Heartland, great-circle distances and the polar maps of the air age.
- **A good world atlas:** A current atlas with physical and political maps. A library copy is fine.
- **Map notebook:** One bound notebook, ideally graph paper, for every map, worked example, project record and written response.
- **Colored pencils, a ruler and a protractor:** For drawing sea lanes, railways, regions and scale bars neatly.
- **A calculator:** Any scientific or phone calculator, for distances, travel times and the area and population comparisons.
- **The primary sources:** Mahan's *The Influence of Sea Power upon History* (1890), Mackinder's "The Geographical Pivot of History" (1904) and *Democratic Ideals and Reality* (1919), Kennan's Long Telegram (1946) and the Monroe Doctrine (1823) are free to read online. The lessons quote the passages needed from later works such as Spykman's.
- **Historic maps online:** The Peutingar Table, Mackinder's 1904 map and Richard Edes Harrison's air-age maps are digitized and free to view online.
- **Optional reading:** Thucydides, *History of the Peloponnesian War* (any good translation); Paul Kennedy, *The Rise and Fall of the Great Powers* (1987); Robert D. Kaplan, *The Revenge of Geography* (2012). Each is one author's view to weigh, not the course's answer. Good for the capstone; not required.

GRADING

Grades come from the practice sets and written responses, the map notebook, the four unit projects, the four unit tests, the midterm, the capstone paper and presentation, and the final exam. A written response or essay earns full credit when it states the idea fairly, supports a judgment with specific places, dates and evidence, and answers at least one serious objection.

- Practice sets and written responses (completed and corrected): 15%
- Map notebook (accuracy, neatness, notes): 10%
- Unit projects: 10%
- Unit tests: 25%
- Midterm exam: 10%
- Capstone paper and presentation: 20%
- Final exam: 10%

A 90-100, B 80-89, C 70-79, D 60-69, F below 60.

- Practice sets are graded for completion and correction, not first-try accuracy: a problem done, checked and correctly reworked earns full credit.
- A map earns full marks when it has a title, a scale, a north arrow, a key and a short note on what it shows and what point of view it carries, and when the places on it are in the right spots.
- On tests, give partial credit for a correct setup even if the arithmetic slips. An essay earns full credit for a fair statement of the idea, a clear judgment, at least two specific facts from the lessons and an honest answer to one objection.
- The capstone paper (about 2,000 words) should describe the region's physical geography, present the views of Mahan, Mackinder and Spykman fairly, include at least one critic's view, cite at least three sources including one primary source or historic map, and reach a reasoned conclusion. It is graded on fairness and reasoning, not on which conclusion the student reaches.
- For a high-school transcript this course is one-half credit of social studies (geography). Keep the map notebook, the tests and the capstone paper as the record of the semester.

A NOTE TO PARENTS

This course teaches a teenager to think carefully about large claims. Geopolitics is full of confident sentences ("who rules the Heartland commands the World-Island"), and the habit we want to build is to read such a sentence fairly, test it against the map and the record, and judge it honestly. You do not need to be an expert. The lessons carry the content, the primary sources are quoted and the answers are provided; your part is to ask the questions, read the written responses, talk through the capstone and hear the presentation. The best conversations will come from asking, "What would the critic say?"

The course is candid and fair. The thinkers are judged by the knowledge and standards of their own time, their real insights are given their due, and real wrongs are named plainly: the conquest that geopolitical ideas were used to justify, above all in Nazi Germany, is presented as a warning of what happens when a theory is made into an idol. Current affairs appear only as neutral, dated examples (as of 2026), and the capstone is graded on fairness and reasoning, not on which side the student takes. Above all we want students to see that nations rise and fall under the hand of God, who "removeth kings, and setteth up kings" (Daniel 2:21).

A word about time. This course is written from a Christian view of creation (Genesis 1:1) and of the Flood (Genesis 6-9) as history. It gives no ages of the earth or its rocks in the millions of years. Deep-time names such as "Ice Age" or "Neolithic" are taught as museum words, so that students can read any museum sign, atlas or textbook with understanding. Where a long age does come up, a "Thinking About Time" box separates what is actually measured from what is assumed, and explains how Christians who read Genesis as history understand it. Recorded history, with dates from written sources, is given normally. We want students to read widely, think carefully and remember that "in the beginning God created the heaven and the earth" (Genesis 1:1).

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★ quarter path · ⚙ technology overcoming geography

FOUNDATIONS

Geopolitics is the study of how geography shapes power: how coasts and mountains, plains and straits, distance and resources help or hinder the nations that live among them. It is one of the oldest ways of thinking about history and one of the most misused. In this unit you will learn where the word came from (a Swedish scholar in 1899), why its early picture of the state as a living organism proved dangerous, and why the question it asks is still worth asking. You will see geography helping the strong and limiting them, from the narrow Strait of Dover to Napoleon's long road to Moscow in 1812. Through it all you will hold to the course verse: "Except the LORD keep the city, the watchman waketh but in vain" (Psalm 127:1).

You will read Thucydides in his own words on the great war between Athens, the sea power, and Sparta, the land power (431–404 BC). You will meet the determinists, from Montesquieu's sheep's tongue in 1748 to Ellen Churchill Semple and Ellsworth Huntington, and their critics, Vidal de la Blache and Lucien Febvre, who answered that geography offers possibilities rather than a fate. You will study maps as arguments, from the Peutinger Table of the Roman roads to Matteo Ricci's 1602 world map, and learn why every flat map distorts and every map has a center chosen by someone.

Finally you will learn five tests for weighing any idea: state the claim exactly, examine the evidence, ask what it predicted, look for counterexamples, and revise it to the strongest form that survives. These tests are your tools for the rest of the course, when you read Mahan, Mackinder and Spykman. Along the way you will draw the unit map of sea power and land power in the ancient world, draw one region on three projections with different centers, and build a balance to weigh a real geopolitical claim.

BEFORE YOU BEGIN

- Can read latitude and longitude and find places on an atlas map
- Can convert between kilometers and miles and compute speed, time and distance
- Can use basic trigonometry (cosine) with a calculator and find a square root
- Knows the outline of ancient Greek and Roman history and of the World Wars

MASTERY CHECKLIST

- I can define geopolitics and tell apart geographic facts from the human choices that use them.
- I can explain, using Thucydides' own words, how geography made Athens a sea power and Sparta a land power, and how each tried to become more like the other.
- I can explain environmental determinism and possibilism, name thinkers on each side with their dates, and test their claims against counterexamples.
- I can explain why every flat map distorts, compute Mercator's stretch at any latitude, and read a map critically for its maker, purpose, projection and center.

- I can weigh any geopolitical idea with five tests and revise a universal claim into the strongest form that survives the evidence.
- I can use distances, travel times, areas and population densities to reason about geography and power.

OPTIONAL BOOKS AND RESOURCES

- **Thucydides and Montesquieu at Project Gutenberg** (<https://www.gutenberg.org/ebooks/search/?query=Thucydides>): Free. Find Richard Crawley's translation of *The History of the Peloponnesian War* and read the passages cited in Lesson 1.2 (1.10, 1.22–23, 1.70, 1.80–81, 1.143–144, 2.65, 5.89, 6.1). A search for Montesquieu finds *The Spirit of Laws*; Book 14 is the climate argument of Lesson 1.3.
- **Library of Congress: Maps Collection** (<https://www.loc.gov/maps/>): Free. Search for Matteo Ricci's 1602 world map, early Mercator-projection maps, and persuasive maps of the 19th and 20th centuries for Lesson 1.4.
- **Austrian National Library** (<https://www.onb.ac.at/>): The home of the Peutinger Table (Lesson 1.4). Search the library's site for the Tabula Peutingeriana to see images of the roll and read about its history.

1.1 WHAT IS GEOPOLITICS?

OBJECTIVES

- Define geopolitics and tell apart the geographic facts a state cannot choose (location, size, terrain, distance, resources, routes) from the human choices that use them.
- Explain where the word came from (Rudolf Kjellén, 1899) and why his picture of the state as a living organism later proved dangerous.
- Use distances, travel times and population densities to reason about how geography both helps and limits power, using the Strait of Dover and Napoleon's march to Moscow in 1812.

Warm-up. Sketch a floor plan of your house from memory in two minutes. Mark the doors and windows, then mark the one spot where you would stand to see the most of the house and the yard. Now sort what you drew into two lists: things you did not choose (where the house stands, the hill or street, the walls) and things people chose (where the furniture goes, which doors are locked, who keeps watch). Geopolitics is this same sorting done for whole nations.

Video. Coming soon. Search Hillsdale Studios and The History Guy for an introduction to geopolitics and the meaning of geography in history; Library of Congress Geography and Map Division talks on maps of empire; RealLifeLore (candidate, needs vetting) for short overviews of why geography matters, previewed by a parent first.

KEY TERMS

geopolitics

The study of how geography (location, size, terrain, resources, routes and distance) shapes the power, fears and choices of states.

relative location

Where a place lies compared with other places: its neighbors, its coasts and the routes that pass it. Often more important than its latitude and longitude.

natural barrier

A sea, mountain range, desert, marsh or great forest that makes movement slow, costly or dangerous.

corridor

An open path for movement, such as a plain, river valley, mountain pass or strait.

power

The ability of a state to defend itself and to get others to do what they otherwise would not, resting on armies, fleets, wealth, population, organization, alliances and will.

organic theory of the state

The idea, set out by Kjellén and others, that a state is like a living organism that must grow; a metaphor later used to excuse conquest.

CORE IDEAS

The story. In 1899 a Swedish political scientist named Rudolf Kjellén was studying a practical problem: the borders of his own country. Sweden had long coasts, a long mountain frontier with Norway (then joined to Sweden under one king), and across the Baltic the Russian Empire, which had taken Finland from Sweden in 1809. Kjellén wanted a name for the study of a state as a piece of the earth: its position, its shape, its coasts and its frontiers. He coined one, *geopolitik*, from the Greek *gē*, earth, and *politikos*, of the city or state. Kjellén taught at Gothenburg and later at Uppsala, and he sat in the Swedish parliament. In 1916 he published *Staten som livsform*, “The State as a Life-Form,” in which he described states as living things that are born, grow, compete and die. The word caught on in Germany, where the geographer Friedrich Ratzel had already compared the state to an organism. Within a generation, German writers such as Karl Haushofer had joined these ideas into a doctrine of “living space,” and the Nazi regime used that doctrine to dress up conquest and mass murder as a law of nature. We will study that story plainly in Unit 3. It is the first warning of this course: an idea about geography can be useful, and it can also be abused.

The big idea. Geopolitics is the study of how geography shapes power. Geography deals every state a hand of cards it did not choose: its **location**, its size and shape, its terrain and rivers, its coasts and harbors, its climate and soils, its resources, its neighbors, and the routes that run through it or past it. **Power** is the ability to defend oneself and to get others to do what they otherwise would not. It rests on armies and fleets, but also on wealth, population, organization, alliances, skill and will. Geopolitics asks where those two meet. Why did a small island off the coast of Europe build the largest navy in the world? Why have armies crossed the plain between Germany and Russia again and again? Why do so many of the world’s ships pass through a few narrow straits? Geography changes slowly, so it is one of the most lasting causes in human affairs. But geography does not act by itself. People act, and they act with the tools of their age.

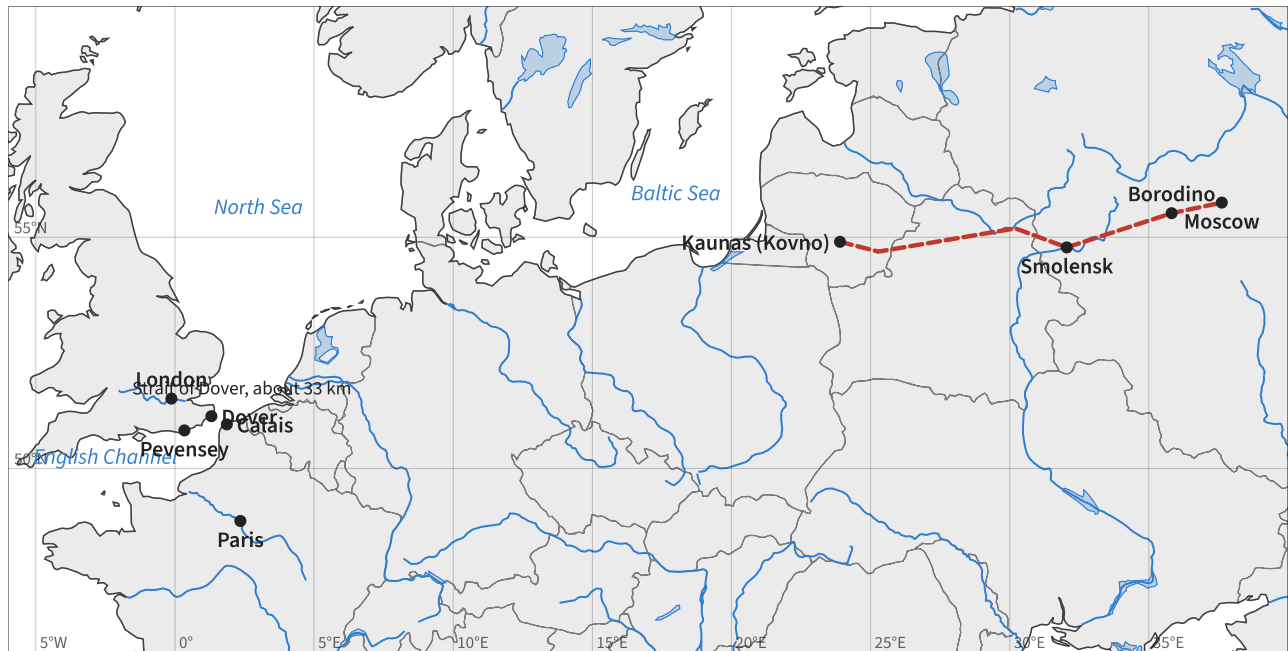
How it worked: the moat. The Strait of Dover, the narrowest part of the English Channel, is about 33 km (21 miles) wide; on a clear day the cliffs of France can be seen from Dover. In 1588 the Spanish Armada sailed up the Channel to carry an army across from Flanders and was scattered by English ships, fireships and storms. From 1803 to 1805 Napoleon camped an army at Boulogne, but he never won the command of the sea he needed, and in 1805 he marched that army east instead. In 1940 Hitler ordered plans for an invasion, but the German air force could not win control of the skies over southern England, and in September the plan was put off and never carried out. Yet in 1066 William of Normandy did cross. The English fleet and levies had watched the coast all summer and had been sent home in September when their supplies ran out; King Harold was in the north defeating a Norwegian invasion at Stamford Bridge on September 25; William landed at Pevensey on September 28 and won at Hastings on October 14. The water was the same every time. What changed was who held the sea and what choices people made.

The limits of power. Geography also limits the strong. On June 24, 1812, Napoleon led an army of more than 400,000 men across the Niemen River near Kovno (today Kaunas, Lithuania) into the Russian Empire. Moscow lay about 870 km (540 miles) away in a straight

line, and much farther by road. The Russians fell back, fought at Smolensk and at Borodino (September 7), and kept falling back. Napoleon entered Moscow on September 14 and found it emptied and soon burning. The tsar would not make peace. Napoleon left on October 19, and the long road home, through hunger, cold and constant attack, destroyed his army; only a small part of it ever recrossed the Niemen. Distance, poor roads, thin harvests and winter did their work. But again geography did not work alone. The Russian commanders chose to trade space for time, and Tsar Alexander I chose not to negotiate. Different choices would have made the same distances tell a different story.

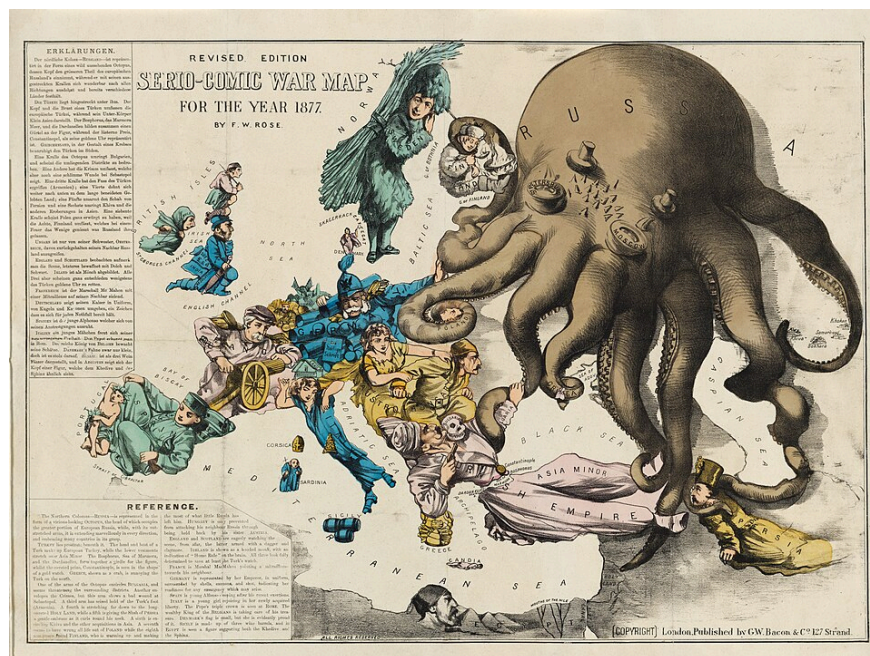
On the map. A geopolitical map is read with a few plain questions. Where are the barriers (seas, mountains, deserts, marshes) and where are the corridors (plains, river valleys, passes, straits)? How far apart are the centers of power, and how long does it take to move an army, a fleet or a cargo between them? Where do people live, and how many live there? Where are the resources, and which routes carry them? All through this course we will add four questions for every thinker we read. What geographic fact is he pointing to? What does he claim about power? What technology of his day is he thinking about? And what evidence would show that he is wrong?

Technology overcoming geography. The same strait can be a wall or a highway, depending on the ships, and the same plain can be a barrier or a road, depending on the railways. The oar and the sail, the railroad, the steamship, the airplane and the satellite have each changed what distance means. Kjellén wrote in an age of railways and steamships, and Mahan, Mackinder and Spykman, whom you will read in their own words in Units 2 to 4, each asked how the newest machines tilted the balance between land power and sea power. A wise student also remembers the limits of both geography and power. Strategists can measure distances to the kilometer, but they cannot command the weather, the harvest or the hearts of men. The psalmist wrote, "Except the LORD keep the city, the watchman waketh but in vain" (Psalm 127:1). That is no reason to stop studying maps. It is a reason to study them humbly.



Two lessons in one map: the narrow moat that guarded England, and the long road that broke the Grande Armée in 1812.

PICTURE STUDY



Serio-Comic War Map for the Year 1877, Fred W. Rose (published by G. W. Bacon & Co., London), 1877 · Color lithograph map · Copies survive in several collections, including the PJ Mode Collection of Persuasive Cartography at Cornell University Library

In 1877 Russia went to war with the Ottoman Empire, and many people in Britain feared that Russia would push south to Constantinople and toward India. A British artist named Fred W. Rose drew this map to show that fear. He kept the real outlines of the countries but turned

Russia into an octopus with tentacles wrapped around the lands around it. Maps like this are called *persuasive maps*: they use real geography to make an argument.

This is a good first picture for a course on geopolitics because it shows both sides of the subject. It is about real geography (Russia's great size and its many neighbors), and it is also about feelings, fears and politics. A careful student learns to enjoy such a map and to question it at the same time.

Look closely

- Find Russia. How did the artist make it look dangerous? Where do its tentacles reach?
- Find Britain. How is it drawn, and what does it seem to be doing?
- Look at the outlines of the coasts and borders. Are they roughly correct? What did the artist change, and what did he keep?
- Find the Black Sea and Constantinople. Why would a fight over this small area worry people far away?

Talk about it

1. What geographic facts does this map rely on, and what opinions does it add?
2. If a Russian artist of 1877 drew a map of the same lands, how might he draw Britain and its empire?
3. Why can a map persuade people more quickly than a written argument?

PROJECT: A GEOGRAPHY-AND-POWER OVERLAY MAP

You will build a layered map of one country, one layer at a time, so you can see which facts of geography help or hurt its power. When you lift and lower the layers, you will see the difference between what the land gives and what people choose.

You will need

- A good atlas or the Library of Congress online maps
- Four sheets of tracing paper or baking parchment, plus one sheet of heavy paper for the base
- Colored pencils, a fine black pen, a ruler, and a piece of string
- Paper clips or tape to hinge the layers along the top edge

Steps

1. Choose one country: Britain, Russia, Japan, the United States, or another approved by your teacher.
2. On the heavy paper, trace the country's outline and its neighbors at a size that fills most of the page. Add a scale bar and a north arrow from your atlas.
3. Layer 1 (Land): on tracing paper, draw mountains, plains, major rivers and deserts. Color barriers brown and corridors green.

4. Layer 2 (Sea): draw the coasts, the best harbors, and any straits or narrow seas nearby. Mark which harbors freeze in winter if your atlas tells you.
5. Layer 3 (Neighbors and distance): mark the capital and the capitals of two or three neighbors. Use the string and the scale bar to measure the distance from your capital to each, and write the distances in kilometers and miles.
6. Layer 4 (People and routes): mark the three or four largest cities and draw the main railways or roads that join them.
7. Hinge the layers along the top so they can be lifted one by one.
8. On a separate page, write two lists: “What geography gives this country” and “What geography does not decide.” Give at least three items in each, and one sentence on how a modern technology (railway, airplane, pipeline) has changed one of them.

Tips

- Keep each layer simple. A geopolitical map shows the few facts that matter most, not everything.
- Measure distances in a straight line, but note in the margin that roads, rails and sea routes are usually longer.

Check your work

- My map has a scale bar, a north arrow and four clear layers.
- I measured at least two distances correctly in kilometers and miles.
- My two lists show the difference between geographic facts and human choices.

MAP NOTEBOOK

1. Draw the Strait of Dover with Dover and Calais, and add a scale bar showing 33 km (21 miles). Under it list the four invasion attempts in this lesson with their dates and results.
2. Draw a simple line from Kaunas to Moscow and mark Smolensk and Borodino with their dates. Write beside it: “Distance did not act alone.”
3. Write Kjellén’s word *geopolitik* and its two Greek roots. Then write one sentence on why calling a state a living organism is a dangerous metaphor.

From history. Napoleon’s camp at Boulogne gathered the “Army of England” from 1803 to 1805, along with hundreds of flat-bottomed boats for the crossing. In late August 1805, with no French fleet able to hold the Channel, Napoleon turned the army east against Austria and renamed it the Grande Armée. Two months later, on October 21, 1805, Nelson’s fleet destroyed the combined French and Spanish fleet at Trafalgar, and no French invasion of Britain was attempted again.

WORKED EXAMPLES

Example 1. The Strait of Dover is about 33 km (21 miles) wide. In 1940 German planners meant to tow river barges across at about 5 km/h. How long would one crossing take? An army marching on a good road covers about 25 km a day. Why was the short water crossing harder than a march of the same length?

1. Time = distance $\div$ speed = $33 \text{ km} \div 5 \text{ km/h} = 6.6$ hours.
2. $0.6 \text{ hour} \times 60 = 36$ minutes, so the crossing takes about 6 hours 36 minutes, in daylight and calm weather.
3. On land, 33 km is a little more than one day's march ($33 \div 25 \approx 1.3$ days).
4. But on land, soldiers carry their own supplies forward step by step. At sea, slow barges full of men and horses are helpless if enemy warships or aircraft reach them, so the crossing is only possible if the attacker first controls the sea and the air.

Answer: About 6.6 hours (6 hours 36 minutes). The water is short but dangerous, because a crossing requires command of the sea and the air; that is why a narrow strait can be a stronger barrier than a long road.

Example 2. Napoleon's army crossed the Niemen near Kaunas on June 24, 1812, and entered Moscow on September 14, 1812. The straight-line distance is about 870 km (540 miles). Find the number of days and the average straight-line progress per day in kilometers and miles.

(Use the map or drawing "Follow the 1812 route from Kaunas to Moscow." shown earlier in this lesson.)

1. Count the days: June 24 to June 30 is 6 days; July has 31; August has 31; then 14 days in September. Total = $6 + 31 + 31 + 14 = 82$ days.
2. Rate = $870 \text{ km} \div 82 \text{ days} \approx 10.6 \text{ km per day}$.
3. In miles: $540 \div 82 \approx 6.6$ miles per day.
4. Compare: a healthy army on a good road can march about 25 km a day. The difference came from winding roads, battles (Smolensk, Borodino), halts to gather food and stragglers, and the sheer size of the army.

Answer: 82 days, about 10.6 km (6.6 miles) per day in a straight line, well under half of a normal day's march.

Example 3. Compare Russia and Japan as of 2026. Russia: about 17.1 million km² (6.6 million sq mi) and about 146 million people. Japan: about 378,000 km² (146,000 sq mi) and about 123 million people. Find each country's population density and say what the numbers suggest for defense.

1. Russia: $146,000,000 \div 17,100,000 \text{ km}^2 \approx 8.5$ people per km². In miles: $146,000,000 \div 6,600,000 \approx 22$ people per sq mi.
2. Japan: $123,000,000 \div 378,000 \text{ km}^2 \approx 325$ people per km². In miles: $123,000,000 \div 146,000 \approx 842$ people per sq mi.
3. Ratio: $325 \div 8.5 \approx 38$, so Japan is about 38 times as densely settled.
4. Meaning: Russia has vast space to fall back into (as in 1812) but long borders to guard and few people per kilometer of frontier. Japan is compact and crowded, with the sea as its border, so its defense depends on ships and aircraft.

Answer: Russia ≈ 8.5 per km² (22 per sq mi); Japan ≈ 325 per km² (842 per sq mi), about 38 times as dense. Space is Russia's shield and burden; the sea is Japan's.

PRACTICE

1. **EASY** Who coined the word "geopolitics," in what year, and what are its two Greek roots?
2. **EASY** Define geopolitics in your own words and name four geographic facts a state cannot choose.
3. **EASY** Convert the width of the Strait of Dover, 33 km, to miles (1 km $\approx$ 0.621 mi).
4. **EASY** Sort each into "geographic fact" or "human choice": (a) the width of the Strait of Dover; (b) the Russian decision to abandon Moscow; (c) the size of the Royal Navy; (d) the Russian winter.
5. **MEDIUM** A sailing ship crosses the Strait of Dover at 4 knots (about 7.4 km/h). How long does the 33 km crossing take?
6. **MEDIUM** Kaunas is at about 54.9° N and Moscow at about 55.75° N. One degree of latitude is about 111 km (69 miles). How far north of Kaunas is Moscow?
(Use the map or drawing "Use the map for Problems 6 and 11." shown earlier in this lesson.)
7. **MEDIUM** Napoleon's retreat left Moscow on October 19, 1812, and reached the Berezina River about November 26, about 600 km (373 miles) away in a straight line. Find the number of days and the average progress per day.
8. **MEDIUM** As of 2026 the United Kingdom has about 69 million people on about 244,000 km² (94,000 sq mi). Find its population density in both units and compare it with Russia's (about 8.5 per km²).
9. **HARD** Explain why the Channel protected England in 1588 and 1940 but not in 1066.
10. **HARD** Why was Kjellén's idea of the state as a living organism dangerous, even though Kjellén himself was a Swedish scholar?
11. **HARD** Calais (50.95° N, 1.86° E) to London (51.51° N, 0.13° W) is about 150 km (95 miles) in a straight line, and Kaunas to Moscow is about 870 km. How many times

longer is the Russian distance? Give one reason the shorter route was still the harder one to cross with an army.

12. **CHALLENGE** Write a paragraph of 6 to 8 sentences weighing the claim “Geography is destiny.” Use at least two examples from this lesson and say what the claim gets right and what it leaves out.

COMMON MISTAKES

- Thinking geopolitics means geography decides everything. Geography sets costs and opportunities; people still choose, and technology changes the costs.
- Treating a sea as a simple barrier. A sea is a wall to a power without ships and a highway to a power with them.
- Measuring only straight-line distance. Armies, ships and trade follow roads, rivers, coasts and seasons, which are almost always longer and slower.

Make it a game · Fixed or Chosen?. One player reads out a fact about a country or a battle (for example, “Russia has few warm-water ports,” “Britain built a large navy,” “the Alps are high,” “Japan imports most of its oil”). The others hold up one finger for a geographic fact, two fingers for a human choice, or a fist for “both.” Anyone who answers “both” must explain in one sentence how the fact and the choice work together. Score a point for each correct answer and two for a good explanation. Play to ten.

Scripture. “Except the LORD build the house, they labour in vain that build it: except the LORD keep the city, the watchman waketh but in vain.” (Psalm 127:1, KJV)

This is the course’s first verse. Geopolitics studies walls, watchmen and frontiers, and it is right to study them well. But no wall, sea or distance guarantees safety; the rise and fall of nations rests finally in God’s hands.

Practice answers

1. Rudolf Kjellén, a Swedish political scientist, in 1899. From *gē* (earth) and *politikos* (of the city or state).
2. Geopolitics is the study of how geography shapes the power and choices of states. Facts a state cannot choose include its location, its size and shape, its terrain and rivers, its coasts and harbors, its climate, its resources and its neighbors (any four).
3. $33 \times 0.621 \approx 20.5$ miles, about 21 miles.
4. (a) geographic fact; (b) human choice; (c) human choice (a navy is built and paid for); (d) geographic fact.
5. $33 \div 7.4 \approx 4.5$ hours, about 4 hours 30 minutes.
6. $55.75 - 54.9 = 0.85^\circ$. $0.85 \times 111 \approx 94$ km ($0.85 \times 69 \approx 59$ miles). Almost the whole journey is eastward, not northward.
7. October 19 to 31 is 12 days, plus 26 days in November = 38 days. $600 \div 38 \approx 16$ km per day ($373 \div 38 \approx 10$ miles per day).
8. $69,000,000 \div 244,000 \approx 283$ per km²; $69,000,000 \div 94,000 \approx 734$ per sq mi. About $283 \div 8.5 \approx 33$ times as dense as Russia.

9. A strait is a barrier only to an attacker who cannot control the water (and, by 1940, the air above it). In 1588 the English fleet and the weather broke the Armada, and in 1940 the German air force failed to win the skies, so no crossing was possible. In 1066 the English fleet and levies had gone home and King Harold was fighting in the north, so William crossed unopposed and landed at Pevensey.
10. If a state is an organism, it seems natural for it to grow, compete and take room from weaker states, as if conquest were a law of nature rather than a moral choice. German writers took up the idea as "living space," and the Nazi regime used it to justify conquest and mass murder. A metaphor that hides human responsibility can be used to excuse great wrongs.
11. $870 \div 150 \approx 5.8$ times longer. The shorter route includes a sea crossing, which needs ships and command of the sea; an army cannot simply walk it.
12. Answers vary. A strong answer says the claim is right that geography is lasting and powerful (the Channel shaped English history; Russian distances wore down Napoleon), but wrong if it means geography decides outcomes by itself. It notes that the same strait gave different results in 1066 and 1588 because of fleets and choices, that the Russian retreat worked because commanders and the tsar chose to use space, and that technology changes what geography means. It ends with a balanced judgment, for example: geography sets the stage and the costs; people write the play.

1.2 THUCYDIDES ON SEA POWER AND LAND POWER

OBJECTIVES

- Explain how geography made Athens a sea power and Sparta a land power, and how Pericles turned Athens into an “island” with the Long Walls and the fleet.
- Read short passages of Thucydides in Richard Crawley’s translation and state his explanation of the war’s cause and his judgment of how Athens lost.
- Use areas, distances and travel times to compare the reach and the weak points of sea power and land power in the Peloponnesian War (431–404 BC).

Warm-up. Put a bowl upside down on a table to be a walled city, and a cup a hand’s width away to be its harbor. Lay two pencils side by side from the bowl to the cup. Now let a partner play an army that can only walk on the table, and you play a fleet that can only move on a towel “sea” beside it. What can the army do to the city? What can the fleet do that the army cannot? Keep your answers; Pericles faced this exact puzzle in 431 BC.

Watch. *Why Sparta Beat Athens - The Fall of the Empire - Peloponnesian War* (Kings and Generals, 19:44). <https://www.youtube.com/watch?v=loQ1MGcnyWg>

After the story: watch how Sparta, a land power, finally beat Athens at sea once Persian gold paid for a fleet, and notice how the Sicilian Expedition drained Athens' strength.

Note: Captions were not available to check; preview it first. The video likely opens with a short sponsor message for a coin dealer that you can skip, and it describes the destruction of Melos and the losses in Sicily.

Backup video. *Athens vs Sparta (Peloponnesian War explained in 6 minutes)*

(Epimetheus, 6:22). <https://www.youtube.com/watch?v=GjbfS8RDoYo>

After the story: watch for how Athens, a sea power, and Sparta, a land power, fought the war in different ways, and look for Pericles' plan to stay behind the walls and the disaster in Sicily. Note: Captions were not available to check; preview it first. This short animated summary covers war and may mention plague deaths in Athens and the Spartan system of helots.

KEY TERMS

sea power

Strength that rests on fleets, sea trade, harbors and the ability to move and strike by water.

land power

Strength that rests on armies, a secure home territory and the ability to hold and take ground.

trireme

The Greek warship of the 5th century BC: a long, light galley with three banks of oars, about 170 rowers, and a bronze ram at the bow.

Long Walls

The walls, built about 461–456 BC, that joined Athens to its harbor at Piraeus, so the city could be supplied by sea during a siege.

hoplite

A Greek heavy infantryman with spear, large round shield and armor, fighting in a close formation called the phalanx.

helots

The unfree people of Laconia and Messenia, owned by the Spartan state and forced to work the land for Spartan citizens.

CORE IDEAS

The story. In the summer of 431 BC, a Spartan army under King Archidamus marched into Attica, the farmland around Athens, and camped at Acharnae, the largest village of the Athenian countryside, a few hours' walk from the city. From the walls the Athenians could see the smoke of their own farms. The men of Acharnae wanted to march out and fight. Pericles, the leading general of Athens, would not call an assembly and kept the army inside. He knew that in open battle the Spartan hoplites were the best soldiers in Greece. He also knew that Athens did not need its fields to live, because it had the sea. So the Athenians waited behind their walls while a fleet of a hundred ships sailed around the Peloponnese and raided the Spartan coasts. This was the first summer of the Peloponnesian War (431–404 BC), and our guide to it is an Athenian general who lived through it: Thucydides.

How it worked. Athens was a land city that had made itself into an island. Its harbor, Piraeus, lay about 7 km (4 miles) from the city, and between about 461 and 456 BC the Athenians had joined city and harbor with the Long Walls, so that grain and timber unloaded at Piraeus could reach the city without passing an enemy. Pericles counted 300 triremes ready for sea, each rowed by about 170 oarsmen, paid for largely by tribute from the allied cities of the Delian League, which by then had become an Athenian empire. Much of the city's grain came from the Black Sea, through the Bosphorus and the Hellespont. Pericles told the Athenians to think of themselves as islanders: give up the fields and houses, guard the city and the sea, and do not try to add new conquests during the war (Thucydides 1.143–144). Sparta was the opposite. Its citizens were few. They ruled, by Thucydides' count, two-fifths of the Peloponnese (1.10), and the land was worked by the helots, whose revolt Spartans always feared. The Spartan king Archidamus warned his people that they had neither the ships nor the money for a long war against a sea power (1.80–81).

The big idea. Thucydides saw the war as a contest between two kinds of power, each strong where the other was weak. He gave his famous explanation of its cause in Book 1, here in Richard Crawley's 1874 translation: "The growth of the power of Athens, and the alarm which this inspired in Lacedaemon, made war inevitable" (1.23). Corinthian speakers in his history describe the Athenians as restless, quick to plan and quick to act, and the Spartans as slow and content with what they have (1.70). Sea power brought mobility, trade, money

and the ability to strike anywhere on a coast, but it depended on ships, pay for rowers and open sea lanes. Land power was secure and almost unbeatable on its own ground, but it was slow and could not reach an enemy across water. Neither side could easily hurt the other where it was strong, so the long war became a story of each side trying to become a little like the other. In 425 BC the Athenians fortified Pylos on the Spartan coast and captured 292 men on the island of Sphacteria, about 120 of them full Spartan citizens, a shock to all Greece. In the end Sparta won by doing what Archidamus said it could not do: it built a fleet.

How it ended. In 430 BC a plague struck the crowded city; Thucydides caught it and recovered, and Pericles died of it in 429. Athens grew harsher. In 416 BC it demanded that the island of Melos submit, and in the debate Thucydides records, the Athenian envoys say that “the strong do what they can and the weak suffer what they must” (5.89). When Melos refused, the Athenians killed its men of military age and sold its women and children as slaves (5.116). From 415 to 413 BC Athens sent a great expedition to conquer Syracuse in Sicily, and lost it entirely. In 413 Sparta fortified Decelea in Attica, about 120 stadia (roughly 22 km) from Athens (7.19), and Thucydides reports that more than twenty thousand slaves deserted to the enemy (7.27). His history breaks off in 411 BC; the end is told by Xenophon. With money from Persia, the Spartan admiral Lysander caught the Athenian fleet drawn up on the beach at Aegospotami on the Hellespont in 405 BC and took almost all of it. With the grain route closed, Athens starved and surrendered in 404 BC, and the Long Walls were pulled down.

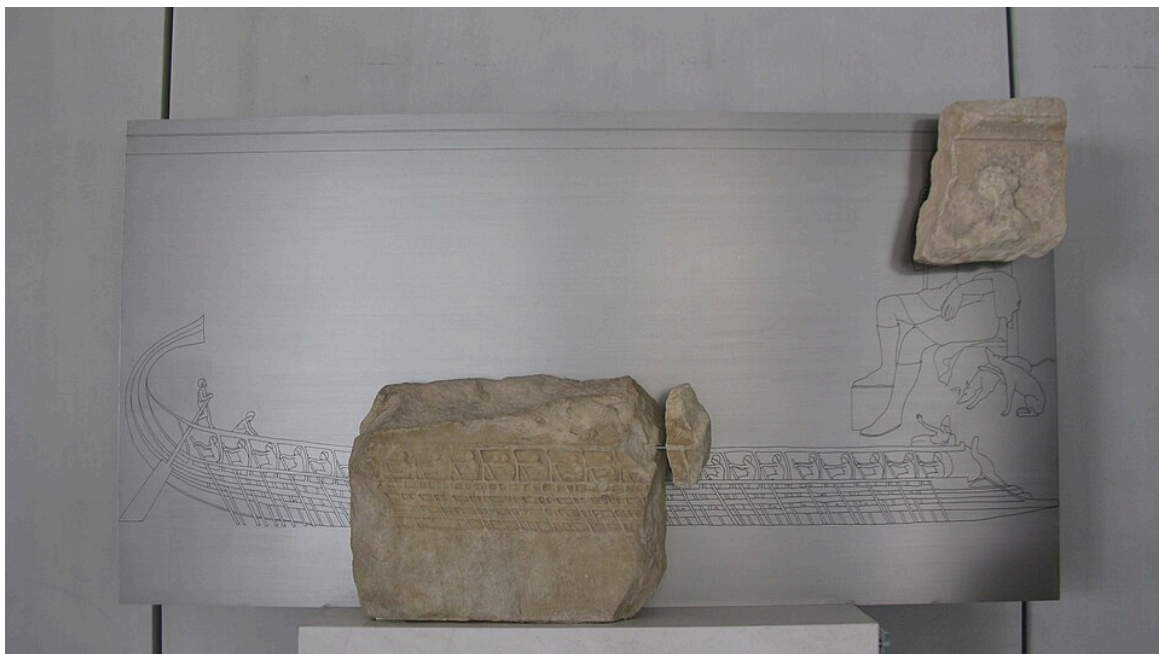
Technology overcoming geography. The trireme and the Long Walls were the high technology of their day. Together they cancelled the great weakness of Athens, a city on a peninsula that a land army could surround, for as long as the fleet ruled the sea. But every technology has its weak point. The walls packed the people of Attica into one city and helped the plague spread. The trireme was fast but light, with little room for food or water, so its crews had to beach their ships most nights; that is how Lysander caught them at Aegospotami. And the whole system depended on one narrow strait, the Hellespont, about 61 km (38 miles) long and only about 1.2 km (three-quarters of a mile) wide at its narrowest. Athens had overcome the land, but it had made itself dependent on the sea lanes.

Weighing it. Thucydides wrote his history to be “a possession for all time” (1.22), and later thinkers, including Mahan and Mackinder, came back again and again to the contest of a sea power and a land power. But read him carefully. He did not say geography decided the war. He judged that Pericles’ plan could have won, and that Athens lost through its own later choices, above all the Sicilian expedition (2.65); some modern historians doubt that Pericles’ strategy could ever have forced Sparta to make peace. The plague, Persian gold, the helots and the Athenian empire’s own harshness all mattered. Geography gave Athens the sea and Sparta the land. What the two cities did with them was their own doing.



Sea power and land power in the ancient Greek world: the Athenian grain route, the Sicilian expedition, and the Spartan base in the Peloponnese.

PICTURE STUDY



The Lenormant Trireme Relief, Unknown Athenian sculptor, about 410–400 BC · Marble relief (fragment) · Acropolis Museum, Athens

This marble fragment was found on the Acropolis of Athens in the 1850s and is named for the French scholar Charles Lenormant, who made it known. It shows part of the side of an Athenian trireme with a row of rowers pulling together. It is one of the very few pictures of a

trireme made by people who had seen them, and modern scholars used it when they designed a full-size working reconstruction, the *Olympias*, launched in 1987.

It was carved in the last years of the Peloponnesian War, when Athens's life depended on its fleet. Each rower in the picture was a citizen, a resident foreigner or a hired man, and the poorest citizens of Athens rowed in the fleet. Sea power in Athens was not only ships; it was thousands of trained men pulling together.

Look closely

- Count the rowers you can see. How are they spaced? Why must they all move at once?
- Find the line of the deck above the rowers. What might have stood or sat on it?
- Notice how low the ship sits. What would happen to a ship like this in heavy seas?
- Look at the edges of the fragment. What parts of the ship are missing that you would most like to see?

Talk about it

1. A trireme needed about 170 rowers. What does that tell you about the cost of a fleet of 300 ships, and about why Athens needed tribute?
2. Why might a city whose poorest citizens row in the fleet think differently about war than a city of landowning hoplites?
3. How does this carving help explain the disaster at Aegospotami?

PROJECT: UNIT MAP: SEA POWER AND LAND POWER IN THE ANCIENT WORLD

You will draw the unit map by hand: a large map of the Greek world in the Peloponnesian War, with an inset of Athens and its Long Walls, and a second panel showing a later contest of sea and land power, Rome against Carthage. This map will go into your unit portfolio.

You will need

- Large sheet of paper (about 18 × 24 in, or two letter sheets taped together)
- Atlas or printed outline map of the Mediterranean and Black Sea
- Colored pencils (blue for sea power, red for land power), fine pen, ruler
- The lesson map figure and your copy of Thucydides (Crawley translation, free online)

Steps

1. Lightly draw a latitude and longitude grid every 5° from 12° E to 38° E and from 34° N to 47° N. Trace the coasts from your atlas into the grid.
2. Mark Athens, Piraeus, Corinth, Sparta, Pylos, Melos, Corcyra, Syracuse, Aegospotami, Byzantium and Panticapaeum (near modern Kerch).
3. Shade the Peloponnese red and label it "Spartan land power: two-fifths of the Peloponnese (Thucydides 1.10)."
4. Draw the Aegean islands and coasts of the Athenian empire in blue, and the grain route from the northern Black Sea through the Bosphorus and Hellespont to Piraeus as a blue

arrow.

5. Draw the Sicilian expedition route (415 BC) as a dashed blue line from Piraeus around the Peloponnese to Corcyra, across to Italy, and down to Syracuse.
6. Put a star at each turning point with its date: Acharnae 431, Pylos 425, Melos 416, Syracuse 413, Decelea 413, Aegospotami 405, the surrender of Athens 404.
7. In a corner inset, draw Athens, Piraeus and the Long Walls to scale, using about 7 km (4 miles) from city to harbor.
8. In a second panel, draw the western Mediterranean with Rome and Carthage, and note that Rome, a land power, built a fleet to fight Carthage at sea in the First Punic War (264–241 BC).
9. Add a key, a scale bar in kilometers and miles, a north arrow and a title.

Tips

- Keep red and blue for land and sea power throughout; the colors are the argument of the map.
- Write the Thucydides reference (book and chapter) beside each event so a reader can check your source.

Check your work

- All eleven places are located correctly, within about half a degree.
- The grain route passes through both the Bosphorus and the Hellespont.
- The inset of the Long Walls is drawn to a stated scale.
- Every dated event agrees with the lesson and with Thucydides.

MAP NOTEBOOK

1. Draw a side view of a trireme with three banks of oars and a ram. Label: about 170 rowers, about 200 men in all.
2. Make a two-column table, “Athens” and “Sparta,” with rows for terrain, main force, source of food, source of money, and greatest fear.
3. Copy Thucydides 1.23 in Crawley’s words and, under it, write one sentence in your own words.

From history. The Romans learned the same lesson as Sparta. When Rome went to war with Carthage, the great sea power of the western Mediterranean, in 264 BC, it had almost no navy. The historian Polybius says the Romans used a Carthaginian warship that had run aground as a model and built a fleet of about a hundred quinqueremes, training rowers on benches on dry land while the ships were being built. In 260 BC that new fleet beat the Carthaginians at Mylae off Sicily, and Rome, a land power, went on to win the First Punic War at sea in 241 BC.

WORKED EXAMPLES

Example 1. Thucydides says the Spartans held two-fifths of the Peloponnese. The Peloponnese covers about 21,500 km² (8,300 sq mi), and Attica about 2,500 km² (965 sq mi). How large was Sparta's territory, and how many times larger than Attica?

(Use the map or drawing "Compare the Peloponnese with Attica on the map." shown earlier in this lesson.)

1. Spartan territory = $\frac{2}{5} \times 21,500 \text{ km}^2 = 8,600 \text{ km}^2$.
2. In square miles: $\frac{2}{5} \times 8,300 = 3,320 \text{ sq mi}$.
3. Ratio: $8,600 \div 2,500 \approx 3.4$.
4. Meaning: Sparta held more than three times the farmland of Athens, which is why Sparta could live from its own land, while Athens, with its larger population, needed imported grain.

Answer: About 8,600 km² (3,320 sq mi), roughly 3.4 times the size of Attica.

Example 2. The road route from Sparta to Athens is about 240 km (150 miles), the length of the modern Spartathlon race that follows it. A Greek army with its baggage might march about 20 km a day. Herodotus says that in 490 BC a force of 2,000 Spartans hurrying to Marathon reached Attica on the third day after leaving Sparta. Compare the two speeds, and explain what they mean for a Spartan invasion of Attica.

1. Normal army: $240 \text{ km} \div 20 \text{ km per day} = 12 \text{ days}$.
2. The hurried force of 490 BC: $240 \text{ km} \div 3 \text{ days} = 80 \text{ km per day}$ (about 50 miles per day), a forced march with little baggage.
3. The forced march is $80 \div 20 = 4$ times as fast, but no army could carry siege gear or stay supplied that way.
4. Meaning: a full Spartan army needed about two weeks just to come and go, had to live off the land it ravaged, and had to go home for its own harvest and to watch the helots. That is why the early invasions of Attica lasted only weeks.

Answer: About 12 days at a normal pace versus 3 days at a forced march (80 km, or 50 miles, a day). Land power could reach Athens, but only slowly and for a short season.

Example 3. Thucydides (6.1) says that sailing around Sicily took a merchant ship not much less than eight days. Take the coast of Sicily as roughly 1,000 km (620 miles). What is the ship's average speed per day and per hour if it sailed day and night? At that rate, how long would a coasting voyage of about 1,200 km (750 miles) from Athens to Syracuse take?

1. Per day: $1,000 \text{ km} \div 8 \text{ days} = 125 \text{ km per day}$ ($620 \div 8 \approx 78 \text{ miles per day}$).
2. Per hour: $125 \text{ km} \div 24 \text{ h} \approx 5.2 \text{ km/h}$, about 2.8 knots.
3. Athens to Syracuse: $1,200 \text{ km} \div 125 \text{ km per day} \approx 9.6 \text{ days}$, roughly 10 days.
4. Meaning: the straight-line distance is only about 750 km, but ships hugged the coast, stopping for water and shelter. A message home and the answer back took weeks, and every reinforcement had to make the same long voyage.

Answer: About 125 km (78 miles) a day, or 5.2 km/h; roughly 10 days to Syracuse. Sea power gave Athens long reach, but the farther it reached, the thinner and slower its support became.

PRACTICE

1. **EASY** Give the dates of the Peloponnesian War and name the leading city of each side.
2. **EASY** What were the Long Walls, and what did they allow Athens to do?
3. **EASY** According to Thucydides 1.23, what made the war inevitable?
4. **EASY** Who were the helots, and why did they affect Spartan strategy?
5. **MEDIUM** If all of Athens's 300 triremes were fully manned at about 200 men each, how many men would the fleet need? How many of them would be rowers at about 170 per ship?
6. **MEDIUM** Athens is at about 37.97° N , 23.73° E and Syracuse at about 37.08° N , 15.29° E . Their straight-line distance is about 750 km. Convert to miles, and say why the real voyage was longer.
(Use the map or drawing "Use the map for Problems 6 and 7." shown earlier in this lesson.)
7. **MEDIUM** The Hellespont (Dardanelles) is about 61 km long and about 1.2 km wide at its narrowest. Convert both to miles, and explain why Aegospotami was the right place for Sparta to win the war.
8. **MEDIUM** Decelea was about 120 stadia from Athens (Thucydides 7.19). If a stadion is about 180 m, how far is that in kilometers and miles? Why did a permanent Spartan fort there hurt Athens more than the summer invasions?
9. **HARD** What happened at Melos in 416 BC? What does it show about Athenian sea power?
10. **HARD** Explain how both sides tried to become more like the other during the war. Give one example for each.
11. **HARD** Give two weak points of Pericles' "island" strategy that geography and technology created.

12. **CHALLENGE** Thucydides judged that Athens lost because of its own mistakes after Pericles died (2.65). Write a paragraph weighing this judgment against the view that geography and Persian money decided the war.

COMMON MISTAKES

- Thinking Athens had no army or Sparta no ships. Athens had thousands of hoplites, and Sparta ended the war with a fleet; each was strong in one element, not limited to it.
- Treating Thucydides as the source for the whole war. His history breaks off in 411 BC; the end, including Aegospotami, comes from Xenophon.
- Quoting Thucydides from memory or a modern paraphrase as if it were his words. Name the translation and give book and chapter, as in “1.23, Crawley.”

Make it a game • Fleet and Phalanx. Draw a simple board: a strip of land (Attica and the Peloponnese) and a sea around it with three ports. One player is Athens with six fleet tokens and a walled city; the other is Sparta with six army tokens. Armies move one space a turn on land only; fleets move three spaces on sea only. Each turn Sparta can burn one farm; Athens can raid one coast. Athens loses a token if the grain port (the Hellespont) is ever blocked; Sparta loses one each time its home is left with no army (a helot revolt). After four turns, Sparta may spend two tokens to buy one fleet (Persian gold). Play eight turns and discuss: who had the advantage, and when did it change?

Scripture. “And he changeth the times and the seasons: he removeth kings, and setteth up kings: he giveth wisdom unto the wise, and knowledge to them that know understanding:” (Daniel 2:21, KJV)

Daniel spoke these words in praise to God when the king of Babylon’s dream was revealed to him; Babylon was the greatest land power of his day. Athens at its height seemed unbeatable at sea, and within a single lifetime its walls were pulled down. The rise and fall of empires is real history, and Scripture teaches that it is not outside God’s rule.

Practice answers

1. 431–404 BC. Athens against Sparta (Lacedaemon) and its Peloponnesian allies.
2. Walls built about 461–456 BC joining Athens to its harbor at Piraeus. They let Athens be supplied by sea even when an enemy army held the countryside.
3. “The growth of the power of Athens, and the alarm which this inspired in Lacedaemon” (Crawley’s translation).
4. Unfree people owned by the Spartan state who worked the land in Laconia and Messenia. Spartans feared their revolt, so the army was reluctant to stay far from home for long.
5. $300 \times 200 = 60,000$ men; $300 \times 170 = 51,000$ rowers.
6. $750 \times 0.621 \approx 466$ miles. Ships sailed around the Peloponnese and along the coasts by way of Corcyra and southern Italy, stopping for water and shelter, so the route was much longer than a straight line.
7. $61 \times 0.621 \approx 38$ miles; $1.2 \times 0.621 \approx 0.75$ mile. Aegospotami lies on the Hellespont, the narrow strait through which the Black Sea grain reached Athens. Destroying the fleet there

closed the grain route, and Athens starved.

8. $120 \times 180 \text{ m} = 21,600 \text{ m} \approx 22 \text{ km}$ (about 13 miles). A fort held all year kept the Athenians off their land, cut the overland route from Euboea, and gave slaves a refuge; Thucydides says more than twenty thousand deserted.
9. Athens demanded that the island submit to its empire. When Melos refused, the Athenians besieged it, killed the men of military age and enslaved the women and children. It shows that sea power could be used as ruthlessly as any army, and that Athens ruled its empire by force as well as by trade.
10. Athens, the sea power, landed troops and fortified Pylos on the Spartan coast (425 BC), capturing 292 men on Sphacteria. Sparta, the land power, built a fleet with Persian money and won at sea under Lysander at Aegospotami (405 BC).
11. Any two: the crowded city behind the walls helped the plague of 430 BC spread; the fleet depended on grain coming through the narrow Hellespont; triremes had to be beached often, leaving them open to surprise; the fleet cost huge sums in pay, which depended on tribute from unwilling allies.
12. Answers vary. A strong answer explains Thucydides' view (the Sicilian expedition broke Pericles' rule against new conquests and wasted the fleet), then the other side (Sparta won only when Persian money let it build a fleet, and Athens's dependence on the Hellespont was a geographic weakness), notes that some historians doubt Pericles' plan could have forced a peace, and reaches a reasoned conclusion such as: geography set the shape of the war, but choices and money decided its outcome.

1.3 GEOGRAPHIC DETERMINISM AND ITS CRITICS

OBJECTIVES

- Explain environmental determinism as Montesquieu, Ellen Churchill Semple and Ellsworth Huntington stated it, and the older tradition behind it (Hippocrates, Aristotle, Ibn Khaldun).
- Explain the replies of the possibilists (Vidal de la Blache, Lucien Febvre) and the middle positions of stop-and-go determinism and probabilism.
- Test determinist claims against counterexamples using latitude, distance, area and population: Athens and Sparta, the two Koreas, Singapore and the Netherlands.

Warm-up. Put two identical bowls of water side by side. Into one drop a pinch of salt; into the other, nothing. Ask someone who did not watch to tell which is which by looking. They cannot: the bowls look the same, but someone made a different choice. Now think of two neighboring places with the same weather and soil. Name one thing that could make their histories very different even though their geography is nearly identical.

Video. Coming soon. Search Hillsdale Studios for lectures on Montesquieu and The Spirit of the Laws; Library of Congress for talks on the history of geography as a discipline; NASA and NASA Earth Observatory for night-lights imagery of the Earth; university lecture channels (candidates, need vetting) on environmental determinism and possibilism.

KEY TERMS

environmental determinism

The view that the physical environment, especially climate, fixes the character, abilities and history of peoples.

possibilism

The view that the environment offers a range of possibilities and limits, and that people choose among them; named by Lucien Febvre in 1922.

genre de vie

French for “way of life”: Vidal de la Blache’s term for the habits, tools and customs by which a people uses its land.

stop-and-go determinism

Griffith Taylor’s middle view (also called neo-determinism): nature sets the general direction, and people can speed up, slow down or stop, but not change the route.

probabilism

The view that geography makes some outcomes more likely than others without making any of them certain.

counterexample

A real case that fits the conditions of a claim but not its conclusion; one solid counterexample defeats a claim that something is always true.

CORE IDEAS

The story. In the years before 1748, a French judge and philosopher at Bordeaux, Charles-Louis de Secondat, baron de Montesquieu, tried a small experiment. He took the tongue of a sheep and looked at its surface through a microscope, where he could see tiny bumps. Then he froze part of the tongue, and the bumps seemed to shrink back into it; when it thawed, they rose again. From this Montesquieu drew a large conclusion. Cold, he reasoned, tightens the fibers of the body, so people of cold countries feel less and act with more vigor and courage, while heat loosens them, so people of hot countries feel more and are less inclined to effort. He set out the argument in Book 14 of *The Spirit of the Laws*, published at Geneva in 1748, which treats laws “in relation to the nature of the climate.” Later in the book he wrote that the power of climate is the first of all powers. A sheep’s tongue had become a theory of nations.

How they figured it out. Montesquieu was adding to a very old idea. A Greek medical treatise from about 400 BC, *Airs, Waters, Places*, taught that a people’s winds, water and seasons shape their bodies and temperaments. Aristotle, in Book 7 of his *Politics*, said the peoples of cold Europe were full of spirit but lacking in skill and thought, the peoples of Asia skilled but lacking in spirit, and the Greeks, living in between, had both. In 1377 the North African scholar Ibn Khaldun, in his *Muqaddimah*, divided the inhabited world into seven climate zones and taught that the temperate middle zones produced the most balanced peoples and the greatest civilizations. Notice a pattern. Each writer found that the best climate on earth happened to be his own. That should make a careful reader suspicious. A theory that always crowns its author’s homeland may be measuring pride as much as climate.

The determinists. In the late 1800s and early 1900s determinism claimed the authority of modern science. The German geographer Friedrich Ratzel, whom you will meet in Unit 3, taught that peoples are shaped by their land and that states grow like living things. His American student Ellen Churchill Semple opened her book *Influences of Geographic Environment* (1911) with the sentence, “Man is a product of the earth’s surface.” She meant it seriously, and her book is full of careful observations about rivers, coasts and mountains. The Yale geographer Ellsworth Huntington went further. In *Civilization and Climate* (1915) he argued that human energy and progress are greatest in climates with cool, changeable weather like that of England and New England, and he ranked the peoples of the world accordingly. Huntington was also a leader of the American eugenics movement in the 1930s. In its own day this school was taught in universities and looked like hard science. It also served as a convenient excuse: if climate made some peoples fit to rule and others fit to be ruled, conquest and colonial rule could be called natural.

The critics. The strongest answer came from France. Paul Vidal de la Blache (1845–1918), the founder of modern French geography, studied the regions of France in his *Tableau de la géographie de la France* (1903). He found that neighboring peoples on the same kind of land

had developed different *genres de vie*, ways of life, by their own habits, tools and choices. The historian Lucien Febvre gave the school its name in *La Terre et l'évolution humaine* (1922; in English, *A Geographical Introduction to History*). He summed it up this way: there are no necessities, but everywhere possibilities, and man, as master of the possibilities, is the judge of their use. Others stood between. The Australian geographer Griffith Taylor argued for “stop-and-go” determinism: nature lays out the road, and a people can speed up, slow down or stop, but cannot wisely leave the road. Later geographers, among them O. H. K. Spate, spoke of **probabilism**: geography makes some outcomes likely and others unlikely, but rarely certain.

The big idea. How do we weigh these views? Determinism has a real strength: it made scholars take the land seriously. Some limits are hard. A country without a harbor cannot easily build a navy, a desert cannot feed a great city without imported water, and Sparta’s farmland and Athens’s harbor really did shape their wars. But a claim that climate *fixes* history meets counterexamples everywhere. Athens and Sparta stood about 150 km (95 miles) apart under nearly the same sky and grew opposite constitutions. The Korean peninsula has one climate and one people, yet since 1945 its northern and southern halves have taken very different paths. Singapore lies just over one degree from the equator, has almost no natural resources, and is one of the richest cities in the world. The Dutch built a nation on land that the sea would cover without their dikes and pumps. And the same land changes its history over time: Rome united the Italian peninsula under one rule, yet after the Lombards invaded in AD 568 Italy was not united under one government again until 1861. The land was the same; the people and their choices were not.

On the map: a Christian reading. Scripture gives us a better frame than either extreme. God made the lands and placed the nations: he “hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation” (Acts 17:26). The same verse that speaks of bounds also teaches that every nation is of one blood, which leaves no room for ranking peoples by their climate. And God told mankind to “replenish the earth, and subdue it” (Genesis 1:28), which means people are stewards who work the land, not clay that the land shapes as it pleases. So read every map with two questions: What does this land make easy or hard? And what did the people who lived here choose to do with it?

How much does geography decide? Four positions



Montesquieu (1748) stood near the left,
but told lawgivers to resist the effects of climate.

Four positions on how much geography decides. Montesquieu stood near the left, but told lawgivers to resist the effects of climate.

PICTURE STUDY



The Korean Peninsula at Night, Crew of Expedition 38, International Space Station (NASA), January 30, 2014 · Digital photograph taken from orbit · NASA, Johnson Space Center astronaut photography collection (public domain)

On January 30, 2014, astronauts aboard the International Space Station photographed the Korean peninsula at night as they passed over East Asia. NASA published the picture, and it was soon printed around the world, because it shows something no table of numbers shows so quickly: two halves of one peninsula, under the same winter sky, with very different amounts of light.

The photograph does not tell us everything about life in either country, and it is not an opinion. It is a measurement of electric light seen from about 400 km (250 miles) up. For this lesson it is a test case. The two halves share mountains, rivers, climate, language and much

of their history. If geography alone decided a people's fate, what would we expect this picture to show?

Look closely

- Find the brightest patch in the south. That is the area around Seoul. How far does the light spread?
- Find the small patch of light in the north. That is Pyongyang. What surrounds it?
- Trace the line where the lights stop. Does it follow a river or mountain range, or something else?
- Look at the coasts and the seas around the peninsula. Can you see ships' lights or the lights of other countries?

Talk about it

1. What geographic facts are the same for both halves of the peninsula? What has been different since 1945?
2. How would a strict environmental determinist explain this photograph? How would a possibilist?
3. What else would you need to know before drawing firm conclusions from a single photograph?

PROJECT: TWIN LANDS POSTER: SAME CLIMATE, DIFFERENT HISTORIES

You will test environmental determinism with data. You will draw climographs (combined temperature and rainfall graphs) for two places with nearly the same climate, put them side by side on a poster, and add a short history of each. If the climates match but the histories do not, you have found a counterexample.

You will need

- Graph paper (two sheets), poster board, ruler, colored pencils (red and blue)
- Monthly average temperature and precipitation for two places, from a national weather service or a climate atlas
- An atlas, and a short encyclopedia article on the history of each place

Steps

1. Choose a pair: Seoul and Pyongyang; Athens and a town near Sparta (modern Sparta or Kalamata); or another pair approved by your teacher with nearly the same latitude and climate.
2. Look up the 12 monthly average temperatures and precipitation totals for each place. Record your source and the years the averages cover.
3. On graph paper, draw a climograph for each: months along the bottom, blue bars for precipitation (mm on the right axis), and a red line for temperature (°C on the left axis). Use the same scales on both graphs.

4. Find each place's latitude and longitude and compute the distance between them, in kilometers and miles.
5. Mount the two climographs side by side on the poster with a small locator map.
6. Under each graph, write five facts about the place's history and way of life that its climate does not explain.
7. Across the bottom write a verdict of three or four sentences: Does this pair support determinism, possibilism, or a middle position? Why?

Tips

- Using the same scales is essential; otherwise two similar climates can look different on paper.
- Stick to facts that can be checked (dates, laws, population, trade). Leave out opinions and slogans.

Check your work

- Both climographs use the same scales and cite their source.
- The distance between the two places is correct in kilometers and miles.
- The verdict names a position from the lesson and supports it with the evidence on the poster.

MAP NOTEBOOK

1. Copy the determinism spectrum diagram and add Montesquieu, Aristotle and Ibn Khaldun where you think they belong. Write one reason for each placement.
2. Draw the Korean peninsula with Seoul and Pyongyang, a scale bar, and the latitude of each city.
3. Write Semple's first sentence and Febvre's summary side by side. Under them, write your own one-sentence position.

From history. Montesquieu's climate theory has not lasted, but another idea in the same book did. *The Spirit of the Laws* argued that liberty is safest when the legislative, executive and judicial powers are held by different hands. The American founders read it closely. In *Federalist* No. 47 (1788), James Madison wrote, "The oracle who is always consulted and cited on this subject is the celebrated Montesquieu." The same book can contain a weak theory and a strong one, which is why we weigh ideas one at a time.

WORKED EXAMPLES

Example 1. Athens is at about 37.97° N, 23.73° E; Sparta is at about 37.07° N, 22.43° E. Find the difference in latitude in degrees and kilometers, and estimate the straight-line distance between them. What does the result mean for climatic determinism?

1. Latitude difference: $37.97 - 37.07 = 0.90^\circ$. North-south distance $\approx 0.90 \times 111.2$ km ≈ 100 km.
2. Longitude difference: $23.73 - 22.43 = 1.30^\circ$. At about 37.5° N, one degree of longitude $\approx 111.3 \times \cos 37.5^\circ \approx 111.3 \times 0.793 \approx 88.3$ km, so the east-west distance $\approx 1.30 \times 88.3 \approx 115$ km.
3. Straight-line distance $\approx \sqrt{(100^2 + 115^2)} = \sqrt{(10,000 + 13,225)} = \sqrt{23,225} \approx 152$ km, about 150 km (95 miles).
4. Both cities have hot, dry summers and mild, wet winters. Yet Athens became a seafaring democracy with an empire, and Sparta a land-based military society ruling over helots.

Answer: 0.90° of latitude (about 100 km); about 150 km (95 miles) apart. Nearly identical climates produced opposite constitutions, a strong counterexample to strict climatic determinism. (The difference is better explained by harbors, farmland, history and choices.)

Example 2. As of 2026, North Korea covers about $120,500$ km² (46,500 sq mi) with about 26 million people; South Korea covers about $100,400$ km² (38,750 sq mi) with about 52 million people. Pyongyang (39.03° N, 125.75° E) and Seoul (37.57° N, 126.98° E) are about 195 km apart. Find each country's population density and the latitude difference between the capitals.

1. North: $26,000,000 \div 120,500 \approx 216$ people per km² ($26,000,000 \div 46,500 \approx 559$ per sq mi).
2. South: $52,000,000 \div 100,400 \approx 518$ people per km² ($52,000,000 \div 38,750 \approx 1,342$ per sq mi).
3. Latitude difference: $39.03 - 37.57 = 1.46^\circ$, about $1.46 \times 111 \approx 162$ km (101 miles).
4. Distance: 195 km $\times 0.621 \approx 121$ miles.

Answer: North ≈ 216 per km² (559 per sq mi); South ≈ 518 per km² (1,342 per sq mi). The capitals are only about 1.5° of latitude and 195 km (121 miles) apart: one climate, one people, different paths since 1945.

Example 3. Singapore, at about 1.3° N, covered about 580 km^2 (224 sq mi) in the 1960s and, after decades of land reclamation, about 735 km^2 (284 sq mi) as of 2026, with about 6.0 million people. By what percentage has its land grown, and what is its population density? Does Singapore support or refute the claim that hot climates prevent prosperity?

1. Growth: $735 - 580 = 155 \text{ km}^2$. $155 \div 580 \approx 0.267$, about 27% larger.
2. Density: $6,000,000 \div 735 \approx 8,160$ people per km^2 ($6,000,000 \div 284 \approx 21,100$ per sq mi).
3. Singapore is near the equator, hot and wet all year, and has almost no farmland, minerals or fresh water of its own.
4. But it sits on the Strait of Malacca, one of the world's busiest sea lanes, and its people chose to build a great port, to trade, and even to make new land.

Answer: About 27% more land; about 8,160 people per km^2 (21,100 per sq mi). Singapore refutes the claim that a hot climate prevents prosperity, while showing that location (a geographic fact) matters a great deal when people choose to use it.

PRACTICE

1. **EASY** Define environmental determinism and possibilism in one sentence each.
2. **EASY** Name the book in which Montesquieu set out his climate theory, its year, and the city where it was published.
3. **EASY** Who wrote "Man is a product of the earth's surface," in what book, and in what year?
4. **EASY** Who gave possibilism its name, and in what year? Which French geographer's work did he build on?
5. **MEDIUM** Seoul is at about 37.57° N and Pyongyang at about 39.03° N. Find the north-south distance between them in kilometers and miles ($1^{\circ} \approx 111 \text{ km} \approx 69 \text{ miles}$).
6. **MEDIUM** Take the land area of the Netherlands as about $33,700 \text{ km}^2$ (13,000 sq mi), and suppose about 26% of it lies below sea level. How much land is that?
7. **MEDIUM** Rome ruled the whole Italian peninsula in ancient times, and the Ostrogoths and then the Eastern Roman Empire still held it whole for a time after AD 476. After the Lombard invasion of AD 568, Italy was not united under one government again until 1861. How many years is that, and what does it show?
8. **MEDIUM** Aristotle, Ibn Khaldun and Huntington each praised a particular climate. What did their choices have in common, and why should that make us cautious?
9. **HARD** Montesquieu wrote that good lawgivers oppose the bad effects of climate rather than give in to them. Does that make him a strict determinist? Explain.
10. **HARD** Explain Griffith Taylor's stop-and-go determinism with an example, and say how it differs from Febvre's possibilism.
11. **HARD** Give one strength of environmental determinism and two ways it was misused.
12. **CHALLENGE** Write a paragraph defending a position on the spectrum from determinism to possibilism. Use at least two counterexamples or supporting cases with numbers from

this lesson, and answer one objection to your view.

COMMON MISTAKES

- Thinking possibilists denied that geography matters. They held that it sets real limits and offers real opportunities, but that people choose among them.
- Treating one counterexample as proof that geography means nothing. A counterexample defeats “always” and “never,” not “often” or “makes it harder.”
- Judging Montesquieu or Semple only by the errors of their theories. They were serious observers in their own time; weigh their evidence and reasoning, and name their errors plainly.

Make it a game · Where Do You Stand?. Mark one end of the room “Geography decides” and the other “People decide.” The leader reads a statement, such as “Island nations always build navies,” “Deserts can never hold great cities,” “Rivers attract towns,” or “Cold climates make people hardworking.” Everyone walks to the spot on the line that matches their view. The leader then calls on one player near each end to give a real example in one sentence. Anyone who gives a real counterexample with a place and date may move one other player one step. Discuss which statements drew people to the middle, and why.

Scripture. “And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;” (Acts 17:26, KJV)

Paul spoke these words in Athens, the city of this unit’s Lesson 1.2. God does set the times and bounds of the nations, but He made them all of one blood, so no climate makes one people superior to another, and every people answers to Him for what it does with its land.

Practice answers

1. Environmental determinism: the physical environment, especially climate, fixes the character and history of peoples. Possibilism: the environment offers possibilities and limits, and people choose among them.
2. *The Spirit of the Laws*, 1748, Geneva.
3. Ellen Churchill Semple, *Influences of Geographic Environment*, 1911.
4. Lucien Febvre, in 1922 (*La Terre et l'évolution humaine*). He built on the work of Paul Vidal de la Blache.
5. $1.46^\circ \times 111 \approx 162$ km; $1.46 \times 69 \approx 101$ miles.
6. $0.26 \times 33,700 \approx 8,760$ km²; $0.26 \times 13,000 \approx 3,380$ sq mi. Land the sea would cover without dikes and pumps.
7. $1861 - 568 = 1,293$ years. The same peninsula, with the same mountains, coasts and climate, was united in one age and divided for well over a thousand years, so geography alone cannot explain its political history.
8. Each found that the best climate was his own region’s (Greece between Europe and Asia; the temperate middle zones; England and New England). A theory that always favors its author’s

homeland may reflect pride rather than evidence.

9. Not strictly. He believed climate pushes peoples strongly in certain directions, but he also believed laws, religion and customs could resist that push. A strict determinist would say laws merely reflect climate; Montesquieu thought wise laws could correct it.
10. Taylor held that nature lays out the general route of a region's development, and people can speed up, slow down or stop, but not wisely change direction (for example, a dry interior can be settled only thinly however hard people try). Febvre held that there are many possible routes and people choose among them. Taylor gives nature the steering wheel; Febvre gives it to people.
11. Strength: it made scholars take physical geography seriously, and some limits really are hard (no harbor, no navy; no water, no city). Misuses: it was used to rank peoples by climate and to treat some as naturally fit to rule (Huntington); it was used to excuse colonial rule and, in Germany, fed the geopolitics that the Nazis abused.
12. Answers vary. A strong answer states a clear position (often probabilism or a careful possibilism), uses evidence such as Athens and Sparta about 150 km apart with opposite constitutions, the Koreas' densities, or Singapore's 27% growth in land, admits the hard limits geography does set, answers an objection (for example, "Singapore's location is itself geography"), and refers to the Christian view that peoples are of one blood and responsible stewards of their lands.

1.4 READING MAPS OF POWER

OBJECTIVES

- Explain why every flat map distorts the earth, name the properties a projection can keep (shape, area, distance from a point, direction), and compute Mercator's stretch at any latitude.
- Explain how the choice of center, orientation and purpose shapes a map's view of power, using the Peutinger Table, the Hereford map and Matteo Ricci's 1602 world map.
- Read a map critically with a checklist of maker, date, purpose, projection, center, scale, selection and symbols, and draw one region on three projections with different centers.

Warm-up. Peel a clementine or orange in as few pieces as you can. Try to press the peel flat on the table without tearing or stretching it. You cannot. Now draw a small face on a second orange with a marker before peeling it, and look at what happens to the face when you flatten the peel. Every flat map of the round earth has the same problem, and every mapmaker has to choose what to tear and what to stretch.

Watch. *Matteo Ricci and The Forbidden Temple - "Ends of The Earth"* (Drive Thru History with Dave Stotts, 4:24). <https://www.youtube.com/watch?v=JDPN7HehhZA>

After the story: use this short clip to meet Matteo Ricci as a missionary in Beijing, and notice how he worked to understand Chinese customs before he tried to share his maps.

Note: Captions were not available to check; preview it first. This is a clip from a Christian travel series about Ricci's life in Beijing and Chinese religious ceremonies, not about his 1602 world map. The clip seems to focus on Ricci and Chinese temple ceremonies rather than his world map or how he placed China near the center.

KEY TERMS

map projection

A systematic method of drawing the curved surface of the earth on a flat sheet. Every projection distorts something.

conformal projection

A projection that keeps angles and the shapes of small areas correct, at the cost of area; Mercator's is the best-known.

equal-area projection

A projection that keeps the relative sizes of areas correct, at the cost of shape.

azimuthal projection

A projection drawn around one center point, on which directions from that center are true; in the equidistant form, distances from the center are true as well.

rhumb line

A course of constant compass bearing; on a Mercator map every rhumb line is a straight line.

persuasive map

A map designed mainly to convince the viewer of an argument, through its center, colors, arrows, symbols and what it leaves out.

CORE IDEAS

The story. In 1602, in Beijing, the Italian Jesuit missionary Matteo Ricci and the Chinese scholar Li Zhizao printed a great map of the world on six large panels. Ricci had come to China in 1582 and had learned to speak, read and write Chinese well enough to talk with scholars as an equal. He had brought European maps with him, and he noticed something about them. European world maps put the Atlantic near the middle, with Europe a little above the center and China pushed far to the right edge. For his Chinese readers Ricci moved the center, so that China sat near the middle of the map, with Europe and Africa on the left and the Americas on the right, across the Pacific. He filled the margins with notes about distant lands, the round earth and its climate zones, and the friendship the map won him helped him speak with Chinese scholars about the Christian faith. The coastlines did not change. Changing the center changed how the world looked, and who seemed to stand in the middle of it.

How it worked: the Peutinger Table. More than a thousand years before Ricci, a Roman mapmaker drew a very different kind of map of power. It survives in a single copy made in the 13th century, now in the Austrian National Library in Vienna, and is named for Konrad Peutinger, the scholar of Augsburg who owned it in the early 1500s. It is a parchment roll about 6.75 m (22 feet) long and only about 34 cm (13 inches) tall, and it shows the roads of the Roman world from the west (the westernmost sheet is lost) to India. Roads are drawn as lines with small kinks at each stopping place, with the distance between stops written in Roman numerals. Small pictures mark towns, baths and harbors, and three great cities, Rome, Constantinople and Antioch, appear as enthroned figures. To fit a roll, the whole world is squeezed from north to south, so the Mediterranean becomes a thin ribbon of water. This is not a mistake. Like a modern subway diagram, the Peutinger Table keeps what its users needed (which road, how far, where to stop) and gives up what they did not (true shapes). It shows the Roman world as Rome saw its power: a network of roads, with Rome at the heart.

The big idea. The earth is a sphere, and a sphere cannot be flattened without stretching or tearing, as the orange peel showed. So every flat map is a **projection** and every projection gives something up. A **conformal** projection keeps angles and the shapes of small areas, but not their sizes. An **equal-area** projection keeps sizes, but not shapes. An **azimuthal** projection is drawn around one center, and true directions (and, in its equidistant form, true distances) run outward from that center only. Compromise projections, such as Arthur Robinson's (1963) and Oswald Winkel's tripel (1921), keep nothing perfectly and spread the errors around. Gerardus Mercator's world map of 1569 was made, as its title says, for the use of navigators. On it every course of constant compass bearing, a **rhumb line**, is a

straight line, which is a wonderful gift to a sailor. The price is size: at latitude φ , Mercator enlarges lengths by $1 \div \cos \varphi$ and areas by the square of that. At 60° lengths are doubled and areas quadrupled. That is why Greenland looks about as big as Africa on a Mercator map, though Africa is about fourteen times larger.

Centers and perspective. Every map also has a center and a top, and both are choices. The Hereford Mappa Mundi, made about 1300, puts Jerusalem at the center and the east at the top. The Peutinger Table puts Rome at the heart of its roads. Ricci put China near the middle. Many world maps printed in the United States put the Americas in the center and split Asia between the two edges, so that Asia and America look an ocean apart in both directions. In Unit 4 you will see how maps centered on the North Pole, drawn in the 1940s, showed Americans that North America and northern Asia face each other across the Arctic. The center decides which countries look central and which look remote, which look surrounded and which look free, and which seas look like highways. No map is drawn from nowhere.

Maps as arguments. Because maps look like plain fact, they persuade quickly. Mapmakers choose what to include and what to leave out, which colors to use, where to draw arrows, and how big to draw each country. Fred W. Rose's octopus map of 1877 (Lesson 1.1) made Russia's reach look menacing. In the 1930s German geopolitical journals and the Nazi propaganda machine used maps with heavy arrows and dark borders to make Germany look encircled and threatened, and so to make its own aggression look like self-defense; you will study that abuse in Unit 3. In 1973 the German historian Arno Peters presented an equal-area world map as a fairer picture of the world; cartographers replied that the projection had already been described by James Gall in 1855, that it badly distorts shapes, and that good equal-area maps already existed. The debate was really about which distortion a map should accept. Scripture gives a fair rule for weighing any one-sided presentation: "He that is first in his own cause seemeth just; but his neighbour cometh and searcheth him" (Proverbs 18:17).

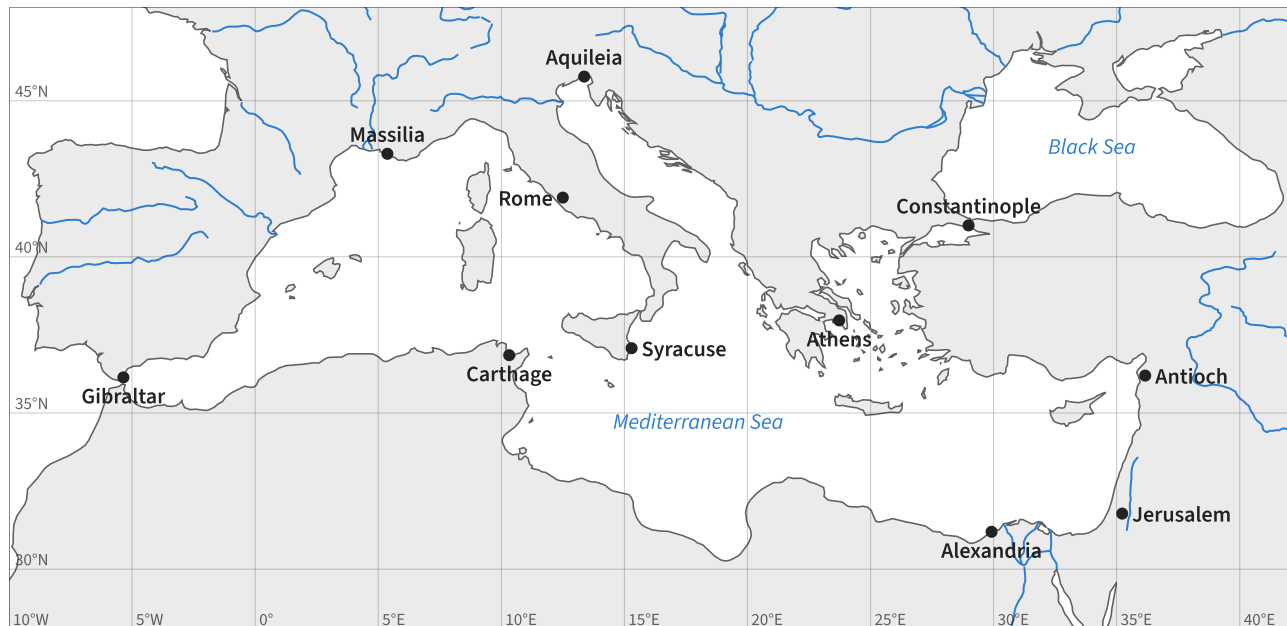
On the map. So read every map of power with a checklist. Who made it, when, and for whom? What was it for: navigation, travel, teaching, war, persuasion? What projection does it use, and what does that projection keep and lose? What is at the center and at the top? What is the scale, and is it the same across the map? What has been selected and what left out? What do the colors, arrows and labels argue? Then compare it with a map made by someone else, from another center, for another purpose. The thinkers you will read in Units 2 to 4 each drew or used a map to make an argument. Mackinder's famous map of 1904, "The Natural Seats of Power," made the interior of Eurasia look vast and central, and you will judge for yourself in Unit 3 how much of that impression came from the map. Learning to read the map is the first step in weighing the idea.

Mercator projection: how much lengths and areas are enlarged

0° (equator)		×1.00 (area ×1.0)
30°		×1.15 (area ×1.33)
45°		×1.41 (area ×2.0)
60°		×2.00 (area ×4.0)
75°		×3.86 (area ×14.9)

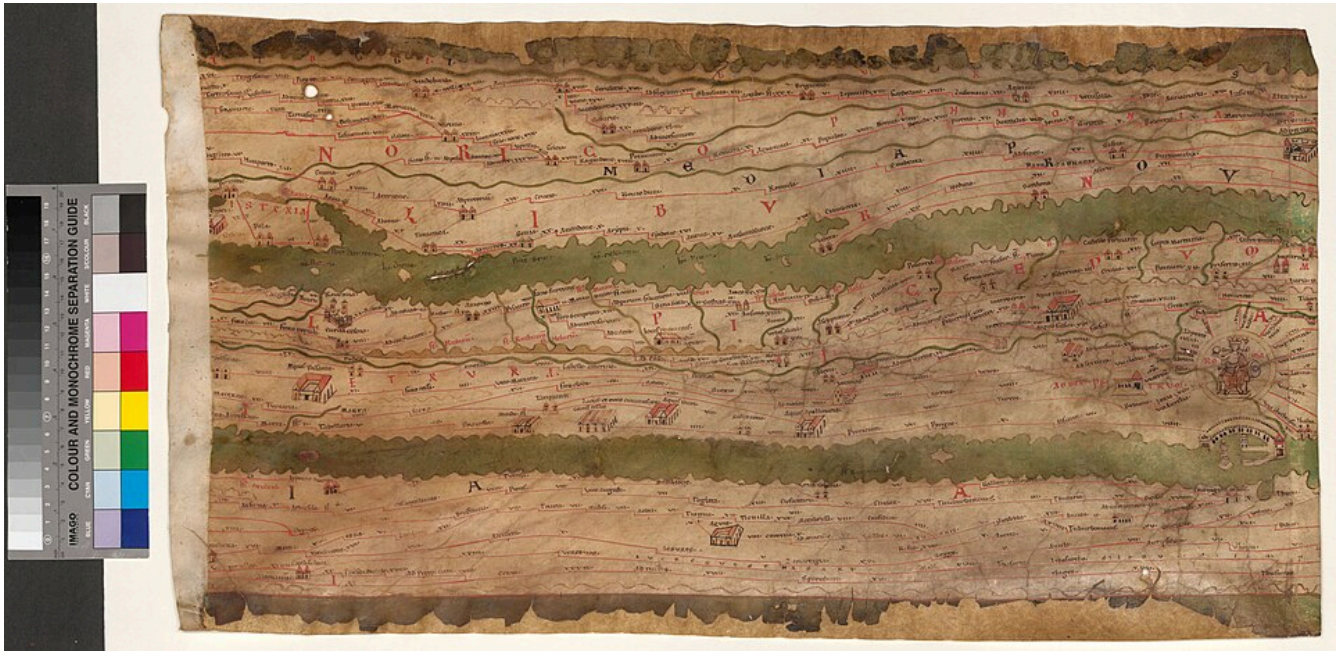
Length factor = $1 \div \cos(\text{latitude})$; area factor = (length factor)²

How much Mercator's projection enlarges lengths and areas at different latitudes. Length factor = $1 \div \cos(\text{latitude})$; area factor = its square.



The Roman Mediterranean, the world of the Peutinger Table. Use it for the projection project.

PICTURE STUDY



The Peutinger Table (Tabula Peutingeriana), Unknown medieval copyist, after a Roman original of late antiquity, about 1200 (medieval copy of a late-Roman original) · Ink and color on parchment; a roll of 11 surviving sheets, about 6.75 m × 34 cm (22 ft × 13 in) · Austrian National Library, Vienna

The Peutinger Table is the only surviving map of the Roman road system. The copy we have was made in the 13th century from a Roman original, probably of the 4th or 5th century AD. It passed to the humanist Conrad Celtes and then, in 1508, to Konrad Peutinger of Augsburg, whose name it still bears. Today it is one of the treasures of the Austrian National Library in Vienna.

Imagine unrolling a map longer than a classroom and only as tall as a sheet of paper. That shape is the key to the whole map. Its maker cared about routes and distances, not true shapes, so he stretched the world east to west and squeezed it north to south until the seas became narrow streams. It is a map of an empire seen as a network of roads.

Look closely

- Find Rome, shown as a crowned figure on a throne. How many roads can you count leaving the city?
- Look at the seas. How wide is the Mediterranean compared with the land? Why did the mapmaker draw it so thin?
- Follow one road line. What do the small kinks and the Roman numerals beside them mean?
- Look for the little building pictures. Some mark towns, some baths, some harbors. Which places seem to matter most to the mapmaker?

Talk about it

1. What questions could a Roman traveler answer with this map? What questions could he not answer?
2. How does this map show Roman power? Compare it with a modern map of the same lands.
3. In what way is the Peutinger Table like a modern subway or airline route map?

PROJECT: ONE REGION, THREE PROJECTIONS, THREE CENTERS

You will draw the Roman Mediterranean, the world of the Peutinger Table, three times: on a simple latitude-longitude grid centered on Rome, on a Mercator projection centered on Constantinople, and as a view of the globe centered on Jerusalem. Then you will compare what each map makes look large, near, central or far away. On the two grid maps the center only moves things on the page; on the globe view, the center changes the shapes themselves.

You will need

- Three sheets of graph paper (centimeter squares are best), pencil, fine pen, ruler, colored pencils
- An atlas, the lesson map figure, and the control-point table below
- A globe, a phone or camera, and a sheet of tracing paper
- Control points (latitude, longitude): Gibraltar 36.1° N, 5.4° W; Massilia (Marseille) 43.3° N, 5.4° E; Rome 41.9° N, 12.5° E; Aquileia 45.8° N, 13.4° E; Carthage 36.9° N, 10.3° E; Syracuse 37.1° N, 15.3° E; Athens 38.0° N, 23.7° E; Constantinople 41.0° N, 29.0° E; Antioch 36.2° N, 36.2° E; Jerusalem 31.8° N, 35.2° E; Alexandria 31.2° N, 29.9° E

Steps

1. Map 1, grid centered on Rome (equirectangular). Turn the graph paper sideways (landscape) and draw a vertical line for 12.5° E about 10 cm from the left edge; Rome's meridian is the central line of this map. Use 0.5 cm for every degree both east-west and north-south, with 30° N near the bottom. Plot each point: $x = (\text{longitude} - 12.5) \times 0.5$ cm from the center line (west is negative), $y = (\text{latitude} - 30) \times 0.5$ cm above the 30° line. Join the points with the coastline from your atlas.
2. Map 2, Mercator centered on Constantinople. On a landscape sheet, draw the central line for 29° E about 19 cm from the left edge (Gibraltar will fall about 17 cm to its left), and keep 0.5 cm per degree east-west. For north-south, use the Mercator spacing. At 1 cm per degree, the height above 30° N is: 35° N, 5.94 cm; 40° N, 12.24 cm; 45° N, 19.03 cm; 50° N, 26.44 cm. Halve these for your 0.5 cm scale (2.97, 6.12, 9.52, 13.22 cm) and estimate between them. Plot the same points and coastline.
3. Map 3, a globe view centered on Jerusalem. Turn a globe until Jerusalem faces you directly. Stand back 3 m or more and photograph it straight on (zoom in rather than walking close, to reduce perspective). Print or display the photo, lay tracing paper over it, and trace the coasts and the eleven cities. This is close to an orthographic projection centered on Jerusalem.

4. On each map, label the projection, the center, the scale and the date, and add a north arrow.
5. Measure the map distance from Rome to Constantinople and from Alexandria to Constantinople on each map, and convert using that map's own scale. Compare with the true distances (about 1,375 km and 1,095 km).
6. Lay the three maps side by side. Write a page answering: Which map makes the western Mediterranean look largest? Which makes Jerusalem and the East look central? Which would a Roman road official, a Byzantine sea captain, and a pilgrim to Jerusalem each prefer, and why?

Tips

- Plot points first and draw coastlines last; the points keep your coastline honest.
- On Map 2, the north-south spacing grows as you go north; do not use equal steps.
- Your distance checks will not match exactly. Write down how far off each map is and why.

Check your work

- All three maps show the same eleven control points, correctly placed for their projection.
- Each map is labeled with projection, center, scale and north arrow.
- The written comparison explains at least two differences caused by projection and one caused by the choice of center.

MAP NOTEBOOK

1. Draw a quick sketch of the Peutinger Table's shape (a long strip) beside a true outline of the Mediterranean, and label what the maker kept and what he gave up.
2. Copy the Mercator stretch chart and add one row of your own: the latitude of your home town and its length and area factors.
3. Make a pocket map-reading checklist of eight questions (maker, date, purpose, projection, center, scale, selection, symbols) to use for the rest of the course.

From history. Mercator did not explain the mathematics behind his 1569 map, and sailors were slow to trust it. In 1599 the English mathematician Edward Wright published *Certain Errors in Navigation*, with tables showing how far apart to draw each parallel so that compass courses would come out straight. With Wright's tables, navigators could build and check Mercator charts themselves, and the projection slowly became the standard for sea charts, as it still is today.

WORKED EXAMPLES

Example 1. Greenland (about 2.17 million km², or 836,000 sq mi) lies mostly between 60° N and 83° N; take its center as about 72° N. Africa (about 30.4 million km², or 11.7 million sq mi) straddles the equator. Find Mercator's length and area factors at 72° N, and estimate how large Greenland appears on a Mercator map.

(Use the map or drawing "Mercator's stretch grows quickly toward the poles." shown earlier in this lesson.)

1. $\cos 72^\circ \approx 0.309$, so the length factor = $1 \div 0.309 \approx 3.24$.
2. Area factor = $3.24^2 \approx 10.5$.
3. Apparent area of Greenland $\approx 2.17 \text{ million} \times 10.5 \approx 22.8 \text{ million km}^2$.
4. Africa, centered near the equator, is enlarged only a little (its average area factor is a bit above 1), so it appears near its true 30 million km².
5. True ratio: $30.4 \div 2.17 \approx 14$.

Answer: Length factor ≈ 3.24 , area factor ≈ 10.5 ; Greenland appears about 23 million km², roughly the same size as Africa, though Africa is really about 14 times larger.

Example 2. Rome is at 41.90° N, 12.50° E and Constantinople at 41.01° N, 28.98° E. The true great-circle distance is about 1,375 km (855 miles). On a simple latitude-longitude grid that draws every degree as 111.2 km in both directions, how long does the line from Rome to Constantinople measure? Why is it wrong?

(Use the map or drawing "Rome and Constantinople lie at almost the same latitude." shown earlier in this lesson.)

1. Differences: latitude $41.90 - 41.01 = 0.89^\circ$; longitude $28.98 - 12.50 = 16.48^\circ$.
2. Grid length = $\sqrt{(16.48^2 + 0.89^2)} \approx \sqrt{(271.6 + 0.8)} \approx \sqrt{272.4} \approx 16.50$ degrees.
3. $16.50 \times 111.2 \text{ km} \approx 1,835 \text{ km}$ (about 1,140 miles).
4. But at about 41.5° N, one degree of longitude is only $111.3 \times \cos 41.5^\circ \approx 111.3 \times 0.749 \approx 83.4 \text{ km}$, not 111.2 km. The grid stretches east-west distances by $1 \div 0.749 \approx 1.34$.
5. Check: $1,375 \times 1.34 \approx 1,840 \text{ km}$, matching the grid measurement.

Answer: The grid measures about 1,835 km (1,140 miles), about a third too long, because a simple latitude-longitude grid stretches east-west distances by $1 \div \cos(\text{latitude})$, about 1.34 at Rome's latitude.

Example 3. A Roman mile was 1,000 paces, about 1.48 km (0.92 mile). A road on the Peutinger Table is marked with stages of XII, XVIII and XXII Roman miles. How long is the whole road in kilometers and modern miles? Also, the roll is about 6.75 m long and 0.34 m tall. If the world it shows is about 9,000 km from west to east and 3,000 km from north to south, by how much has the mapmaker squeezed north-south distances compared with east-west ones?

1. Stages: XII = 12, XVIII = 18, XXII = 22. Total = 52 Roman miles.
2. $52 \times 1.48 \text{ km} \approx 77 \text{ km}$; $52 \times 0.92 \approx 48 \text{ miles}$.
3. Shape of the roll: $6.75 \div 0.34 \approx 20$, so it is about 20 times as long as it is tall.
4. Shape of the real world it shows: $9,000 \div 3,000 = 3$.
5. Squeeze factor: $20 \div 3 \approx 6.7$. North-south distances are drawn about 6 to 7 times smaller, relative to east-west ones, than they really are.

Answer: 52 Roman miles $\approx$ 77 km (48 miles). The world is squeezed north to south about 6.7 times, which is why the Mediterranean appears as a narrow ribbon; the road distances, written as numbers, stay correct.

PRACTICE

1. **EASY** Define a conformal, an equal-area and an azimuthal projection in one sentence each.
2. **EASY** When did Mercator publish his world map, for whom was it made, and what special property did it have?
3. **EASY** What is the Peutinger Table, where is it kept, and when was the surviving copy made?
4. **EASY** What did Matteo Ricci change on his 1602 world map for Chinese readers, and why?
5. **MEDIUM** Find Mercator's length and area factors at 30° and at 45° latitude.
6. **MEDIUM** One degree of longitude is about $111.3 \times \cos(\text{latitude})$ km. Find its length at the equator, at Rome (41.9° N) and at 60° N, in kilometers and miles.
7. **MEDIUM** A stage on the Peutinger Table is marked XXVIII. How far is it in kilometers and modern miles (1 Roman mile $\approx$ 1.48 km $\approx$ 0.92 mi)?
8. **MEDIUM** On a Mercator map drawn at 1 cm per degree of longitude, the 30° N parallel is 31.47 cm above the equator and the 40° N parallel is 43.71 cm above it. How far apart are they on the map? On a simple grid at the same scale they would be 10 cm apart. By what percentage has Mercator stretched this band?
9. **HARD** Use the map figure. Which is nearer to Rome, Carthage (36.85° N, 10.32° E) or Constantinople? Estimate the Rome-Carthage distance.
(Use the map or drawing "Use the map for Problem 9." shown earlier in this lesson.)
10. **HARD** Why might a medieval mapmaker put Jerusalem at the center and east at the top? What does the center of a map tell you about its maker?

11. **HARD** State fairly both sides of the debate over the Peters projection in the 1970s and 1980s.
12. **CHALLENGE** Choose any historic or modern map of a region of conflict or competition. Apply the eight-question checklist (maker, date, purpose, projection, center, scale, selection, symbols) and write a paragraph on what the map argues and what a rival mapmaker might draw instead.

COMMON MISTAKES

- Calling one projection “the correct map.” Each keeps some properties and loses others; the right projection depends on the purpose.
- Measuring distances with a ruler across a whole world map. Scale changes across most projections; only certain lines (or distances from the center on an equidistant map) are true.
- Thinking the Peutinger Table is a failed attempt at a modern map. It is a successful route map; its users needed roads and distances, not shapes.

Make it a game · Projection Detective. Gather five or six different world maps from atlases, books, a globe and online images. One player hides each map’s title and legend with sticky notes. The others race to name, for each map, the likely projection family (cylindrical, conic, azimuthal or compromise), the center, and one thing it distorts badly (for example, “Greenland is too big” or “Australia is squashed”). Score a point for each correct answer, checked by lifting the notes. Bonus point for guessing the purpose of the map.

Scripture. “He that is first in his own cause seemeth just; but his neighbour cometh and searcheth him.” (Proverbs 18:17, KJV)

A single map, like a single speech, can seem convincing until we see another drawn from a different center. Wise readers look for the neighbor’s map before they judge.

Practice answers

1. Conformal: keeps angles and the shapes of small areas, not sizes. Equal-area: keeps relative sizes, not shapes. Azimuthal: drawn around one center, with true directions (and in the equidistant form true distances) from that center.
2. 1569, for navigators. Every line of constant compass bearing (rhumb line) is straight, so a sailor can lay a course with a ruler.
3. A long roll map of the roads of the Roman world, copied from a Roman original; kept in the Austrian National Library in Vienna; the copy was made in the 13th century.
4. He moved the center so that China lay near the middle of the map, with Europe and Africa on the left and the Americas on the right, so that his readers would see their own country in a familiar central place.
5. 30° : $1 \div \cos 30^\circ = 1 \div 0.866 \approx 1.15$; area ≈ 1.33 . 45° : $1 \div 0.707 \approx 1.41$; area = 2.0.
6. Equator: 111.3 km (69.2 mi). Rome: $111.3 \times 0.744 \approx 82.8$ km (51.4 mi). 60° N: $111.3 \times 0.5 \approx 55.7$ km (34.6 mi).

7. XXVIII = 28. $28 \times 1.48 \approx 41.4$ km; $28 \times 0.92 \approx 25.8$ miles.
8. $43.71 - 31.47 = 12.24$ cm. $12.24 \div 10 = 1.224$, a stretch of about 22%.
9. Carthage. Latitude difference $5.05^\circ \approx 562$ km; longitude difference $2.18^\circ \times$ about 86 km (at about 39° N) ≈ 188 km; $\sqrt{562^2 + 188^2} \approx 592$ km, about 590 km (370 miles), less than half the 1,375 km to Constantinople.
10. Jerusalem was the center of the Christian story of salvation, and east, toward the rising sun and the earthly Paradise, was put at the top (the word “orient” comes from this practice). The center tells you what the maker and his audience thought mattered most.
11. Peters and his supporters argued that an equal-area map gives a fairer picture of the true sizes of lands near the equator, which Mercator’s map shrinks in comparison with northern lands. Cartographers replied that the projection was not new (James Gall described it in 1855), that it badly distorts shapes, and that other equal-area and compromise maps already did the job better. Both sides agreed that every map distorts; they disagreed about which distortion to accept.
12. Answers vary. A strong answer identifies the map fully, names its projection and center, notes what is emphasized and what is left out, explains the argument the colors, arrows or labels make, and sketches in words a fair alternative map drawn from another center or for another purpose.

1.5 HOW TO WEIGH AN IDEA

OBJECTIVES

- Apply five tests to any geopolitical idea: state the claim exactly, examine the evidence, ask what it predicted, look for counterexamples, and revise it to the strongest form that survives.
- Explain how the French judgment about the Ardennes in 1940 rested on real evidence and a hidden assumption, and how new technology and a bold choice overturned it.
- Use distances, rates and simple counts of cases (the German advance of 1940, Hannibal's crossing of the Alps, invasions of islands) to test and revise general claims about geography and power.

Warm-up. Write this claim on a card: “Every bird can fly.” Set a timer for two minutes and list as many counterexamples as you can. Then rewrite the claim so that it is still true and still useful. You have just done, in miniature, what this lesson asks you to do with the great ideas of geopolitics.

Video. Coming soon. Search Kings and Generals (selected, previewed) and The History Guy for the German campaign through the Ardennes in May 1940; Hillsdale Studios for lectures on reasoning, evidence and the study of history; university lecture channels (candidates, need vetting) on Karl Popper and falsifiability.

KEY TERMS

claim

The exact statement an idea makes, including how strong it is: always, usually, sometimes, or makes it more likely.

evidence

Facts and cases that bear on a claim, judged by how many there are, how they were chosen, and whether they would have looked different if the claim were false.

prediction

A statement made before the fact about what will happen; a strong idea risks predictions that could turn out wrong.

counterexample

A real case that meets the conditions of a claim but not its conclusion; one solid counterexample defeats an “always” or “never” claim.

falsifiable

Able to be shown false by some possible observation. Karl Popper argued that a scientific claim must be falsifiable.

hidden assumption

An unstated belief on which an argument depends, such as an assumption about technology or about what an enemy will choose.

CORE IDEAS

The story. On May 10, 1940, Germany attacked the Netherlands, Belgium and Luxembourg. As they had planned, the best French and British armies moved north into Belgium to meet what they expected to be the main German blow, coming across the open plains of central Belgium as it had in 1914. But the strongest German armored force, seven panzer divisions, was moving through the Ardennes, a hilly, forested region of southern Belgium and Luxembourg cut by deep valleys and served by narrow, winding roads. French planners had judged the Ardennes too difficult for a fast armored attack and guarded the exit from it, on the Meuse River around Sedan, with weaker divisions. On May 13 German troops crossed the Meuse at Sedan under heavy air attack. On May 20 German tanks reached the English Channel near Abbeville, cutting off the Allied armies in Belgium. The evacuation from Dunkirk followed, and on June 22 France signed an armistice. A geographic idea, that forests stop armies, had failed in six weeks.

How they figured it out. The French judgment was not foolish. It rested on evidence. The Ardennes really did have few good roads; the Meuse really was a wide river with steep banks; in 1914 the Germans really had come through central Belgium; and the Maginot Line really did make a direct attack on France's eastern border costly. But the judgment carried **hidden assumptions**: that an army of engines would move through forest as slowly as an army of horses and boots, that the enemy would choose the obvious route, and that the defenders would have time to bring up reserves. The plan to make the Ardennes the main thrust came from the German general Erich von Manstein, and many German officers thought it too risky. It worked because tanks, trucks, radios and dive-bombers changed what the forest meant, and because the attacker accepted a risk the defender had not imagined. The ground did not change. Technology and choice did.

The big idea. Every idea in this course will be weighed with five tests. First, the **claim**: state it exactly, including its strength. "Forests always stop armies" and "forests slow armies and favor defenders" are very different claims. Second, the **evidence**: how many cases support it, how were they chosen, and were cases that did not fit left out? Third, **prediction**: did the idea say something before the fact that could have turned out wrong? An idea that explains everything after the fact, but never risks a prediction, tells us little. Fourth, the **counterexample**: one solid case defeats an "always" or a "never." Europeans long used the black swan as a picture of something impossible, until January 1697, when the Dutch navigator Willem de Vlamingh saw black swans in Western Australia on the river he named the Swan. In the 1930s the philosopher Karl Popper made the point formal: piling up confirmations can never prove a universal claim, but a single real counterexample can refute it. Fifth, **revision**: after a counterexample, does the idea survive in a narrower, more careful form? Often the best ideas do.

Read them in their own words. Before you can weigh an idea fairly, you must state it as its author would recognize it. In 1910 the British writer Norman Angell published *The Great Illusion*. He is often remembered as the man who said war had become impossible, and mocked because the First World War broke out four years later. But that is not what he argued. Angell argued that in an age of credit, trade and industry, war between great powers

could no longer pay, because the conqueror would ruin the very wealth he hoped to seize. The war did not disprove that claim; the ruin of Europe in 1914–1918 arguably supported it. What failed was the hope that nations would act on the knowledge. Angell received the Nobel Peace Prize in 1933. The lesson for this course is plain: read Mahan, Mackinder and Spykman in their own words, give each the strongest fair statement of his case, and only then weigh it.

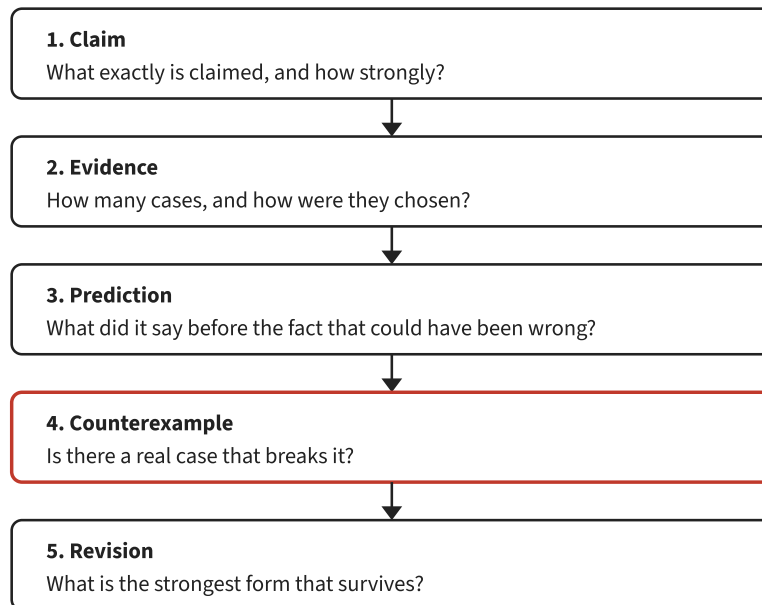
On the map. Geography offers many claims to test. Do mountains stop armies? In 218 BC Hannibal crossed the Alps into Italy, so the answer is no; but Polybius, who took the numbers that reached Italy from an inscription Hannibal himself set up, reports that the army fell from about 38,000 infantry and 8,000 cavalry at the Rhône to about 20,000 infantry and 6,000 cavalry in Italy. Mountains did not stop Hannibal, but they cost him over 40 percent of his army. Are islands safe from invasion? Britain was invaded successfully in 1066 and, by William of Orange, in 1688; the Armada failed in 1588. The claim “islands cannot be invaded” fails, but “an island can be invaded only by a power that controls the sea around it, and usually only with help on shore” survives every one of those cases. Notice also two errors to avoid. An idea is not proved false just because bad men used it; the Nazi abuse of geopolitics was a great evil, but the truth of a claim about railways or coastlines must be tested on the evidence. And an idea is not proved true because it fits the one case we happen to remember.

A Christian reading. Scripture has its own view of the rise and fall of empires. In Daniel 2, Nebuchadnezzar dreams of a great image with a head of gold, breast and arms of silver, belly and thighs of brass, legs of iron, and feet of iron mixed with clay, which is broken by a stone cut out without hands that becomes a mountain and fills the whole earth. Daniel tells the king that the God of heaven sets up kingdoms and will at last set up a kingdom that shall never be destroyed. Human theories of power are partial and must be tested; God’s rule over history is not a theory to be weighed but the frame in which all our weighing takes place. That frees a Christian student to be both humble and fearless with ideas: humble, because no strategist sees the whole; fearless, because truth has nothing to fear from evidence. Paul’s instruction fits every lesson in this course: “Prove all things; hold fast that which is good” (1 Thessalonians 5:21).



The German thrust of May 1940, simplified: through the Ardennes, across the Meuse at Sedan on May 13, to the Channel near Abbeville on May 20.

Five tests for weighing an idea



Five tests for weighing any idea. We will use them for every thinker in this course.

PICTURE STUDY



The Course of Empire: Destruction, Thomas Cole, 1836 · Oil on canvas · New-York Historical Society, New York

Thomas Cole, the founder of the Hudson River School of American landscape painting, painted *The Course of Empire* between 1833 and 1836 for the New York merchant Luman Reed. It is a series of five paintings of the same valley and harbor across the ages: *The Savage State*, *The Arcadian or Pastoral State*, *The Consummation of Empire*, *Destruction* and *Desolation*. In every painting the same tall crag stands in the background, so the viewer knows it is one place seen through time.

Destruction is the fourth painting. The splendid city of the third painting is being sacked by invaders. Cole was painting an idea about history: that empires rise from simplicity to glory, grow proud and luxurious, and fall. It is a powerful idea, beautifully painted. In this lesson we treat it as an idea to weigh.

Look closely

- Find the crag in the distance. What stays the same in this valley, and what has changed?
- Find the bridge. What is happening on it, and what does it tell you about how the city fell?
- Look at the harbor. What has become of the ships that once made the city rich?
- Look at the sky and the light. How does Cole use weather to tell the story?

Talk about it

1. State Cole's idea about empires as an exact claim. Is it "every empire," "most empires," or something else?

2. Name one empire whose history fits Cole's cycle and one that fits it poorly. What would count as a counterexample?
3. How is Cole's cycle like and unlike the succession of kingdoms in Daniel 2?

PROJECT: THE IDEA BALANCE: WEIGHING A GEOPOLITICAL CLAIM

You will build a simple balance and use it to weigh a real claim about geography and power. Every piece of evidence becomes a card, and every card gets a weight according to how good the evidence is. The balance will not decide for you, but it will make you show your reasons.

You will need

- A wire or plastic coat hanger, string, two paper cups, a hole punch or pencil point, and tape
- About 30 coins or washers of the same size
- Index cards, a pen, and the lesson's worked examples and practice cases
- Access to an atlas and a history reference

Steps

1. Build the balance: punch two holes near the rim of each cup, tie each cup with string to one end of the hanger, and hang the hanger from a doorknob or hook. Label one cup "For" and the other "Against." Check that it hangs level when empty.
2. Choose a claim: "Sea powers win long wars against land powers," "Mountains protect the nations behind them," or "Islands are safe from invasion."
3. Write the claim exactly at the top of a card, then decide whether it says always, usually, or makes it more likely.
4. Find at least six real cases, with dates and places (for example Athens and Sparta, 431–404 BC; Rome and Carthage, 264–241 BC; Britain and Napoleon, 1803–1815; Hannibal and the Alps, 218 BC). Write each on its own card with one line of evidence.
5. Weigh each card: 3 coins for a well-documented, clearly relevant case; 2 for a good but disputed case; 1 for a weak or partly relevant case. Put the coins in the For or Against cup.
6. Watch the balance. If the claim says "always," one solid Against card is enough to defeat it, however the cups hang.
7. Rewrite the claim in the strongest form that survives all your cards, and test the new version against the cards again.
8. Write a weighed judgment of about 500 words: the original claim, the evidence, the best counterexample, your revised claim, and your verdict.

Tips

- Look hardest for the cases that would hurt the claim you like best.
- A case belongs on the balance only if both sides would agree on its basic facts. Put disputed interpretations in your essay, not in the cups.

Check your work

- My claim is stated exactly, with its strength.
- I have at least six cases with dates and places, weighed by a stated rule.
- My revised claim survives every case on the table, and my essay explains why.

MAP NOTEBOOK

1. Copy the five-test flow chart into your notebook and keep it on the first page of your geopolitics notes for the rest of the course.
2. Sketch the Ardennes map with Sedan, Abbeville and Dunkirk, and add the dates May 10, May 13 and May 20, 1940.
3. Draw the image from Nebuchadnezzar's dream with its five materials labeled (Daniel 2:31-35), and write beside it Daniel 2:44 in your own words.

From history. What is often called the last invasion of Britain came in February 1797, when about 1,400 French soldiers under an Irish-American officer, Colonel William Tate, landed near Fishguard in Wales. They had little support from the French navy and none from the local people, who turned out against them. Within two days the force surrendered. The case is small, but it fits the revised claim of Worked Example 2 exactly.

WORKED EXAMPLES

Example 1. German tanks crossed the Meuse at Sedan (49.70° N, 4.94° E) on May 13, 1940, and reached the Channel near Abbeville (50.10° N, 1.83° E) on May 20. Estimate the straight-line distance and the average daily advance. Compare it with Napoleon's average of about 10.6 km a day from the Niemen to Moscow in 1812 (Lesson 1.1).

(Use the map or drawing "Measure from Sedan to Abbeville." shown earlier in this lesson.)

1. Latitude difference: $50.10 - 49.70 = 0.40^\circ$, about $0.40 \times 111.2 \approx 44$ km.
2. Longitude difference: $4.94 - 1.83 = 3.11^\circ$. At about 49.9° N, one degree of longitude $\approx 111.3 \times \cos 49.9^\circ \approx 111.3 \times 0.644 \approx 71.7$ km, so $3.11 \times 71.7 \approx 223$ km.
3. Distance $\approx \sqrt{(44^2 + 223^2)} = \sqrt{(1,936 + 49,729)} = \sqrt{51,665} \approx 227$ km, about 230 km (140 miles).
4. Time: May 13 to May 20 = 7 days. Rate $\approx 227 \div 7 \approx 32$ km per day (about 20 miles per day).
5. Comparison: $32 \div 10.6 \approx 3$ times Napoleon's average, through a battle zone, after crossing a defended river.

Answer: About 230 km (140 miles) in 7 days, roughly 32 km (20 miles) a day, about three times the average pace of 1812. Engines, radios and aircraft changed what the same kind of ground meant.

Example 2. Test the claim “Islands cannot be successfully invaded” against these seven attempts: Britain 1066 (William of Normandy, succeeded); Britain 1588 (Spanish Armada, failed); Britain 1688 (William of Orange, succeeded); Japan 1274 and 1281 (Mongol invasions, both failed); Sicily 415–413 BC (Athenian expedition, failed); Sicily 1943 (Allied landings, succeeded). Find the success rate and revise the claim.

1. Count the cases: 1066, 1588, 1688, 1274, 1281, 415–413 BC, 1943 = 7 attempts (the two Mongol invasions count separately).
2. Successes: 1066, 1688, 1943 = 3. Failures: 1588, 1274, 1281, 415–413 BC = 4.
3. Success rate = $3 \div 7 \approx 43\%$.
4. The claim says “cannot,” so three successes defeat it. But look at what the successes share: in 1066 the English fleet had dispersed, in 1688 William had strong support inside England, and in 1943 the Allies held command of the sea and air. The failures lacked control of the sea, or met storms and strong defenders on shore.
5. Revised claim: “An island can be invaded successfully only by a power that controls the surrounding sea (and, in modern times, the air), and success is far more likely with help on shore.”

Answer: 3 successes in 7 attempts, about 43%. The universal claim fails; a revised claim about command of the sea and support on shore fits all seven cases.

Example 3. Polybius reports that Hannibal had about 38,000 infantry and 8,000 cavalry when he crossed the Rhône in 218 BC, and about 20,000 infantry and 6,000 cavalry when he came down into Italy after crossing the Alps, a passage he says took fifteen days. Find the total loss, the percentage lost, and the average loss per day of the Alpine crossing, assuming all the losses happened there. What does this do to the claim “mountains stop armies”?

1. Before: $38,000 + 8,000 = 46,000$. After: $20,000 + 6,000 = 26,000$.
2. Loss: $46,000 - 26,000 = 20,000$ men.
3. Percentage: $20,000 \div 46,000 \approx 0.435$, about 43%.
4. Per day over fifteen days: $20,000 \div 15 \approx 1,330$ men a day. (In fact some losses came on the march between the Rhône and the Alps, so this is an upper estimate for the mountains themselves.)
5. The claim “mountains stop armies” fails: Hannibal arrived and went on to win great victories in Italy. But a revised claim, “mountains impose very heavy costs on armies that cross them,” is strongly supported.

Answer: A loss of about 20,000 men, about 43% of the army, or up to about 1,330 a day over fifteen days. Mountains did not stop Hannibal, but they cost him nearly half his army.

PRACTICE

1. **EASY** List the five tests for weighing an idea and give the key question for each.
2. **EASY** What happened at Sedan on May 13, 1940, and near Abbeville on May 20, 1940?
3. **EASY** Who saw black swans in Western Australia, and in what year? Why did that matter to thinkers about evidence?
4. **EASY** What did Norman Angell actually argue in *The Great Illusion* (1910), and how is he often misremembered?
5. **MEDIUM** Suppose German armored columns covered about 120 km (75 miles) from the German border to the Meuse at Sedan between May 10 and May 13, 1940. What is the average daily advance in kilometers and miles?
6. **MEDIUM** In February 1797 about 1,400 French troops landed near Fishguard in Wales and surrendered within two days. Add this case to the seven island invasions in Worked Example 2. What is the new success rate?
7. **MEDIUM** Rewrite each universal claim so it survives the counterexample given: (a) “Mountains stop armies” (Hannibal, 218 BC); (b) “Forests stop tanks” (Ardennes, 1940); (c) “Sea powers always beat land powers” (Sparta’s victory over Athens, 404 BC).
8. **MEDIUM** Hannibal’s army fell from about 46,000 to about 26,000. If the crossing of the Alps took fifteen days, what fraction of the starting army survived, and what was the average loss per day?
9. **HARD** The Nazis abused geopolitics to justify conquest. Does that prove every geopolitical idea false? Explain the error in reasoning involved and the right way to respond.
10. **HARD** Name two hidden assumptions in the French judgment that the Ardennes were unsuitable for the main German attack in 1940, and say how each failed.
11. **HARD** Is Thomas Cole’s idea that empires rise, grow luxurious and fall a falsifiable claim? What would count as a counterexample, and how might a defender try to escape it?
12. **CHALLENGE** Weigh the claim “In a long war, the sea power beats the land power,” using Athens and Sparta (431–404 BC), Rome and Carthage (264–241 BC) and Britain and Napoleonic France (1803–1815). Apply all five tests and give a revised claim.

COMMON MISTAKES

- Attacking a weak version of an idea. Weigh the strongest fair statement of the claim, in its author’s own words.
- Treating a pile of supporting cases as proof. Ask how the cases were chosen and look for the ones that would break the claim.
- Throwing out an idea at the first counterexample. Often a narrower, revised claim survives and is more useful than the original.

Make it a game · Counterexample Duel. One player states a universal claim about geography or history (for example, “Every great city stands on a river,” “No army has

ever crossed the Sahara,” or “Every empire falls within 500 years”). The other has thirty seconds to give a real counterexample with a place and a date. If the counterexample holds, the challenger scores a point and the first player must revise the claim so that it survives. If no one can find a counterexample, the claim earns a point. Use an atlas or reference book to settle disputes. Play to seven points.

Scripture. “Prove all things; hold fast that which is good.” (1 Thessalonians 5:21, KJV)

To prove in the old sense is to test. Paul does not tell believers to fear ideas or to swallow them whole, but to test them and keep what is true. That is the method of this whole course.

Practice answers

1. Claim: what exactly is claimed, and how strongly? Evidence: how many cases, and how were they chosen? Prediction: what did it say before the fact? Counterexample: is there a real case that breaks it? Revision: what is the strongest form that survives?
2. German troops crossed the Meuse River at Sedan after coming through the Ardennes, and German tanks reached the English Channel near Abbeville, cutting off the Allied armies in Belgium.
3. The Dutch navigator Willem de Vlamingh, in 1697. Europeans had used the black swan as a picture of the impossible; one real black swan refuted “all swans are white,” showing that many confirmations cannot prove a universal claim but one counterexample can refute it.
4. He argued that war between modern industrial powers could not pay, because conquest would destroy the wealth the conqueror hoped to gain. He is often misremembered as having said that war had become impossible.
5. May 10 to May 13 is 3 days. $120 \div 3 = 40$ km per day; $75 \div 3 = 25$ miles per day.
6. Now 8 attempts with 3 successes: $3 \div 8 = 37.5\%$, about 38%. The French had no command of the sea and no support on shore, which fits the revised claim.
7. Sample answers: (a) Mountains impose heavy costs on armies that cross them. (b) Forests slow armored forces and favor defenders unless the attacker has roads, air support and surprise. (c) Sea powers have advantages in long wars, but a land power that gains money and a fleet can defeat them.
8. $26,000 \div 46,000 \approx 0.57$, so about 57% survived. Loss per day $\approx 20,000 \div 15 \approx 1,330$ men.
9. No. Judging an idea false only because of who used it is an error of reasoning (judging an idea by its origin or users instead of its evidence). The abuse is a real warning: it shows how geographic ideas can be twisted to excuse evil, and why they must be held to moral limits. But whether a claim about coasts, railways or distance is true must be tested on the evidence.
10. (1) That armored forces would move through forested hills as slowly as older armies; tanks, trucks and air support moved much faster. (2) That the Germans would choose the obvious route through central Belgium, as in 1914; Manstein’s plan chose the unexpected route. (Also acceptable: that there would be time to bring up reserves to the Meuse.)
11. It is falsifiable only if stated exactly, for example “every empire that reaches great wealth declines within a few centuries.” A counterexample would be an empire that grew rich and lasted without decline, or one that fell while still simple and vigorous. A defender might escape by stretching the words (calling any change “decline,” or extending the time limit forever), which would make the idea unfalsifiable and therefore tell us little.
12. Answers vary. A strong answer notes that Sparta, the land power, beat Athens once it gained a fleet with Persian money; Rome, the land power, beat Carthage, the sea power, by building

its own fleet; Britain, the sea power, outlasted Napoleon with continental allies who fought him on land. The universal claim fails on two of three cases. A good revision: "A sea power is hard to defeat while it keeps command of the sea and has allies on land; a land power wins against it only by building or buying sea power of its own." The answer should note what this predicts and what would break it.

UNIT 1 TEST

Answer each question. Show your work for calculations, give both kilometers and miles where asked, and use complete sentences for explanations. Cite Thucydides by book and chapter where you quote him. The test is worth 100 points.

1. (8 pts) Define geopolitics. Then, using the invasions of England in 1066 and 1588, give one geographic fact and two human choices that decided the outcomes.
2. (6 pts) Napoleon crossed the Niemen on June 24, 1812, and entered Moscow on September 14, about 870 km (540 miles) away in a straight line. Find the number of days and the average progress per day in kilometers and miles.
3. (6 pts) Who coined the word geopolitics, and when? What was dangerous about his description of the state as a living organism?
4. (8 pts) Explain Pericles' strategy at the start of the Peloponnesian War and the geography and technology it depended on.
5. (6 pts) Why was the Spartan victory at Aegospotami in 405 BC decisive? Use the geography of the Hellespont (about 61 km long, about 1.2 km wide at its narrowest) in your answer.
6. (8 pts) Thucydides (1.10) says Sparta held two-fifths of the Peloponnese. Taking the Peloponnese as about 21,500 km² and Attica as about 2,500 km², find the area of Spartan territory in square kilometers and square miles (1 km² $\approx$ 0.386 sq mi) and its ratio to Attica. Explain what the difference meant for each city.
7. (6 pts) Define environmental determinism and possibilism, and name one thinker for each with a book and date.
8. (8 pts) As of 2026, North Korea has about 26 million people on about 120,500 km² and South Korea about 52 million on about 100,400 km². Find each density in people per km², and explain why the two Koreas are a hard case for environmental determinism.
9. (6 pts) Aristotle, Ibn Khaldun and Ellsworth Huntington each named an ideal climate. What pattern do their choices show, and how should a careful reader respond? How does Acts 17:26 bear on ranking peoples by climate?
10. (8 pts) Find Mercator's length and area factors at 60° N and at 70° N ($\cos 60^\circ = 0.500$; $\cos 70^\circ \approx 0.342$). Then explain why Greenland looks about as large as Africa on a Mercator map, and why Mercator's map is still valuable.
11. (6 pts) Describe the Peutinger Table (what it is, where it is kept, its shape) and explain what it keeps and what it gives up. Convert a stage marked XXIV into kilometers and miles (1 Roman mile $\approx$ 1.48 km $\approx$ 0.92 mi).
12. (8 pts) Explain how the choice of a map's center shapes its view of the world. Use Matteo Ricci's 1602 map and one other map from the lesson as examples.
13. (8 pts) German tanks crossed the Meuse at Sedan on May 13, 1940, and reached the Channel near Abbeville, about 230 km (140 miles) away, on May 20. Find the average daily advance. Then name the claim the French plan relied on, its hidden assumption, and the counterexample that broke it.

14. (8 pts) Test the claim “Islands cannot be successfully invaded” against Britain in 1066, 1588 and 1688 and Sicily in 413 BC and AD 1943. Give the success rate, then revise the claim into a form that fits every case, and explain why revising is better than simply discarding the claim.

UNIT PROJECT: FOUNDATIONS PORTFOLIO: MAPS OF POWER AND A WEIGHED JUDGMENT

Present three pieces of work together. First, your hand-drawn unit map, “Sea Power and Land Power in the Ancient World” (Lesson 1.2), with the Greek world in the Peloponnesian War, its inset of the Long Walls, and its panel on Rome and Carthage. Second, your set of three maps of the Roman Mediterranean on three projections with three centers (Lesson 1.4), with your written comparison. Third, your weighed judgment of a geopolitical claim (Lesson 1.5), with a photograph or sketch of your evidence balance and its cards.

Add a one-page cover letter titled “What Geography Gives and What It Does Not Decide,” using at least one example from each lesson in the unit and the five tests for weighing an idea.

- **Accuracy:** Places, routes, dates and grid positions are correct; each map is labeled with its projection, center, scale and north arrow; Thucydides is cited by book and chapter.
- **Reasoning:** Calculations of distance, area, rate and map stretch are shown and correct, and each conclusion follows from the evidence.
- **Fairness:** Each idea is stated in its strongest fair form, its strengths and its critics are both presented, and the revised claim survives every case cited.
- **Care:** The maps are neat, consistently colored and easy to read, and the written work is clear, complete and free of slogans.

Answer key

1. Geopolitics is the study of how geography (location, size, terrain, resources, routes and distance) shapes the power and choices of states. Geographic fact: the Strait of Dover is about 33 km (21 miles) of open water. Choices: in 1066 the English fleet and levies were sent home in September and King Harold marched north to fight at Stamford Bridge, so William landed unopposed at Pevensey; in 1588 England had built and kept a fleet that, with fireships and the weather, broke the Armada.
2. $6 \text{ (June)} + 31 \text{ (July)} + 31 \text{ (August)} + 14 \text{ (September)} = 82 \text{ days}$. $870 \div 82 \approx 10.6 \text{ km per day}$; $540 \div 82 \approx 6.6 \text{ miles per day}$.
3. Rudolf Kjellén, a Swedish political scientist, in 1899. If a state is an organism that must grow, conquest can be made to look natural rather than a moral choice. German writers turned the idea into “living space,” and the Nazi regime used it to justify conquest and mass murder.
4. Pericles brought the people of Attica inside the walls, refused to fight the Spartan hoplites in open battle, let the Spartans ravage the countryside, and used the fleet to raid the Peloponnese and protect the sea lanes (Thucydides 1.143–144). It depended on the Long Walls joining Athens to Piraeus (about 7 km, or 4 miles), a fleet of about 300 triremes paid for

by allied tribute, and grain shipped from the Black Sea through the Bosphorus and Hellespont. In effect, Athens acted as if it were an island.

5. Aegospotami lies on the Hellespont, the narrow strait (about 38 miles long and three-quarters of a mile wide at its narrowest) through which Black Sea grain reached Athens. Lysander captured almost the whole Athenian fleet there, so Athens could no longer guard the strait. The grain route was closed, the city starved, and it surrendered in 404 BC.
6. $2/5 \times 21,500 = 8,600 \text{ km}^2 \approx 3,320 \text{ sq mi}$. $8,600 \div 2,500 \approx 3.4$. Sparta could feed itself from a large home territory worked by the helots, so it was a self-sufficient land power. Athens, with less farmland and more people, depended on imported grain and therefore on its fleet and the sea lanes.
7. Determinism: the environment, especially climate, fixes the character and history of peoples (Montesquieu, *The Spirit of the Laws*, 1748; Semple, *Influences of Geographic Environment*, 1911; or Huntington, *Civilization and Climate*, 1915). Possibilism: the environment offers possibilities and limits and people choose among them (Vidal de la Blache, *Tableau de la géographie de la France*, 1903; or Febvre, *La Terre et l'évolution humaine*, 1922).
8. North: $26,000,000 \div 120,500 \approx 216 \text{ per km}^2$. South: $52,000,000 \div 100,400 \approx 518 \text{ per km}^2$. The two halves share one peninsula, one climate, one language and a long common history, and their capitals are only about 195 km (121 miles) apart; yet since 1945 they have followed very different paths. Climate and terrain cannot explain the difference, so strict determinism fails here.
9. Each found the best climate in his own homeland (Greece; the temperate middle zones of the Islamic world; England and New England). A careful reader should suspect that pride is shaping the theory and should test it against cases outside the author's homeland. Acts 17:26 teaches that God "hath made of one blood all nations of men," which leaves no room for ranking peoples as naturally superior or inferior by climate.
10. 60° : length $1 \div 0.5 = 2.00$, area 4.0. 70° : length $1 \div 0.342 \approx 2.92$, area ≈ 8.5 . Greenland lies far north, where areas are enlarged roughly ten times, while Africa straddles the equator, where enlargement is small; so Greenland appears about as large as Africa though Africa is about 14 times larger. The map is still valuable because it is conformal and every line of constant compass bearing is straight, which is what navigators need.
11. It is the only surviving map of the Roman road system, a 13th-century copy of a Roman original, kept in the Austrian National Library in Vienna; it is a parchment roll about 6.75 m long and 34 cm tall. It keeps routes, stopping places and road distances; it gives up true shapes, squeezing the world north to south so that the seas become thin ribbons. XXIV = 24 Roman miles $\approx 35.5 \text{ km} \approx 22.1 \text{ miles}$.
12. The center decides which lands look central and which remote, which look surrounded, and which seas look like highways. Ricci moved the center of his 1602 world map so that China lay near the middle, with Europe and Africa on the left and the Americas across the Pacific on the right, so Chinese readers saw their own land in a familiar central place. The Hereford Mappa Mundi (about 1300) put Jerusalem at the center and east at the top; the Peutinger Table puts Rome at the heart of its road network. In each case the center shows what the maker and his readers thought mattered most.
13. $230 \div 7 \approx 33 \text{ km}$ (about 20 miles) per day. Claim: the Ardennes are too difficult for a fast armored attack, so the main German blow would come through central Belgium. Hidden assumptions: that tanks and trucks would move through forest as slowly as older armies, and that the enemy would choose the obvious route as in 1914. Counterexample: seven panzer divisions came through the Ardennes, crossed at Sedan, and reached the sea in a week.
14. Successes: 1066, 1688, 1943 (3); failures: 1588, 413 BC (2). Success rate $3 \div 5 = 60\%$. Revised claim: an island can be invaded successfully only by a power that controls the

surrounding sea (and in modern times the air), and success is far more likely with help on shore. Revising keeps what was true in the original idea (seas are real barriers to powers without fleets) while removing what the evidence refuted, which gives a more useful and testable idea.

MAHAN AND SEA POWER

In 1890 a quiet American naval captain named Alfred Thayer Mahan published a history book that changed the world. *The Influence of Sea Power upon History, 1660-1783* argued that the sea is a great highway, that nations grow rich and strong by production, shipping and overseas ports, and that whoever commands the sea in war can supply himself and starve his enemy. Within a few years presidents, emperors and admirals were quoting it, and the great navies of the early 1900s were built in its shadow. In this unit you will read Mahan in his own words, learn his six elements of sea power, follow his ideas into the policies of Theodore Roosevelt, Kaiser Wilhelm II and the Japanese navy, trace the coaling stations and the canal he argued for, and then weigh what he got right and what the submarine and the airplane changed.

You will work like a geographer and a historian at once. You will measure sea routes on maps and globes, calculate voyage times and the savings of the Panama Canal, test whether a coal-burning battleship could cross the Pacific, compute the gaps in convoy air cover, and score nations on Mahan's six elements. Along the way you will meet de Grasse at the Chesapeake in 1781, de Ruyter on the Medway in 1667, the sixteen white battleships of 1907, Captain Glass at Guam, the builders of the Gatún Locks, and Billy Mitchell's bombers over the *Ostfriesland*. Mahan is taught here as an idea to weigh, not a doctrine to accept: you will give his insights their due, name the real costs of the expansion he urged (the overthrow of the Hawaiian monarchy, the war in the Philippines, the lives lost at Panama), and hear his critics fairly.

Scripture gives this study its proper frame. God "hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;" (Acts 17:26). The coasts, harbors and positions Mahan studied are part of that ordering. Yet the fleets of every age pass away, as Daniel 2 shows in the vision of the kingdoms that rise and fall, and the course's faith thread reminds us: "Except the LORD keep the city, the watchman waketh but in vain" (Psalm 127:1).

BEFORE YOU BEGIN

- Has completed Unit 1, especially Lesson 1.2 (Thucydides on sea power and land power) and Lesson 1.5 (how to weigh an idea by evidence, prediction and counterexample)
- Can read latitude and longitude, and knows that one minute of latitude equals one nautical mile
- Can convert among nautical miles, kilometers and statute miles (1 nm = 1.852 km = 1.151 miles) and work with speed, time and distance in knots
- Can use a calculator for square roots, π and percentages

MASTERY CHECKLIST

- I can tell the story of Mahan and his 1890 book and state his main argument in his own words and mine.
- I can name and apply Mahan's six elements of sea power, and say which are given by geography and which by human choice.
- I can explain how Mahan's ideas shaped the navies of the United States, Germany and Japan, and why Germany's position defeated its fleet.
- I can show on a map why a steam navy needed coaling stations and a canal, and calculate voyage savings and range limits.
- I can explain what submarines and aircraft changed, and weigh Mahan fairly against critics such as Corbett, Mackinder and Kennedy.
- I can read and draw a map of the world's naval bases about 1900.

OPTIONAL BOOKS AND RESOURCES

- **Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660-1783* (free at Project Gutenberg)** (<https://www.gutenberg.org/ebooks/search/?query=Mahan+Influence+of+Sea+Power>): Free. The primary source for the whole unit. Read the Introductory chapter and Chapter I, "Discussion of the Elements of Sea Power," closely (Lessons 2.1, 2.2 and 2.4).
- **Naval History and Heritage Command** (<https://www.history.navy.mil/>): Free. The U.S. Navy's official history site, with photographs and articles on the Great White Fleet, the Spanish-American War, Mahan, the Panama Canal and the battles of the world wars (Lessons 2.3-2.5).
- **Library of Congress Digital Collections** (<https://www.loc.gov/>): Free. Search for historic photographs of the Great White Fleet, Panama Canal construction photographs and maps, and Theodore Roosevelt's papers (Lessons 2.3 and 2.4).

2.1 ALFRED THAYER MAHAN

OBJECTIVES

- Tell the story of Alfred Thayer Mahan and how *The Influence of Sea Power upon History, 1660–1783* (1890) came to be written, and read its opening argument in his own words.
- Explain Mahan's core claims: the sea as a highway and a common, the chain of production, shipping and colonies, command of the sea won by concentrated battle fleets, and commerce raiding as a secondary weapon.
- Use real distances and dates (Adam Smith's wagon and ship, Hannibal's march, the Battle of the Chesapeake in 1781) to calculate how control of the sea changes time, cost and the outcome of wars.

Warm-up. Tie a string around a heavy book and drag it 1 meter across a carpet, noticing how hard you must pull. Now set the same book in a plastic tub or baking pan floating in a full sink or bathtub and pull it the same distance with the same string. Which took less force? Write two sentences: Why might a nation that can move goods by water have an advantage over one that must move them by land? What would happen to that advantage if an enemy could stop your tub from floating where you wanted?

Watch. *Alfred Thayer Mahan and Sea Power* (Defence and Security Studies, 7:57).

<https://www.youtube.com/watch?v=C7A6lesjxGs>

After the story: watch for Mahan's main ideas about sea power (a strong navy, merchant shipping, bases and control of the sea lanes), and compare them with what you read about *The Influence of Sea Power upon History*.

Note: Captions were not available to check, the video has no description, and the channel is not well known; preview it first and make sure the narration is a real human voice. It may also touch on imperialism or modern naval strategy.

KEY TERMS

sea power

In Mahan's broad sense, everything that lets a nation use the sea and keep others from using it against her: a navy, a merchant fleet, seamen, harbors and overseas bases, and the production and trade that the shipping carries.

command of the sea

Control of the important sea routes in war, so that your own ships can pass and the enemy's cannot. Mahan held that it is won chiefly by defeating or bottling up the enemy's battle fleet.

trade route

One of the "well-worn paths" across the sea, chosen because of winds, currents, harbors, distance and markets, along which most ships travel.

commerce raiding (guerre de course)

War against an enemy's merchant ships by cruisers or privateers. Mahan judged that it could hurt an enemy but could not by itself win a war against a nation that held command of the sea.

concentration

Keeping the battle fleet together so that it can beat the enemy's fleet, instead of dividing it to guard many places at once. One of Mahan's chief principles.

Naval War College

The U.S. Navy's school for advanced study of strategy and history, founded at Newport, Rhode Island, in 1884 by Stephen B. Luce. Mahan's lectures there became his famous book.

CORE IDEAS

The story. In 1884, Commander Alfred Thayer Mahan of the United States Navy was on station off the west coast of South America in command of an old wooden steam sloop, USS *Wachusett*. He was forty-four, a careful and bookish officer with a long, quiet career behind him. That year a letter reached him from Commodore Stephen B. Luce, who was founding a **Naval War College** at Newport, Rhode Island, and wanted Mahan to lecture there on naval history and tactics. Mahan began to read in earnest. In the library of the English Club at Lima, Peru, he took up Theodor Mommsen's *History of Rome*. As he later told it in his memoir *From Sail to Steam* (1907), while reading of Hannibal's war against Rome it suddenly struck him how different things might have been if Hannibal had been able to invade Italy by sea instead of by the long march over the Alps, and how much Rome's control of the sea had shaped the whole war. That thought became a question that would fill the rest of his life: had historians overlooked the influence of control of the sea on the rise and fall of nations?

Who he was. Mahan was born in 1840 at West Point, New York, where his father, Dennis Hart Mahan, taught engineering and the art of war at the Military Academy. The son chose the Navy, graduated from the Naval Academy in 1859 and served on the Union blockade of the Southern coast during the Civil War. After the war came twenty years of ordinary duty in an American navy that had shrunk to a collection of aging wooden ships. At Newport he lectured from 1886 and became president of the college. His lectures, worked over for several years, were published in Boston in 1890 as *The Influence of Sea Power upon History, 1660-1783*. The book covers the wars of England, France, the Dutch Republic and Spain from the restoration of Charles II in 1660 to the peace that ended the American Revolution in 1783.

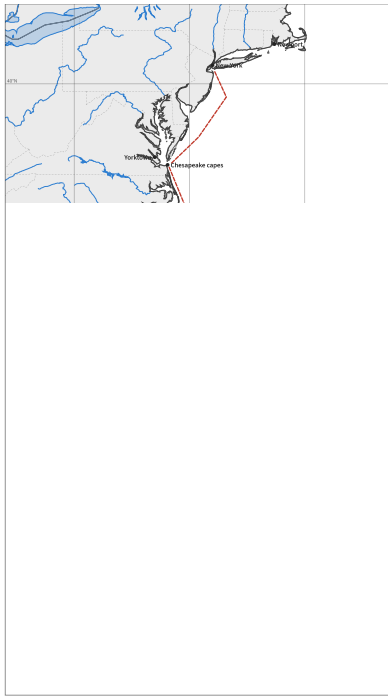
How he figured it out. Mahan did not discover new documents. He reread familiar histories with a new question and looked for *principles*, the way earlier writers such as Antoine-Henri Jomini had drawn principles from land campaigns. His first chapter opens with a picture of the earth itself: "The first and most obvious light in which the sea presents itself from the political and social point of view is that of a great highway; or better, perhaps, of a wide common, over which men may pass in all directions, but on which some well-worn

paths show that controlling reasons have led them to choose certain lines of travel rather than others.” Water carriage, he argued, has always been easier and cheaper than land carriage. A nation grows rich through a chain of three links: **production** of goods to trade, **shipping** to carry them, and **colonies** and friendly ports to receive the ships and shelter them. A navy exists to protect that chain in war and to break the enemy’s.

The big idea. From this Mahan drew his best-known rule. The first aim of a navy in war is **command of the sea**: control of the great routes, won by beating the enemy’s main fleet in battle or shutting it up in harbor. For that, a nation needs a **concentrated** fleet of heavy battleships, not a scatter of small ships guarding every port. Commerce raiding, the old French and American favorite, could sting an enemy, but Mahan judged that it could never by itself defeat a nation that held command of the sea, because the stronger fleet would sweep the raiders away and keep its own trade moving. Britain, in his telling, rose to world power because for more than a century it kept a strong fleet, guarded its trade and gathered bases around the world, while France spent its strength on armies and continental wars.

On the map. One of Mahan’s clearest examples came from the American Revolution. In the summer of 1781 the British general Lord Cornwallis fortified Yorktown, Virginia, on a peninsula, expecting the Royal Navy to supply him or carry him away. The French admiral the Comte de Grasse sailed north from Cap-Français in Saint-Domingue (now Haiti) with his fleet and reached the mouth of Chesapeake Bay at the end of August. On September 5, 1781, in the Battle of the Chesapeake (also called the Battle of the Virginia Capes), he fought a British fleet under Admiral Thomas Graves. The battle itself was indecisive, but Graves withdrew to New York, and for a few critical weeks France held local command of those waters. Washington’s and Rochambeau’s armies closed in by land, and on October 19, 1781, Cornwallis surrendered. Mahan’s lesson was that a few weeks of sea control, at the right place and time, decided a war that years of fighting on land had not.

Weighing the book. The book appeared at a turning point. Navies were trading sail for steam and wood for steel, and many officers thought old history had nothing to teach them. Mahan answered that tactics change with weapons, but the principles of strategy endure. The book was soon translated into many languages, and admirals, emperors and presidents read it (Lesson 2.3). In a sequel on the wars of the French Revolution and Napoleon (1892), he wrote of the British blockading squadrons: “Those far distant, storm-beaten ships, upon which the Grand Army never looked, stood between it and the dominion of the world.” Read Mahan as you would read any strong writer: he was a careful historian, but he was also an advocate who wanted his own country to build a modern navy, and he chose his examples mostly from Britain’s success. In this unit you will test his claims against the map and against what came after him. As you do, remember that the rise and fall of sea empires is not the whole story; Scripture reminds us that God “removeth kings, and setteth up kings” (Daniel 2:21).



The Chesapeake campaign of 1781. De Grasse's fleet came north from the West Indies; Graves came south from New York. Routes are simplified.

PICTURE STUDY



The Cannon Shot, Willem van de Velde the Younger, about 1680 · Oil on canvas · Rijksmuseum, Amsterdam

Mahan's book begins in 1660, in the age of the great wars between England and the Dutch Republic for command of the sea and its trade. Willem van de Velde the Younger and his father were the finest marine painters of that age. They sketched real ships and real battles, sometimes from small boats in the middle of the fighting, and their pictures are still used by historians to learn how those ships were built and rigged.

Here a Dutch warship fires a single gun, probably a salute, on a calm day. The painting is quiet, but it shows the instrument of sea power Mahan studied: the armed sailing ship, built and manned by a seafaring people. There is an irony in the painter's own life. In the early 1670s, in the middle of the Anglo-Dutch wars, both van de Veldes moved from Holland to England and went to work for King Charles II, as if the art of the sea were following sea power across the North Sea.

Look closely

- Find the puff of smoke. Which way is it drifting, and what does that tell you about the wind?
- Look at the sails. Are they filled with wind or hanging loose? What could a sailing fleet do on a day like this, and what could it not do?
- Find the smaller boats and ships around the warship. What jobs might they be doing?
- Look at how much of the picture is sky. Why might a sea painter give so much space to the sky?

Talk about it

1. Mahan said tactics change with weapons but strategy endures. What about this ship would be out of date by 1890? What problems of the sea would be the same?
2. Why would a nation's rulers want painters to record their warships and sea battles?
3. The van de Veldes moved from Holland to England. What does that suggest about where wealth and power at sea were moving in the late 1600s?

PROJECT: READING MAHAN LIKE A HISTORIAN: AN ANNOTATED SOURCE AND A STRING MAP

You will read the opening pages of Mahan's first chapter in his own words, mark his claims and evidence, and then turn his picture of the sea as "a great highway" into a physical map. With yarn and pins you will lay out the well-worn trade routes of the 1700s and the ports that guarded them, and you will see for yourself why Mahan thought whoever held those paths held the key to wealth and war.

You will need

- A printed copy of the Introductory chapter and the first pages of Chapter I of Mahan's *The Influence of Sea Power upon History, 1660-1783* (free at Project Gutenberg)
- Three highlighters or colored pencils
- A world outline map at least 60 × 90 cm (24 × 36 in), or a large printed Mercator map, taped to a corkboard or a sheet of foam board
- Push pins, colored yarn (three colors) and small paper flags
- A ruler, a pencil and a notebook

Steps

1. Read the first four pages of Chapter I aloud. With one color, highlight every *claim* (what Mahan says is true). With a second color, highlight every *piece of evidence or example*. With a third, mark any sentence that shows what Mahan *wants* his readers to do.
2. In your notebook, write Mahan's chain of production, shipping and colonies in your own words, and copy his "great highway ... wide common" sentence exactly.
3. On the map, pin the great ports of 1750: London, Amsterdam, Brest, Cádiz, Lisbon, Boston, New York, Charleston, Kingston (Jamaica), Cap-Français, Cape Town, Bombay, Madras and Canton.
4. With yarn of the first color, lay out three trade routes: Europe to the West Indies and North America, Europe around the Cape of Good Hope to India, and the West Indies back to Europe by the Gulf Stream.
5. With yarn of the second color, mark the narrow places where those routes squeeze together: the English Channel, the Strait of Gibraltar, the Cape of Good Hope, the Windward Passage between Cuba and Saint-Domingue, and the mouth of the Chesapeake.
6. With paper flags, mark which nation held each port about 1750. Then use the third yarn to show de Grasse's route of 1781 from Cap-Français to the Chesapeake.
7. Write a one-page response: State Mahan's thesis in two sentences. Give the strongest piece of evidence in the pages you read. Name one question you would want to ask him, and one kind of evidence that might count against him.

Tips

- Mahan writes long sentences. Read each one twice, once for the main clause and once for the qualifications.
- A claim and the evidence for it are not the same thing. If a sentence has no example, date or number, it is probably a claim.
- Keep your string map. You will add to it in Lessons 2.3 and 2.4, and it will become part of your unit portfolio.

Check your work

- I marked Mahan's claims, evidence and aims in three different colors.
- My map shows at least ten ports, three trade routes and five narrow places.
- I can state Mahan's thesis in my own words and quote his opening sentence exactly.
- My written response names one strength and one possible weakness in his argument.

MAP NOTEBOOK

1. Draw a simple timeline from 1650 to 1800 and mark 1660 (Restoration of Charles II), 1781 (Battle of the Chesapeake, Yorktown) and 1783 (Peace of Paris). Above the line, write "the span of Mahan's book."
2. Copy the Chesapeake map. Add arrows for Washington's and Rochambeau's armies marching south by land, and shade the waters where France held local command in September 1781.

3. Draw Mahan's chain as three linked rings labeled production, shipping and colonies, and write under each one a real example from the 1700s.

From history. Mahan gave English one of its most-used geographic terms. In an article titled "The Persian Gulf and International Relations," published in the British *National Review* in September 1902, he used the phrase "Middle East" for the lands around the Persian Gulf that lay between the Near East (the Ottoman lands by the Mediterranean) and the Far East. He was thinking as a naval strategist about the sea route to India. Newspapers picked up the phrase, and over the following decades its meaning widened to the whole region we call the Middle East today.

WORKED EXAMPLES

Example 1. In *The Wealth of Nations* (1776), Adam Smith compared land and sea carriage between London and Edinburgh. A broad-wheeled wagon with two men and eight horses carried about 4 tons there and back in about six weeks. In about the same time a ship with six or eight men, sailing between London and Leith (the port of Edinburgh), often carried 200 tons. How many wagons, men and horses would it take to match one ship? How many tons does each man move in each case?

1. Wagons needed: $200 \text{ tons} \div 4 \text{ tons per wagon} = 50 \text{ wagons}$.
2. Men: $50 \text{ wagons} \times 2 \text{ men} = 100 \text{ men}$. Horses: $50 \times 8 = 400 \text{ horses}$, all of which must be fed.
3. Tons per man by wagon: $4 \div 2 = 2 \text{ tons}$. Tons per man by ship (using 8 men): $200 \div 8 = 25 \text{ tons}$.
4. Ratio: $25 \div 2 = 12.5$. Each sailor moved about twelve times as much as each wagoner, with no horses at all.

Answer: It would take 50 wagons, 100 men and 400 horses to match one ship with 6 to 8 men. A sailor moved about 25 tons and a wagoner about 2 tons, roughly twelve times less. This is the plain economic fact behind Mahan's picture of the sea as "a great highway."

Example 2. According to the ancient historian Polybius, Hannibal's march from New Carthage (Cartagena, Spain) to Italy in 218 BC took about five months, and he lost a large part of his army on the way. The sea route from Cartagena to the coast of central Italy near Rome is roughly 700 nautical miles (nm). Suppose a fleet of the time averaged 3 knots including stops. How many days would the voyage take? Why did Hannibal not go by sea?

1. One knot is one nautical mile per hour. Time = $700 \text{ nm} \div 3 \text{ knots} = 233 \text{ hours}$.
2. Days = $233 \div 24 = 9.7 \text{ days}$, about 10 days.
3. Five months is about 150 days. Ratio: $150 \div 10 = 15$.
4. Convert the distance: $700 \text{ nm} \times 1.852 = 1,296 \text{ km}$; $700 \times 1.151 = 806 \text{ miles}$.

Answer: About 10 days by sea for roughly 700 nm (1,300 km, 810 miles), against about five months by land, some fifteen times longer. Hannibal marched because Rome, after its victory in the First Punic War, controlled the western Mediterranean. This was exactly the thought that struck Mahan in Lima in 1884.

Example 3. Use the map. De Grasse's fleet left Cap-Français (19.8° N) in early August 1781 and reached the Chesapeake capes (37.0° N) at the end of August, about 25 days later. One minute of latitude is one nautical mile. How far north did he have to sail (the difference in latitude, in nautical miles)? That is a lower limit on the distance he sailed. If his actual route was about 1,300 nm, what was his average speed?

(Use the map or drawing "Measure the difference in latitude between Cap-Français and the Chesapeake capes" shown earlier in this lesson.)

1. Difference in latitude: $37.0^\circ - 19.8^\circ = 17.2^\circ$.
2. North-south distance: $17.2^\circ \times 60 = 1,032 \text{ nm}$ (1,911 km, 1,188 miles). Even a straight line is a little longer (about 1,050 nm), since the capes lie about 3.75° west of Cap-Français, and the real route is longer still because it bends west through the Old Bahama Channel and the Straits of Florida.
3. Time: $25 \text{ days} \times 24 = 600 \text{ hours}$.
4. Average speed on the 1,300 nm route: $1,300 \div 600 = 2.2 \text{ knots}$ (4.0 km/h, 2.5 mph).
A large fleet moves only as fast as its slowest ship and must wait for stragglers.

Answer: At least 1,032 nm (about 1,900 km, 1,190 miles); on a route of about 1,300 nm his average speed was about 2.2 knots. Slow as that seems, it was fast enough: he arrived before the British could reinforce, and he held the bay for the weeks that mattered.

PRACTICE

1. **EASY** Give the full title and year of Mahan's famous book, and say which years of history it covers.

2. **EASY** Who founded the Naval War College, where and when? What was Mahan's role there?
3. **EASY** Mahan compared the sea to two things in his famous opening sentence. Name them and explain what each comparison means.
4. **EASY** Define command of the sea and commerce raiding, and state what Mahan believed about each.
5. **MEDIUM** Using Adam Smith's figures (a wagon with 2 men and 8 horses carries 4 tons; a ship with 6 men carries 200 tons), how many tons does each man carry by ship if the crew is 6? How many times more is that than by wagon?
6. **MEDIUM** The French squadron of the Comte de Barras sailed from Newport, Rhode Island (41.5° N), to join de Grasse at the Chesapeake capes (37.0° N). What is the north-south distance between them (the difference in latitude), in nm, km and miles? Is the true sailing distance more or less than this?
7. **MEDIUM** How many days passed between the Battle of the Chesapeake (September 5, 1781) and Cornwallis's surrender at Yorktown (October 19, 1781)?
8. **MEDIUM** Mahan's book covers 1660 to 1783, and his sequel covers 1793 to 1812. How many years does each book cover, and how many years after the end of the first period was the first book published?
9. **HARD** A Roman-era fleet carrying an army could average 2 knots, including stops for water. How many days would 700 nm take? Even at this slow pace, how many times faster than Hannibal's five-month (about 150-day) march would it be?
10. **HARD** Use the map. Name the two narrow waters de Grasse's route passed through between Cap-Français and the open Atlantic off Florida, and explain why a fleet commander would care about narrow waters.
(Use the map or drawing "Use this map for Problem 10." shown earlier in this lesson.)
11. **HARD** In three or four sentences, explain why Mahan believed lessons from wooden sailing ships still applied in an age of steel and steam.
12. **CHALLENGE** Mahan wrote that Britain's "far distant, storm-beaten ships, upon which the Grand Army never looked, stood between it and the dominion of the world." Explain what he meant using the geography of Britain and Europe, and give one reason a critic might say he overstated the case.

COMMON MISTAKES

- Thinking Mahan was a famous fighting admiral. He was a historian and teacher whose influence came from his books, not from battles he won.
- Thinking sea power means only warships. For Mahan it included merchant shipping, seamen, harbors, overseas bases and the production and trade the ships carry.
- Reading Mahan as a neutral scholar. He was a serious historian, but he also wrote to persuade Americans to build a navy, and he drew most of his examples from Britain's success.

Make it a game · Highway or Common?. Make twenty index cards, each naming a real sea or route event from this lesson or your string map (for example, "Smith's ship carries

200 tons to Leith,” “de Grasse sails north in August 1781,” “Hannibal crosses the Alps”). Shuffle. A player draws a card and must say in thirty seconds whether it shows the sea as a highway (trade and transport), as a contested common (fleets fighting for control), or as land power avoiding the sea, and explain why. A good explanation scores 1 point; one that also names a place on the map scores 2. Play until the deck is gone.

Scripture. “They that go down to the sea in ships, that do business in great waters; These see the works of the LORD, and his wonders in the deep.” (Psalm 107:23-24, KJV)

The psalmist saw sailors and merchants on the great waters, the same “highway” Mahan described. Sea power is a human achievement, but the sea itself, its winds and its depths, are God’s works. A wise strategist studies them with humility.

Practice answers

1. *The Influence of Sea Power upon History, 1660-1783*, published in 1890. It covers 1660 (the restoration of Charles II) to 1783 (the Peace of Paris ending the American Revolution).
2. Stephen B. Luce founded it at Newport, Rhode Island, in 1884. Mahan lectured there on naval history from 1886 and became its president; his lectures became his book.
3. A great highway (the sea carries traffic and trade cheaply) and a wide common (it is open to all, so ships may pass in any direction, yet “well-worn paths,” the trade routes, are chosen for good reasons).
4. Command of the sea is control of the main sea routes in war, won by defeating or bottling up the enemy’s main fleet; Mahan thought it the first aim of a navy. Commerce raiding is attacking the enemy’s merchant ships with cruisers or privateers; Mahan judged it could hurt but not by itself defeat a nation that held command of the sea.
5. $200 \div 6 = 33.3$ tons per man by ship; $4 \div 2 = 2$ tons per man by wagon. $33.3 \div 2 \approx 16.7$ times more.
6. $41.5^\circ - 37.0^\circ = 4.5^\circ \times 60 = 270$ nm (500 km, 311 miles). The true distance is longer: Newport also lies about 4.6° of longitude east of the capes (71.3° W against 75.95° W), so even a straight line is about 345 nm (640 km, 400 miles), and the route a ship follows is longer still.
7. September has 30 days: $30 - 5 = 25$ days left in September, plus 19 in October = 44 days.
8. $1783 - 1660 = 123$ years; $1812 - 1793 = 19$ years. $1890 - 1783 = 107$ years after.
9. $700 \div 2 = 350$ hours $\div 24 = 14.6$ days. $150 \div 14.6 \approx 10$ times faster.
10. The Old Bahama Channel (between Cuba and the Bahama banks) and the Straits of Florida. Narrow waters force ships into predictable paths, where an enemy can lie in wait, and they leave little room to maneuver; they are also where shoals and reefs make navigation dangerous.
11. Mahan distinguished tactics, which change with weapons, from strategy, which rests on lasting facts: the sea is still the cheapest highway, trade still follows certain routes and passes through narrow places, and a nation still needs a fleet to protect its trade and break the enemy’s. Whoever controls the main routes in war can supply himself and starve his enemy, whatever the ships are made of. So he thought the wars of 1660-1783 still taught sound principles.
12. Answers will vary. A strong answer: Napoleon’s Grand Army conquered most of continental Europe, but it could not cross the English Channel while the Royal Navy blockaded French

ports and held the sea; Britain stayed free, kept trading, paid and supplied allies and landed armies in Spain and Portugal. The navy never fought the army directly, yet it set limits the army could not pass. A critic could say that Napoleon was finally beaten on land by the armies of Russia, Prussia, Austria and Britain (as at Leipzig in 1813 and Waterloo in 1815), and that Russia's vast distances and winter mattered at least as much as the blockade.

2.2 MAHAN'S SIX ELEMENTS OF SEA POWER

OBJECTIVES

- Name and explain Mahan's six elements of sea power: geographical position, physical conformation, extent of territory, number of population, national character and character of the government.
- Apply the elements to Britain, France, the Dutch Republic and the United States of 1890, using maps, distances and population figures as evidence.
- Judge which elements are fixed by geography and which are matters of human choice, and weigh the strengths and weaknesses of Mahan's scheme.

Warm-up. Lay out six household objects in a row: a coin, a cup of water, a ruler, a handful of dried beans, a key and a pencil. Without being told, assign each one to a quality you think a nation needs to be strong at sea (for example, the cup of water might stand for good harbors). Write your six qualities down. At the end of the lesson, compare your list with Mahan's six elements. How many did you match?

Watch. *17th May 1756: The Seven Years' War begins, when Great Britain formally declares war on France* (HistoryPod, 2:36). <https://www.youtube.com/watch?v=JqQWiN3PStE>

With the big idea: watch how Britain and France fought around the world in 1756, and ask which of Mahan's elements, such as position, coastline and national character, helped Britain win at sea.

Note: Captions were not available to check; preview it first. This short clip is about the start of the Seven Years' War, not about Mahan or the 1667 Medway raid. The video covers 1756, not the 1667 Dutch raid in the story, and it does not explain Mahan's six elements.

Backup video. *The Naval Strategy of Alfred Thayer Mahan* (Strategy Stuff, 28:22). <https://www.youtube.com/watch?v=nEe8JX0YKBE>

With the big idea: watch the chapter 'The Policy Level: Elements of Sea Power' (18:31–23:14) and listen for each of Mahan's six elements as the narrator names them. Note: Captions were not available to check; preview it first. It runs about 28 minutes and spends most of that time on sea control and decisive battle, so the chapter on the six elements is the part to watch.

KEY TERMS

geographical position

Mahan's first element: where a nation lies relative to the sea, its rivals and the great trade routes, including whether it must also defend land frontiers.

physical conformation

The shape and nature of a country's coast and land: its harbors, rivers leading inland, soil and climate, which can draw a people toward the sea or keep them at home.

extent of territory

For Mahan, not area in square miles but the length of coastline and number of harbors compared with the population available to use and defend them.

number of population

For Mahan, not the total population but the number of people who follow the sea or could quickly be trained for it: sailors, shipbuilders and dock workers.

national character

Mahan's term for a people's habits and aptitudes, especially a bent for trade and enterprise at sea. Today historians treat such generalizations about whole peoples with caution.

character of the government

Whether a nation's rulers and institutions pursue sea power wisely and steadily over many years.

CORE IDEAS

The story. In June 1667, during the Second Anglo-Dutch War, a Dutch fleet under Lieutenant-Admiral Michiel de Ruyter sailed into the mouth of the Thames and up the river Medway toward the English naval base at Chatham. The Dutch broke the great iron chain stretched across the river, burned several of the largest English warships at their moorings, and towed away the English flagship, the *Royal Charles*, as a prize. In London, the naval official Samuel Pepys wrote in his diary of the fear that gripped the city. The carved royal coat of arms from the *Royal Charles's* stern still hangs in the Rijksmuseum in Amsterdam. In 1667 the little Dutch Republic, with fewer than two million people, was the greatest trading nation on earth. Yet within fifty years it had slipped to the second rank at sea, and Britain had risen to the first. Mahan wanted to know why, and his answer is a list of six **elements of sea power**.

How he figured it out. In the first chapter of his book, Mahan sets out the "principal conditions affecting the sea power of nations" and illustrates each with the history of England, France, Holland and Spain. They are: (1) **geographical position**; (2) **physical conformation**, including natural productions and climate; (3) **extent of territory**; (4) **number of population**; (5) **national character**; and (6) **character of the government**, including national institutions. Notice the order. The first three are largely given by geography. The last three are about people and the choices they make. Mahan was not a simple geographic determinist (Lesson 1.3); in his view geography set the stage, but a people and its rulers still had to act.

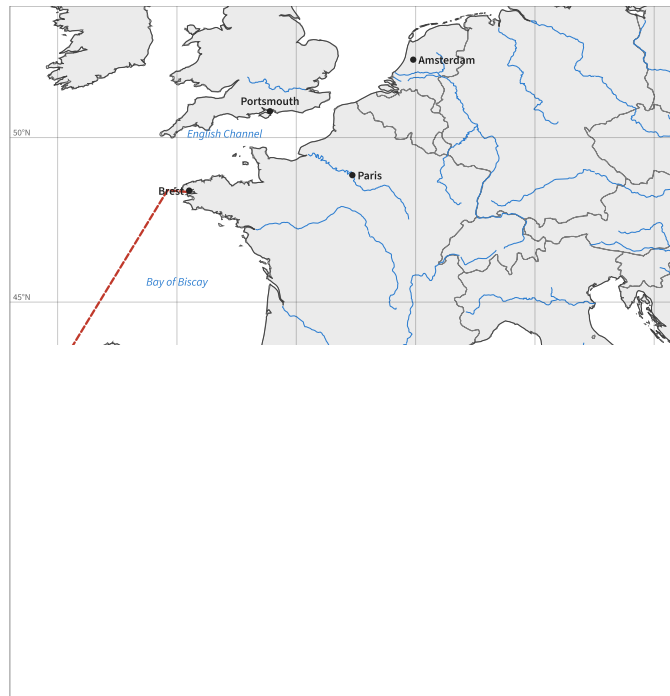
On the map: position and conformation. England, Mahan pointed out, is an island. It needed no great army to guard a land frontier, so it could spend its strength on ships. France had to guard long land borders, and Holland lay open to invasion; when Louis XIV attacked the Dutch Republic in 1672, the Dutch had to open their dikes and pour money into armies and fortresses instead of fleets. France had a second problem: two coasts. Its Atlantic fleet

lay at Brest and its Mediterranean fleet at Toulon, and to unite them a fleet had to sail all the way around Spain and through the Strait of Gibraltar, held by Britain from 1704. Position, Mahan said, can let a nation concentrate its forces or force it to divide them. Under physical conformation he looked at harbors, rivers and soil. Holland's poor, low land, he argued, drove its people to the sea for a living, while France's rich soil and pleasant climate kept most Frenchmen content at home. He then made a pointed comparison: the United States, with its vast rich interior, was in danger of turning inward as France had.

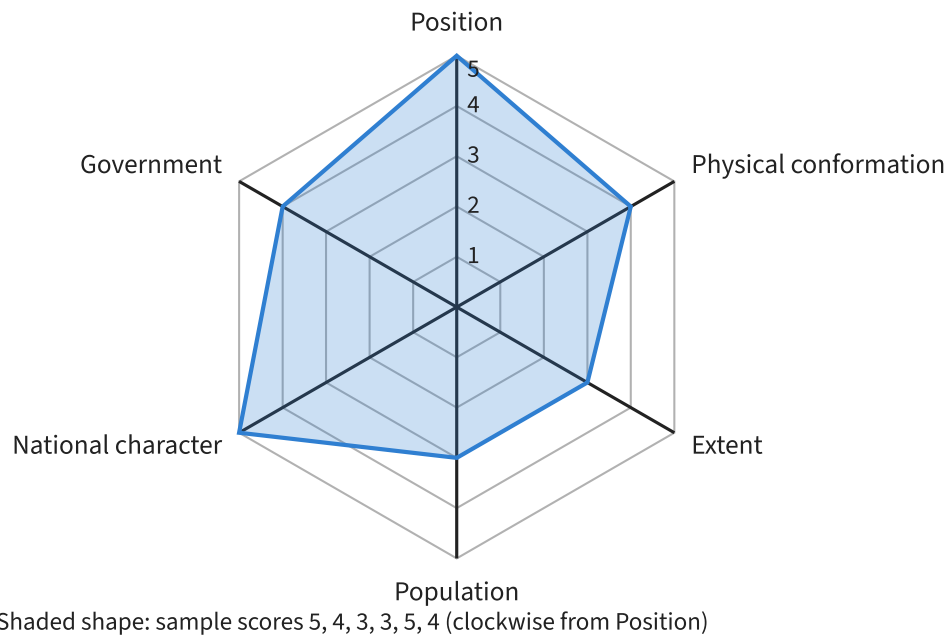
The big idea: extent and population. By **extent** Mahan did not mean square miles. He meant the length of coast and the number of harbors measured against the people available to use and defend them. His example was close to home. The Confederate States had a coast of some 3,500 miles (5,600 km) with many inlets, but too few people, ships and seamen to defend it. When the Union navy blockaded the main ports, the long coast became a weakness instead of a strength. By **population** he did not mean the total count, but the number who followed the sea or could be trained for it quickly: sailors, fishermen, shipwrights and dock workers. France had perhaps four times England's people about 1700, but England had the larger reserve of seamen, and in long wars that reserve counted more.

National character and government. Mahan's fifth element was a people's aptitude for commerce. He contrasted the English and Dutch, whom he saw as patient traders and builders of settlements, with the Spanish and Portuguese, whom he described as chiefly seeking gold and silver. Here the student must read carefully. Generalizations about whole nations were common in the 1800s, and they hold some truth about institutions and habits, but they are easily stretched into stereotypes and are hard to test. The sixth element is **government**. Under Louis XIV, his minister Jean-Baptiste Colbert built a great French navy quickly, which showed what a determined ruler could do; but when the king's interest turned to land wars, the navy decayed. Britain's governments, by contrast, kept a steady policy of sea power for generations. Mahan concluded that a strong ruler can build a navy fast, but a free people whose prosperity depends on the sea is more likely to keep one.

Weighing the elements. The six elements are not a formula with numbers; they are a checklist for asking good questions. Their strength is that they join geography and human action, and they explain real cases well: Britain's rise, the Dutch decline, France's divided fleets. Their weakness is that they are loose. Mahan chose the examples, and almost any result can be explained afterward by stressing one element over another. He gave little weight to industry, which later writers such as Paul Kennedy, in *The Rise and Fall of British Naval Mastery* (1976), argued was the real foundation of British sea power. As Christians we can add one more thought. Acts 17:26 teaches that God "hath determined the times before appointed, and the bounds of their habitation." The coasts, harbors and positions Mahan studied are not accidents; but neither do they guarantee greatness. Nations rise and fall through both the gifts they are given and what they do with them.



France's two coasts. To unite its Atlantic and Mediterranean fleets, France had to send ships around the whole Iberian Peninsula and past British-held Gibraltar.



A sea-power scorecard. Each spoke is one of Mahan's elements, scored from 1 (weak) to 5 (strong). The shaded shape shows sample scores only; you will make your own judgments in the project.

PICTURE STUDY



First View of Toulon: The New Port, Seen from the Corner of the Artillery Park (from the Ports of France series), Claude-Joseph Vernet, 1755 · Oil on canvas · Musée national de la Marine, Paris (on deposit from the Louvre)

In 1753 King Louis XV commissioned the painter Claude-Joseph Vernet to paint the great seaports of France. Vernet traveled from port to port for about a decade and painted fifteen large views, which were meant to show the king the wealth and strength of his kingdom at sea. The series became one of the most famous sets of harbor paintings ever made.

Toulon was France's great Mediterranean naval base, the home of the fleet that so often could not join the Atlantic fleet at Brest. In Vernet's view you can see the arsenal, the warships and the crowds of workers who built and supplied them. It is a picture of several of Mahan's elements at once: a sheltered harbor, a seafaring population and a government that paid for it all.

Look closely

- Find the warships. Are they at sea, at anchor or being worked on in the dockyard?
- Look at the people in the foreground. What jobs can you identify? Which of Mahan's six elements do they represent?
- Look at the shape of the harbor and the hills behind it. Why would this make a good naval base?
- Where does the light fall? What does the painter want the king to notice first?

Talk about it

1. Vernet painted for the king. How might that affect what he chose to show and not to show?

2. Use the map in this lesson. Why could a fleet at Toulon not easily help a fleet at Brest in time of war?
3. Compare this busy harbor with Mahan's claim that France's rich land kept most Frenchmen at home. Does the painting support or challenge his claim?

PROJECT: THE SEA-POWER SCORECARD

You will act as Mahan's research assistant. For four cases, Britain about 1750, France about 1750, the Dutch Republic about 1700 and the United States in 1890, you will gather evidence for each of the six elements, score it from 1 to 5, and draw a hexagonal scorecard with a compass and protractor. Then you will ask whether the shapes you drew actually match what happened.

You will need

- Four sheets of heavy paper or card
- A drawing compass, a protractor, a ruler and colored pencils
- Twenty-four index cards (six for each case)
- An atlas or printed maps of Europe and North America
- Your notes from this lesson and Mahan's Chapter I (free at Project Gutenberg)

Steps

1. On each sheet, draw a circle of radius 6 cm with the compass. With the protractor, mark six points 60° apart and draw six spokes from the center. Label them in Mahan's order: Position, Physical conformation, Extent, Population, National character, Government (use the figure as a guide).
2. Draw five rings at 1.2, 2.4, 3.6, 4.8 and 6 cm from the center, and number them 1 to 5.
3. For each case, fill in one index card per element. On each card write one piece of evidence (a fact, a distance or a map observation) and the score you give, from 1 (weak) to 5 (strong).
4. Plot each score on its spoke, join the six points, and shade the shape. Use a different color for each case.
5. Lay the four scorecards side by side. Which nation has the largest shape? Which element varies most from case to case?
6. Check your shapes against history: Britain rose, the Dutch slipped, France won some battles but lost most of its overseas empire in 1763, and the United States built a modern fleet after 1890. Did your scores predict those results? Where not, why not?
7. Write a 300-word conclusion: Which of Mahan's elements do you judge the most important, and which the hardest to measure fairly? Use at least two of your evidence cards.

Tips

- Score with evidence, not with what you already know happened. Write the evidence card first, then the score.

- For national character, use behavior you can document (size of the merchant fleet, number of trading companies, overseas settlements) rather than opinions about a people.
- Two students scoring the same case will disagree. That is part of the lesson: Mahan's elements are a tool for judgment, not a machine that gives answers.

Check your work

- I drew four accurate hexagonal scorecards with labeled spokes and rings.
- Every score is backed by an evidence card.
- I compared my scores with what actually happened and explained any mismatch.
- My conclusion weighs Mahan's elements fairly, naming a strength and a weakness.

MAP NOTEBOOK

1. Trace the outline of Britain, France and the Low Countries. Shade the land frontiers France and the Dutch Republic had to defend, and write "no land frontier" across the sea around Britain.
2. Copy the France map and draw the sea route from Brest to Toulon. Label Ushant, Cape Finisterre, Cape St. Vincent and Gibraltar along the way.
3. Make a two-column table headed "Given by geography" and "Made by people," and sort Mahan's six elements into it. Add a seventh element of your own that you think Mahan missed.

From history. When Mahan commanded the cruiser USS *Chicago* on a visit to Britain in 1894, he found himself famous. British readers saw his book as an explanation of their own empire, and in that year both Oxford and Cambridge gave him honorary degrees. Few American naval officers before or since have been so honored abroad for a work of history, and the welcome showed how quickly his ideas had crossed the Atlantic.

WORKED EXAMPLES

Example 1. Use the map. In a straight line overland, Brest is about 1,000 km (620 miles) from Toulon. By sea, around Spain and through the Strait of Gibraltar, the route is about 1,650 nautical miles (nm). Convert the sea route to kilometers and miles, and find how many times longer it is than the straight-line distance. How many days would a sailing fleet averaging 5 knots need to make the passage?

(Use the map or drawing “Trace the long sea route between France’s two fleets.” shown earlier in this lesson.)

1. Sea route in km: $1,650 \text{ nm} \times 1.852 = 3,056 \text{ km}$. In miles: $1,650 \times 1.151 = 1,899$ miles.
2. Ratio: $3,056 \text{ km} \div 1,000 \text{ km} \approx 3.1$.
3. Time: $1,650 \text{ nm} \div 5 \text{ knots} = 330$ hours.
4. Days: $330 \div 24 = 13.75$, about 14 days, and longer if the wind is foul in the Strait of Gibraltar or the Bay of Biscay.

Answer: The sea route is about 3,060 km (1,900 miles), roughly three times the straight-line distance, and takes about two weeks at 5 knots. Every passage also had to pass British-held Gibraltar. This is Mahan’s point about position: France’s fleets were divided by the very shape of Europe.

Example 2. The Rock of Gibraltar rises 426 m (1,398 ft) above the sea. The distance to the horizon from a height h in meters is about $d = 3.57 \sqrt{h}$ kilometers. How far can a lookout on the summit see in clear weather? The Strait of Gibraltar is about 14 km (8.7 miles) wide at its narrowest. What does this tell you about Gibraltar’s position?

1. $\sqrt{426} = 20.64$.
2. $d = 3.57 \times 20.64 = 73.7 \text{ km}$.
3. Convert: $73.7 \text{ km} \div 1.609 = 45.8 \text{ miles}$; $73.7 \div 1.852 = 39.8 \text{ nm}$.
4. Compare: 73.7 km is about five times the 14 km width of the strait.

Answer: About 74 km (46 miles, 40 nm). In clear weather a lookout on the Rock could see across the whole strait and far out into both seas, so no fleet could pass unseen by day. Haze and darkness shorten this in practice, but Gibraltar’s position made it a natural watchtower over the only sea gate between the Atlantic and the Mediterranean.

Example 3. About 1700, France had roughly 21 million people, England and Wales about 5.5 million, and the Dutch Republic about 1.9 million (historians' estimates). How many times larger was France than each? Then, for illustration only, suppose 1 person in 50 in England followed the sea, but only 1 in 200 in France. Compare the seafaring populations.

1. France ÷ England and Wales: $21 \div 5.5 = 3.8$ times larger.
2. France ÷ Dutch Republic: $21 \div 1.9 = 11$ times larger.
3. England's seafaring population (illustration): $5,500,000 \div 50 = 110,000$.
4. France's seafaring population (illustration): $21,000,000 \div 200 = 105,000$.

Answer: France was nearly four times as populous as England and Wales and about eleven times as populous as the Dutch Republic. Yet with the illustrative fractions, England's seafaring population (110,000) would slightly exceed France's (105,000). That is exactly Mahan's point: what counts for sea power is not the total population but the number who follow the sea.

PRACTICE

1. **EASY** List Mahan's six elements of sea power in his order.
2. **EASY** Which three elements are mainly given by geography, and which three depend mainly on people and their choices?
3. **EASY** According to Mahan, why was England's position an advantage over both France and the Dutch Republic?
4. **EASY** What happened in the Dutch raid on the Medway in June 1667?
5. **MEDIUM** The Strait of Dover is about 33 km wide. Convert this to statute miles and nautical miles. How long would a ship at 6 knots take to cross it?
6. **MEDIUM** Use the map. Name the British-held base that lay on the sea route between Brest and Toulon, and give the year Britain captured it and the treaty that confirmed it. *(Use the map or drawing "Use this map for Problem 6." shown earlier in this lesson.)*
7. **MEDIUM** The Confederate coast was about 3,500 miles (5,600 km) long. Suppose (for illustration) one blockading ship could watch 20 miles of coast. How many ships would a blockade of the whole coast need? Why did the Union focus instead on the main ports?
8. **MEDIUM** A lookout stands at a masthead 30 m above the sea. Using $d = 3.57 \sqrt{h}$ km, how far is his horizon? Can he see a small boat at sea level on the far side of the 33 km Strait of Dover?
9. **HARD** A French fleet leaves Toulon to join the Brest fleet, a sea passage of about 1,650 nm, averaging 4 knots. How many days does it take? Meanwhile a British squadron at Gibraltar needs only a few hours to put to sea. Explain how this illustrates Mahan's first element.
10. **HARD** In two or three sentences, explain what Mahan meant when he compared the United States of his day to France under the heading of physical conformation.

11. **HARD** Use the scorecard figure. Read the sample scores for all six elements and add them. What is the greatest possible total? Why might a simple total be misleading? *(Use the map or drawing “Use this figure for Problem 11.” shown earlier in this lesson.)*
12. **CHALLENGE** Write a paragraph evaluating “national character” as one of Mahan’s elements. Give one way it helps explain history and one danger in using it.

COMMON MISTAKES

- Reading “extent of territory” as land area. Mahan meant the length of coast and number of harbors compared with the people available to use and defend them; a long coast with few people can be a weakness.
- Reading “population” as total population. Mahan meant the number who follow the sea or can quickly be trained for it.
- Treating the six elements as a formula that predicts the future. They are a checklist for asking questions, and Mahan chose his examples after the results were known.

Make it a game • Element Match. Write each of Mahan’s six elements on a large card and lay them face up. A caller reads a fact from a stack of prepared slips (for example, “France has fleets at Brest and Toulon,” “Holland’s soil is poor and low,” “Colbert builds a fleet quickly,” “the Confederacy has 3,500 miles of coast,” “England has no land frontier”). Players race to slap the element the fact illustrates and must explain the link in one sentence. A correct slap and explanation scores 2 points; a defensible second element scores 1. First to 15 points wins.

Scripture. “And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;” (Acts 17:26, KJV)

Mahan’s first three elements are about the places nations were given to live: their position, their coasts, their extent. Paul tells the Athenians that God set those bounds and times. That is no excuse for pride or for despair. Every nation’s geography is a gift and a trust, and what a people does with it still matters.

Practice answers

1. (1) Geographical position; (2) physical conformation (with natural productions and climate); (3) extent of territory; (4) number of population; (5) national character; (6) character of the government (with national institutions).
2. Given by geography: position, physical conformation and extent of territory. Mainly human: population (especially the seafaring part), national character and government.
3. As an island, England had no land frontier to defend and needed no great army, so it could concentrate its money and men on the navy. France and the Dutch Republic had to defend land borders and pay for armies and fortresses.
4. A Dutch fleet under Michiel de Ruyter sailed up the Thames estuary and the Medway, broke the chain across the river, burned several English warships near Chatham and towed away the English flagship, the *Royal Charles*.

5. $33 \div 1.609 = 20.5$ miles; $33 \div 1.852 = 17.8$ nm. Time = $17.8 \div 6 = 3.0$ hours.
6. Gibraltar, captured in 1704 and confirmed to Britain by the Treaty of Utrecht in 1713.
7. $3,500 \div 20 = 175$ ships. The Union had too few ships early in the war to watch every inlet, and most trade had to pass through a few deep harbors with railroads inland (such as Wilmington, Charleston, Savannah, Mobile and New Orleans), so blockading or capturing those ports did the most damage.
8. $\sqrt{30} = 5.48$; $d = 3.57 \times 5.48 = 19.6$ km (12.2 miles). No: a boat at sea level 33 km away lies below his horizon. (Tall objects such as the white cliffs can be seen farther, because they have their own horizon distance.)
9. $1,650 \div 4 = 412.5$ hours $\div 24 = 17.2$ days. The French fleet must pass through the narrow strait right under a British base, where it can be seen and intercepted long before it can unite with its partner. Position let Britain watch the join between France's divided fleets, while France could not concentrate without running that gauntlet.
10. France's rich soil and pleasant climate kept most of its people content at home, so they did not take to the sea as the Dutch had. Mahan feared that the United States, with its vast, rich interior to develop, would likewise turn its energy inward and neglect shipping and a navy until it was too late.
11. Sample scores: Position 5, Physical conformation 4, Extent 3, Population 3, National character 5, Government 4; total 24 out of a possible 30. A total treats all elements as equal, but in a given war one element (such as position, or a weak government) may outweigh all the others, and the scores themselves are judgments, not measurements.
12. Answers will vary. A strong answer: it helps because the habits and institutions of a people (a strong merchant class, trading companies, a tradition of shipbuilding, laws that protect property and commerce) clearly affect whether a nation takes to the sea; the Dutch and English merchant fleets of the 1600s show this. The danger is that it turns into a stereotype that claims a whole people is naturally one way, which is hard to test, ignores change over time (Spain and Portugal had led the world at sea in the 1500s), and can be used to flatter one's own nation. A careful historian replaces vague character with documented behavior and institutions.

2.3 MAHAN'S INFLUENCE: ROOSEVELT, THE GREAT WHITE FLEET AND THE KAISER'S NAVY ⚙

OBJECTIVES

- Trace how Mahan's ideas shaped policy in the United States under Theodore Roosevelt, in Germany under Wilhelm II and Alfred von Tirpitz, and in Japan.
- Explain how steel, steam, coal and the turbine-driven *Dreadnought* changed navies between 1890 and 1914, and what the voyage of the Great White Fleet (1907–1909) revealed about American sea power.
- Calculate average speeds, voyage times and scouting distances from real data, and use Mahan's own first element, position, to explain why Germany's fleet could not break out.

Warm-up. Fill a pot or bucket with sand, rice or dried beans, and time how long it takes you to move it all, one large spoonful at a time, into a second container 3 meters away. Count your spoonfuls. Every ton of coal a battleship burned had to be shoveled aboard by its own crew, sack by sack, and then shoveled again into the furnaces. Write one sentence on what that tells you about the limits of a steam navy.

Watch. *The Great White Fleet: 16 Battleships Around the World (1907–1909)* (The Photographed Past, 8:12). <https://www.youtube.com/watch?v=0rNA8OPrZbM>
After the story: follow the sixteen white battleships around the world, and notice how hard it was to find coal for them without the Panama Canal, which sets up the next lesson.
Note: Captions were not available to check, and this is a newer channel whose narration could not be confirmed as a human voice; preview it first. The video uses British spellings and mentions the fleet helping after the Messina earthquake.

Backup video. *The Anglo German Naval Arms Race (Short Animated Documentary)* (History Matters, 3:39). <https://www.youtube.com/watch?v=vQNCHt0pL94>
With the big idea: watch this short cartoon to see how Britain's HMS Dreadnought and Germany's new fleet started a race that Mahan's ideas helped push forward. Note: Captions were not available to check; preview it first. The channel sometimes uses light, joking narration.

KEY TERMS

Great White Fleet

The popular name for the sixteen U.S. battleships, painted white with buff trim, that steamed around the world from December 16, 1907, to February 22, 1909.

pre-dreadnought

A battleship of about 1890–1906, usually carrying four heavy guns plus many smaller ones and driven by reciprocating steam engines. All the Great White Fleet's battleships were of

this kind.

dreadnought

A battleship on the pattern of HMS *Dreadnought* (1906), armed with many guns of one large caliber and driven by steam turbines; it made earlier battleships second-class almost overnight.

collier

A cargo ship that carried coal to fuel warships at sea or in distant harbors.

risk theory

Admiral Alfred von Tirpitz's idea that Germany needed a fleet only strong enough that Britain could not fight it without risking losses that would leave it weaker than other naval powers.

naval race

A contest between nations to build more and better warships than each other, such as the Anglo-German race of about 1898-1914.

CORE IDEAS

The story. On the morning of December 16, 1907, President Theodore Roosevelt stood on the deck of the presidential yacht *Mayflower* in Hampton Roads, Virginia, as sixteen battleships steamed past him in a long column and out to sea. Their hulls were painted white and their upperworks buff, and they carried about 14,000 sailors and marines under Rear Admiral Robley D. Evans. Officially the fleet was bound for the Pacific coast. Only later was it confirmed that it would go on around the world. When it returned to the same waters on February 22, 1909, it had steamed some 43,000 nautical miles, called at about twenty ports on six continents, and become the most famous display of naval power of its age. The newspapers called it the **Great White Fleet**. It was, in steel and coal, Alfred Thayer Mahan's ideas put to sea.

Roosevelt and Mahan. Roosevelt was already a naval historian before he read Mahan. His first book, *The Naval War of 1812* (1882), was written while he was in his early twenties. When *The Influence of Sea Power upon History* appeared in 1890, Roosevelt reviewed it warmly in *The Atlantic Monthly*, and the two men became friends and correspondents. As Assistant Secretary of the Navy in 1897-1898, Roosevelt pushed for a stronger fleet, for Hawaii, and for readiness against Spain. In the war of 1898, Commodore George Dewey destroyed the Spanish squadron in Manila Bay on May 1, and the Spanish Caribbean squadron was destroyed off Santiago de Cuba on July 3; Mahan served on the Naval War Board that advised the government. As president from 1901 to 1909, Roosevelt built up the battle fleet, began the Panama Canal (Lesson 2.4) and liked to quote a West African saying: "Speak softly and carry a big stick; you will go far." The world cruise was the big stick on parade. It tested whether a battle fleet could really steam around the globe, it showed the flag in South America, Australia and Asia, and it reminded Japan, with whom relations had been strained since 1906, that the United States could bring its fleet to the Pacific. In his *Autobiography* (1913), Roosevelt judged the cruise the most important service he had done for peace. At Yokohama in October 1908 the fleet received a warm and friendly welcome.

How it worked: the steam navy. The Great White Fleet showed both the power and the limits of the new technology. Steel hulls and armor, breech-loading guns firing explosive shells across miles of sea, and steam engines that ignored the wind had made the sailing navies of Mahan's history obsolete. But steam ran on coal. A battleship of 1907 burned scores of tons a day, and coaling ship was a filthy, all-hands job of shoveling coal into sacks, hoisting them aboard and dumping them into the bunkers. The fleet's greatest weakness lay not in its guns but in its fuel. The United States had few coaling stations abroad and a small merchant marine, so much of the fleet's coal was carried by chartered foreign colliers. If war had come during the voyage, those colliers could have been withheld. Mahan had warned of exactly this. Meanwhile, technology raced ahead of the fleet. In February 1906 Britain had launched HMS *Dreadnought*, with ten 12-inch guns (against four in most earlier battleships) and steam turbines that drove her at 21 knots. Every one of the sixteen white battleships was outclassed before it left Hampton Roads.

The Kaiser's navy. In Germany, Kaiser Wilhelm II read Mahan's book in 1894 with great excitement, wrote that he was trying to learn it by heart, and had copies placed aboard his ships. "Our future lies on the water," he declared in 1898. In 1897 he appointed Admiral Alfred von Tirpitz to head the Imperial Naval Office. Tirpitz persuaded the Reichstag to pass Navy Laws in 1898 and 1900 that set a goal of 38 battleships. His **risk theory** held that Germany need not equal Britain, only build a fleet so strong that Britain could not fight it without being badly weakened. Britain, which since 1889 had followed a "two-power standard" (a fleet at least equal to the next two navies combined), answered with the *Dreadnought* and a building race. The race helped push Britain toward friendship with France (1904) and Russia (1907). When war came in 1914, the German High Seas Fleet fought one great battle, at Jutland on May 31 and June 1, 1916, sinking more ships than it lost, but it never broke Britain's hold on the North Sea. It spent most of the war in harbor, and in June 1919 its crews scuttled it at Scapa Flow.

On the map. Why did Tirpitz's fleet fail? Mahan's own first element, **position**, gives the answer. Germany's coast faces the North Sea, and Britain lies across both exits to the Atlantic: the Strait of Dover, about 33 km (21 miles) wide, and the northern passage between Scotland and Norway. From Scapa Flow in the Orkneys, the British Grand Fleet could guard the northern gap without fighting at all. Germany copied Mahan's prescription, a concentrated battle fleet, while ignoring his diagnosis that geography decides what such a fleet can do. Japan, by contrast, applied Mahan with its geography. Mahan's book was translated and studied in Japan, and on May 27-28, 1905, Admiral Tōgō Heihachirō destroyed the Russian fleet in the Strait of Tsushima. Most of that fleet had steamed about 18,000 nautical miles from the Baltic around Africa, coaling at sea and in remote anchorages from chartered German colliers because it had almost no friendly ports on the way, and it arrived worn out. Nearly every Russian ship was sunk, captured or interned; Japan lost three torpedo boats.

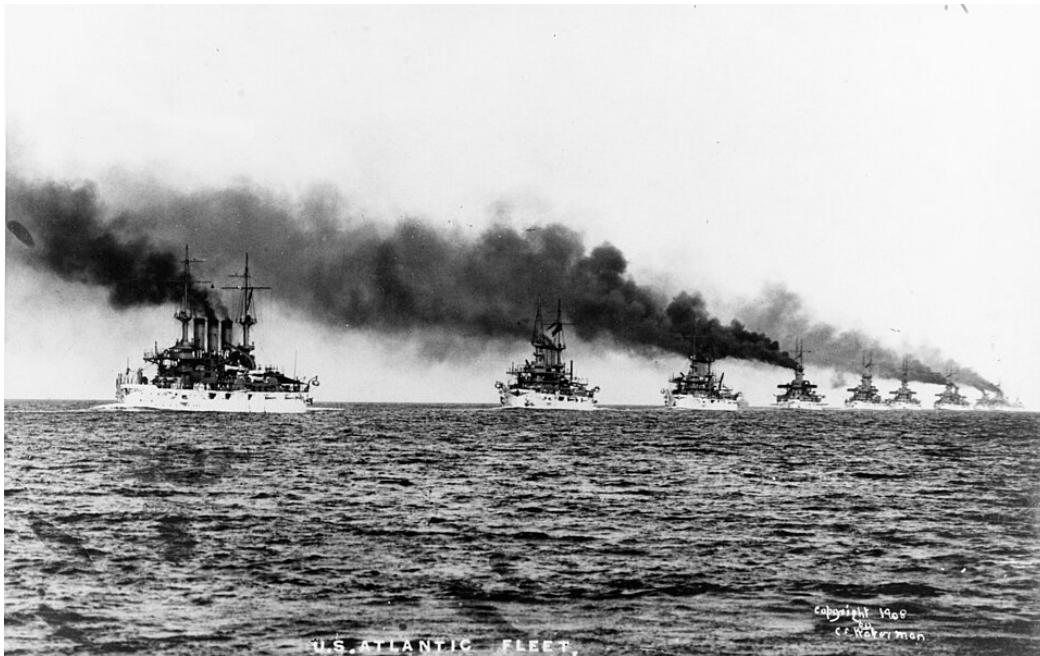
Technology overcoming geography. Steam had freed warships from the wind, but it chained them to coal, and coal chained them to bases. The Great White Fleet's voyage proved a battle fleet could circle the globe, yet only with help from foreign colliers and friendly ports. The lesson pointed straight to Lesson 2.4: a nation that wanted to use the sea

in war needed coaling stations and a canal. It also carried a warning. Mahan's ideas fed a fever of fleet-building in many nations, and fleets meant to deter war helped feed the suspicion that led to it. Scripture offers a steady word for an age of battleships: "Some trust in chariots, and some in horses: but we will remember the name of the LORD our God" (Psalm 20:7).



The voyage of the Great White Fleet, December 1907 to February 1909 (route simplified; some side visits omitted).

PICTURE STUDY



The Atlantic Fleet Steaming in Column, Probably Leaving Hampton Roads, C. E. Waterman, Hampton, Virginia (commercial photographer), December 1907 (probably December 16, the day the fleet sailed) · Black-and-white photograph · Naval History and Heritage Command, Washington, D.C. (NH 92091)

Photographers followed the Great White Fleet all the way around the world, and the pictures of its departure from Hampton Roads are among the most famous American naval photographs. They show the fleet in its peacetime colors, white hulls and buff upperworks, steaming in a long line ahead, each ship following the one in front.

Look closely and you can read the technology of the age. These are coal-burning ships, and the smoke from their funnels was a constant problem: it gave away the fleet's position to anyone over the horizon and fouled the guns and the gunners' view. The ships are pre-dreadnoughts, with a few big guns in turrets fore and aft and many smaller guns along their sides.

Look closely

- Count the ships you can see in the column. Why would a fleet steam in a single line?
- Find the funnels and the smoke. What would the smoke tell an enemy lookout many miles away?
- Find the gun turrets. How many large turrets can you see on the nearest ship?
- Look at the color of the ships. Why might a navy paint its ships white for a peacetime voyage, and a different color for war?

Talk about it

1. Roosevelt called this voyage a service to peace. What message do you think these ships sent to the ports where they called?
2. Within a few years this fleet was obsolete. What does that suggest about the cost of a navy in an age of fast technological change?
3. Compare this photograph with van de Velde's *Cannon Shot* (Lesson 2.1). What has changed in two hundred years, and what has stayed the same?

PROJECT: STRING AROUND THE GLOBE: MEASURING THE GREAT WHITE FLEET'S VOYAGE

On a flat map, distances near the poles are stretched, but on a globe a taut string shows the true shortest path. You will trace the Great White Fleet's route on a globe with string, measure each leg against the globe's scale, total the voyage, and compare your result with the reported 43,000 nautical miles. Then you will mark where the fleet would have needed coal and ask which of those ports the United States controlled.

You will need

- A globe, 30 cm (12 in) diameter or larger
- Thin string or embroidery thread, about 3 m (10 ft)
- Small removable dots or tape flags, a fine marker, a flexible ruler or tape measure
- A calculator, a notebook and the route map in this lesson

Steps

1. Find your globe's scale. Measure its circumference around the equator with string. Earth's equator is about 21,600 nautical miles (40,075 km) around, so divide 21,600 by your string length in centimeters to get nautical miles per centimeter.
2. Mark the fleet's main ports with dots: Hampton Roads, Port of Spain, Rio de Janeiro, Punta Arenas, Callao, San Francisco, Honolulu, Auckland, Sydney, Albany, Manila,

Yokohama, Colombo, Suez, Gibraltar.

3. For each leg, stretch the string taut between the two ports, bending it around coasts where a ship must go around land. Measure the string and convert to nautical miles. Record each leg in a table.
4. Add up the legs. Compare your total with the reported 43,000 nm. Explain the difference (side trips to Puget Sound, Amoy and the Mediterranean ports; zigzags around coasts; your measuring error).
5. Color each port dot: blue if the United States controlled it in 1908, red if it belonged to another power, green if it was in an independent country.
6. Assume (for illustration) a battleship could steam about 4,000 nm at 10 knots on a full load of coal. Circle every leg longer than that. Where would the fleet have been stranded without colliers?
7. Write a paragraph: What did the voyage prove about American sea power, and what did it reveal that Mahan would have found worrying?

Tips

- Keep the string tight. A slack string adds distance.
- On a 30 cm globe the equator is about 94 cm, so each centimeter is roughly 230 nm. Check your own globe rather than trusting this figure.
- Save your port table. You will use the coaling question again in Lesson 2.4.

Check your work

- I found my globe's scale and showed the calculation.
- My table lists at least twelve legs with distances in nautical miles.
- I compared my total with 43,000 nm and explained the difference.
- I identified which ports the United States controlled and which legs needed colliers.

MAP NOTEBOOK

1. Draw a side view of a pre-dreadnought (four heavy guns in two turrets) and HMS *Dreadnought* (ten heavy guns in five turrets). Label the turrets, funnels and the speed of each ship.
2. Sketch the North Sea and mark Wilhelmshaven, Scapa Flow, the Strait of Dover and the gap between Shetland and Norway. Shade the waters the British Grand Fleet could watch.
3. Make a timeline from 1890 to 1919 with Mahan's book, the Navy Laws, Tsushima, the *Dreadnought*, the Great White Fleet, Jutland and Scapa Flow.

From history. On December 28, 1908, while the Great White Fleet was crossing the Indian Ocean toward Suez, a great earthquake and sea wave destroyed much of Messina in Sicily and Reggio across the strait, killing tens of thousands of people. When the fleet reached the Mediterranean in January 1909, some of its ships and its supply vessels

carried relief stores and sailors to help the stricken city. The warships built for battle ended their cruise doing a work of mercy.

WORKED EXAMPLES

Example 1. The Great White Fleet left Hampton Roads on December 16, 1907, and returned on February 22, 1909, after steaming about 43,000 nautical miles. How many days was it away? What was its average distance per day and its average speed including time in port? If it cruised at about 10 knots when under way, roughly what fraction of the voyage was spent steaming?

(Use the map or drawing “The fleet’s route around the world, 1907–1909.” shown earlier in this lesson.)

1. Days: December 16, 1907, to December 16, 1908, is 366 days (1908 was a leap year). December 16, 1908, to February 16, 1909, is $31 + 31 = 62$ days, and 6 more days reach February 22. Total = $366 + 62 + 6 = 434$ days.
2. Average per day: $43,000 \div 434 = 99$ nm per day.
3. Average speed: $99 \div 24 = 4.1$ knots (7.6 km/h, 4.7 mph).
4. Steaming time at 10 knots: $43,000 \div 10 = 4,300$ hours = 179 days. Fraction: $179 \div 434 = 0.41$.

Answer: 434 days away; about 99 nm (183 km, 114 miles) a day, an overall average of about 4.1 knots. At a cruising speed of 10 knots the fleet was actually under way only about 41 percent of the time; the rest went to port visits and coaling.

Example 2. A pre-dreadnought carries four 12-inch guns, all of which can fire to one side (a broadside), and makes 18 knots. HMS *Dreadnought* carries ten 12-inch guns, of which eight can fire on a broadside, and makes 21 knots. How many times heavier is the *Dreadnought*’s broadside in big guns? If a pre-dreadnought tries to escape with a 20 nm head start, how long until the *Dreadnought* catches it?

1. Broadside ratio: $8 \div 4 = 2$. The *Dreadnought* fires twice as many heavy shells to one side.
2. Closing speed: $21 - 18 = 3$ knots.
3. Time to close 20 nm: $20 \div 3 = 6.7$ hours (about 6 hours 40 minutes).
4. In practice the chase ends sooner, because the heavy guns can open fire at a range of several miles.

Answer: The *Dreadnought*’s big-gun broadside was twice as heavy, and with a 3-knot advantage she would close a 20 nm gap in about 6.7 hours. She could both catch and outgun any older battleship, which is why her launch in 1906 made every earlier battleship, including all sixteen of the Great White Fleet, second-class.

Example 3. In 1914 the German fleet could reach the Atlantic only through the Strait of Dover (about 33 km wide) or the northern gap between the Shetland Islands and Norway (about 180 nm wide). Suppose (for illustration) a scouting cruiser in clear weather can watch about 10 nm to each side of its course. How many cruisers spaced in a line would be needed to watch each gap? Convert the northern gap to km and miles.

1. Each cruiser watches a strip $10 + 10 = 20$ nm wide.
2. Northern gap: $180 \div 20 = 9$ cruisers.
3. Strait of Dover: $33 \text{ km} \div 1.852 = 17.8$ nm, less than one cruiser's 20 nm strip; and in practice it was closed with mines, nets and patrols.
4. Convert the northern gap: $180 \text{ nm} \times 1.852 = 333 \text{ km}$; $180 \times 1.151 = 207$ miles.

Answer: About nine cruisers could watch the 180 nm (333 km, 207-mile) northern gap, and a single patrol line, backed by mines, could watch Dover. With the main British fleet waiting at Scapa Flow behind the scouts, the German fleet had no unseen way out. Geography, not numbers alone, kept it bottled up.

PRACTICE

1. **EASY** Give the dates of departure and return of the Great White Fleet, the number of battleships, and the approximate distance steamed.
2. **EASY** Name Roosevelt's first book and say how he responded to Mahan's book in 1890.
3. **EASY** What two features made HMS *Dreadnought* (1906) revolutionary?
4. **EASY** Who was Alfred von Tirpitz, and what was his risk theory?
5. **MEDIUM** Germany's Navy Law of 1898 provided for 19 battleships and the law of 1900 for 38. By what percent did the goal increase?
6. **MEDIUM** Under Britain's two-power standard, if (for illustration) the next two navies had 22 and 18 battleships, how many did Britain need at least? If the first of those navies then built 8 more, how many more would Britain need?
7. **MEDIUM** A battleship carries 1,600 tons of coal and (for illustration) burns 100 tons a day at 10 knots. How many days and how many nautical miles can it steam before its bunkers are empty? What if it keeps a 20 percent reserve?
8. **MEDIUM** The Russian fleet left the Baltic in mid-October 1904 and fought at Tsushima on May 27, 1905, about 220 days later, after steaming about 18,000 nm. What was its average distance per day and average speed overall?
9. **HARD** Use the map. On which leg of its voyage did the fleet pass through the Strait of Magellan, and on which leg did it pass through the Suez Canal? Why did it not use a canal across Central America?
(Use the map or drawing "Use this map for Problem 9." shown earlier in this lesson.)
10. **HARD** The distance from Wilhelmshaven to Scapa Flow is about 500 nm. How many hours would a German fleet at 15 knots take to reach the latitude of Scapa Flow? Why did Britain base its Grand Fleet there rather than on the south coast of England?

11. **HARD** In three or four sentences, explain why Germany's attempt to follow Mahan failed while Japan's succeeded, using Mahan's first element.
12. **CHALLENGE** Write a paragraph weighing this claim: "Mahan's ideas made the world safer, because strong navies deter war." Use at least two examples from this lesson on each side.

COMMON MISTAKES

- Thinking the Great White Fleet was modern when it sailed. All sixteen were pre-dreadnoughts, made second-class by HMS *Dreadnought* before the voyage began.
- Assuming steam freed ships from geography. It freed them from the wind but tied them to coal, and coal tied them to bases and colliers.
- Blaming Mahan alone for the naval race. Rulers and parliaments chose to build; Mahan supplied arguments that many were already eager to hear.

Make it a game • Coal Run. Draw the fleet's route on a large sheet with the fifteen ports from this lesson as stops. Each player starts at Hampton Roads with 40 coal tokens (beans). Moving to the next port costs 1 token for every 100 nm (use rounded leg distances you measured in the project). At a U.S.-controlled port you may refill to 40 free; at a foreign port, roll a die: 1–4 the port sells you coal at 1 point per 5 tokens, 5–6 it refuses and you must wait a turn. A player who runs out at sea must call a collier, which costs 5 points and a lost turn. Fewest points spent on returning home wins. Afterward, discuss which ports you most wished your nation owned.

Scripture. "Some trust in chariots, and some in horses: but we will remember the name of the LORD our God." (Psalm 20:7, KJV)

In David's day chariots were the most advanced weapons on earth; in Roosevelt's, battleships were. Both were real power, and both were overtaken within a few years. Nations may wisely build defenses, but the psalmist warns against putting our final trust in them.

Practice answers

1. It left Hampton Roads on December 16, 1907, and returned on February 22, 1909; sixteen battleships; about 43,000 nautical miles.
2. *The Naval War of 1812* (1882). He reviewed Mahan's book warmly in *The Atlantic Monthly* and became Mahan's friend and correspondent.
3. An all-big-gun armament (ten 12-inch guns instead of the usual four) and steam turbines that gave her a speed of 21 knots.
4. The admiral who headed Germany's Imperial Naval Office from 1897 and built the High Seas Fleet under the Navy Laws of 1898 and 1900. His risk theory held that Germany needed only a fleet strong enough that Britain could not fight it without losses that would leave Britain weaker than other naval powers.
5. $(38 - 19) \div 19 \times 100 = 100$ percent. The goal doubled.
6. $22 + 18 = 40$ battleships at least. If the first navy grows to 30, the combined total becomes $30 + 18 = 48$, so Britain would need 8 more. Every ship a rival built forced Britain to build one

too, which is how a naval race feeds itself.

7. $1,600 \div 100 = 16$ days; $16 \times 24 \times 10 = 3,840$ nm (7,110 km, 4,420 miles). With a 20 percent reserve, it may use only 1,280 tons: 12.8 days and 3,072 nm.
8. $18,000 \div 220 = 82$ nm per day; $82 \div 24 = 3.4$ knots. Most of the time went to coaling, repairs and waiting.
9. The Strait of Magellan on the leg from Rio de Janeiro to Callao (via Punta Arenas), early in 1908. The Suez Canal on the leg from Colombo to the Mediterranean, in January 1909. There was no Central American canal yet: the Panama Canal was under construction and did not open until August 15, 1914.
10. $500 \div 15 = 33.3$ hours. Scapa Flow lies beside the northern exit to the Atlantic, so the Grand Fleet could block it, and it was far enough from German bases to be safer from surprise attack than the North Sea coast; the Strait of Dover in the south could be closed with mines and lighter forces.
11. Germany built a concentrated battle fleet as Mahan advised, but its only coast faced the North Sea, and Britain lay across both exits, so the fleet could not reach the ocean trade routes without fighting a larger fleet on Britain's terms. Japan is an island nation lying across the approaches to Korea and Manchuria, so its fleet fought near its own bases while the Russian fleet had to come halfway around the world. Mahan's prescription worked where position favored it and failed where position did not.
12. Answers will vary. For: the Great White Fleet's cruise showed American strength peacefully and was warmly received in Japan and Australia; Britain's strong navy kept the sea lanes open and Britain itself safe from invasion; Roosevelt believed the cruise served peace. Against: the Anglo-German naval race bred suspicion, drove Britain into alliances that hardened the European blocs, and was one cause of the tension before 1914; Japan's victory at Tsushima encouraged later reliance on naval force; costly fleets were quickly obsolete (the *Dreadnought* made every older battleship second-class). A balanced answer notes that deterrence depends on how fleets are used and how rivals read them.

2.4 COALING STATIONS AND CANALS ⚙️

OBJECTIVES

- Explain Mahan's argument that a steam navy needs coaling stations and a canal, in his own words, and show how Hawaii, Guam and Panama fit into it.
- Read a map of the world's naval bases in 1900 and compare the networks of Britain, France, Germany, Russia, Japan and the United States.
- Calculate voyage savings through the Panama Canal, the effect of island "stepping stones" on the longest leg across the Pacific, and whether a ship of limited coal range can reach a distant port.

Warm-up. Put a toy car or a coin at one end of a long table and a target at the other end. The rule: the car can travel only the length of your hand on one "tank of fuel," and it may refuel only on a coaster. Lay out coasters so the car can reach the target with the fewest coasters possible. Then remove one coaster from the middle. What happens? Write one sentence about what this means for a steam navy crossing the Pacific.

Watch. *Panama Canal: The Mountain That Would Not Stay Cut* (The Photographed Past, 6:24). https://www.youtube.com/watch?v=c_w7zGARdEA

With On the map: watch the Culebra Cut through the Continental Divide, and look for the steam shovels, trains and landslides the engineers fought to finish the canal.

Note: Captions were not available to check, and this is a newer channel whose narration could not be confirmed as a human voice; preview it first. It may mention workers killed in landslides and blasting accidents.

Backup video. *The Engineering Marvel called Panama Canal* (Sabin Civil Engineering, 14:39). <https://www.youtube.com/watch?v=jh79YSCC8mM>

Before the project: watch how the canal's locks lift ships up over Panama and lower them back to the sea, so you can see why a canal made coaling stations and long voyages less needed. Note: Captions were not available to check; preview it first. The video likely includes a sponsor segment for a parts company and an appeal for Patreon support that you can skip.

KEY TERMS

coaling station

A harbor with stocks of coal, docks and workshops where steamships could refuel and repair; essential to any navy that sailed far from home before oil and refueling at sea.

steaming range

How far a ship can go on a full load of fuel at a given speed. Range falls sharply at high speed, because fuel use rises much faster than speed.

stepping stones

A chain of islands or bases spaced so that ships, and later aircraft, can cross a wide ocean in legs shorter than their range.

isthmian canal

A canal cut across an isthmus, a narrow neck of land between two seas, such as the Panama Canal (1914) or the Suez Canal (1869).

lock

A chamber with gates at each end in which water is raised or lowered to lift ships from one level to another. The Panama Canal's locks lift ships about 26 m (85 ft) to Gatún Lake.

Panamax

The largest size of ship that could fit the original Panama Canal locks, which are 33.5 m (110 ft) wide and 305 m (1,000 ft) long.

CORE IDEAS

The story. On June 20, 1898, the U.S. cruiser *Charleston* under Captain Henry Glass steamed into Apra Harbor on the Spanish island of Guam, in the western Pacific, and fired a few shots at an old fort. Soon a boat came out carrying Spanish officials, who apologized politely: they had no powder to return what they took to be a salute. They had not heard that Spain and the United States had been at war since April. The next day the Spanish governor surrendered the island, and the *Charleston* went on to join Commodore Dewey at Manila. By the Treaty of Paris in December 1898, Spain ceded Guam, Puerto Rico and the Philippines to the United States. A comic little episode in a short war gave the United States a harbor more than 3,000 nautical miles west of Hawaii, the kind of "resting place" Mahan had been asking for since 1890.

How it worked: Mahan on coal. In his first chapter, Mahan pointed out that the United States had no colonies or military posts abroad, and warned that in war its ships "will be like land birds, unable to fly far from their own shores. To provide resting-places for them, where they can coal and repair, would be one of the first duties of a government proposing to itself the development of the power of the nation at sea." A steamship could go only as far as its coal would carry it, and in war a neutral port might refuse it coal. Dewey felt this in April 1898: under the laws of neutrality he had to leave British Hong Kong, and his nearest American coal was some 6,000 nautical miles away in San Francisco. He had to win at Manila or be stranded. Mahan added an often-forgotten warning: bases must be **defensible**. A few strong bases are worth more than many weak ones, because a weak base is only a hostage that the fleet must leave its work to protect.

Hawaii. Mahan's best-known case was Hawaii. In an article titled "Hawaii and Our Future Sea-Power" (*The Forum*, March 1893), he argued that the islands stood alone in the middle of the north Pacific, the only place for a coaling station in a vast circle of empty sea, so that whoever held them could command the approaches to the American west coast. The United States had already won the right to use Pearl Harbor as a coaling and repair station in an 1887 treaty with the Kingdom of Hawaii. In January 1893 a group of mostly American residents and businessmen in Honolulu overthrew Queen Lili'uokalani, with marines landed from USS *Boston* standing by. President Grover Cleveland sent an investigator, concluded

that the American minister had improperly helped the overthrow, and refused to annex the islands. The plain fact is that the Hawaiian kingdom was overthrown against the will of its queen and without the consent of most of its people. In July 1898, during the war with Spain, when Honolulu had proved its worth as a coaling stop for troopships bound for Manila, Congress annexed Hawaii by joint resolution. Mahan's strategic argument had won, but by means many Americans disputed at the time.

Panama. The same war made the case for a canal. When the battleship USS *Oregon* was ordered from San Francisco to the Caribbean in March 1898, she had to steam south around the whole of South America and through the Strait of Magellan, roughly 14,000 miles (22,500 km), in 66 days. She arrived in time to fight off Santiago, but the country had seen its two coasts divided, as France's fleets had been (Lesson 2.2). In "The United States Looking Outward" (1890), Mahan had predicted that a canal would turn the Caribbean from a dead end into one of the great highways of the world, and he saw that it would let one American fleet serve both oceans, his principle of **concentration** applied to a continent. After Britain gave up its canal claims (1901) and Panama broke away from Colombia in November 1903, with American warships keeping Colombian troops from putting down the revolt, the United States obtained a Canal Zone and began work in 1904. The canal opened on August 15, 1914. Its cost in lives was heavy: the earlier French attempt of the 1880s had lost many thousands of workers to yellow fever and malaria, and in the American years more than 5,000 more died of disease and accidents, a large share of them laborers from Barbados and other West Indian islands. Dr. William Gorgas's war on mosquitoes made the work possible. By treaties signed in 1977, the canal passed fully to Panama on December 31, 1999.

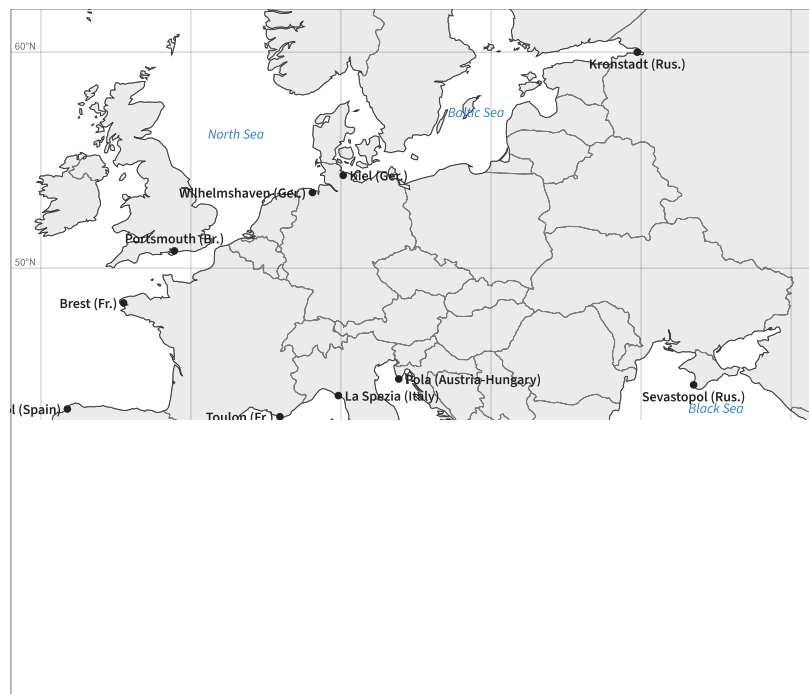
Technology overcoming geography. The canal cut the voyage from New York to San Francisco from about 22,500 km (14,000 miles) around Cape Horn to about 9,500 km (5,900 miles). Its locks lift ships some 26 m (85 ft) up to Gatún Lake and down again on the other side. The lock chambers are 33.5 m (110 ft) wide, and for decades the U.S. Navy designed its battleships to fit them; the *Iowa*-class battleships of World War II were 33.0 m (108 ft 2 in) wide, with less than a foot to spare on each side. Meanwhile navies were switching from coal to oil, which gave greater range and could be pumped from a tanker at sea. Oil loosened the chain to coaling stations but did not end the need for bases, which still supplied ammunition, repairs and dry docks.

On the map. The map of naval bases in 1900 shows who had read Mahan's lesson longest. Britain held a worldwide chain: Gibraltar, Malta, Alexandria, Aden, Trincomalee, Singapore and Hong Kong on the road to the East; Simon's Town at the Cape; Halifax, Bermuda and Jamaica in the Atlantic; Esquimalt and Sydney in the Pacific. Admiral John Fisher is said to have spoken of five strategic keys that lock up the world: Singapore, the Cape, Alexandria, Gibraltar and Dover. France held Dakar, Martinique, Diego-Suarez in Madagascar and Saigon. Germany had leased Tsingtao in China in 1898, and Russia took Port Arthur the same year. The United States, after 1898, suddenly had Hawaii, Guam, the Philippines and Puerto Rico, and soon Tutuila in Samoa (1899) and Guantánamo Bay in Cuba (1903). Mahan's ideal network, a fortified canal with guarded Caribbean approaches and Hawaii as the Pacific outpost, was largely in place by 1914. The war in the Philippines from 1899 to

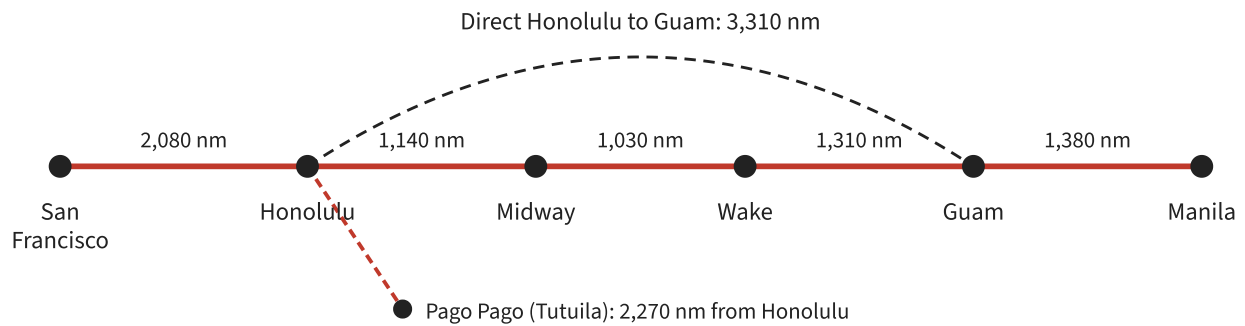
1902, in which Filipino forces fought for independence, some 20,000 Filipino fighters were killed and perhaps 200,000 civilians died, many of disease and famine, showed the heavy price of distant islands. Whether Guam and the Philippines could be defended at all would be tested in 1941 (Lesson 2.5).



Overseas naval bases and coaling stations about 1900 (Br. = Britain, Fr. = France, Ger. = Germany, Rus. = Russia, Jap. = Japan, U.S. = United States). Guantánamo (1903) and the Panama Canal (1914) came later.



Home naval bases of the European powers about 1900.



Great-circle distances, rounded. Not to scale. San Francisco to Manila direct: about 6,050 nm.

Stepping stones across the Pacific (great-circle distances, rounded; not to scale).

PICTURE STUDY



Gatún Upper Locks Under Construction, East Chamber, Ernest Hallen, official photographer of the Panama Canal, March 12, 1912 · Black-and-white photograph · Panama Canal Museum Collection, University of Florida Digital Collections (Hallen's official negatives are at the U.S. National Archives)

Ernest “Red” Hallen was hired in 1907 as the official photographer of the Panama Canal and photographed the work for the next three decades. His pictures were made to show Congress and the public how the money was being spent, and they are now among the best records of one of the greatest engineering projects in history.

The Gatún Locks, at the Atlantic end, raise ships in three steps from sea level to Gatún Lake. In Hallen’s photographs the workers on the floor of the half-built chambers look like ants beside walls of concrete taller than a six-story building. Those dimensions, 33.5 m (110 ft) wide and 305 m (1,000 ft) long, would shape the design of the world’s ships, and the U.S. Navy’s battleships, for the next century.

Look closely

- Find the workers. Use them as a scale bar: how many people tall are the lock walls?
- Look for the railway tracks, cranes or cableways. How were concrete and materials moved around the site?
- Find the openings in the walls or floor. What might they be for in a lock that must fill and empty with water?
- Look at the size of the chamber. Could a battleship of the Great White Fleet fit inside?

Talk about it

1. Hallen's photographs were official records. What do they show proudly, and what hard parts of the work (disease, danger, long hours) might they leave out?
2. Why would a navy accept a limit on the width of its battleships just to fit this canal?
3. How does this picture show "technology overcoming geography" and also geography setting new limits?

PROJECT: MAHAN'S NETWORK: MAP IT AND WEIGH IT

This is the main project of the unit. You will map the network of bases Mahan argued for and the United States actually held by 1914, draw the reach of a coal-burning fleet from each base, find the gaps, and then judge the network as Mahan himself would: Is it complete? Is it defensible? Was it worth the cost?

You will need

- A large printed world map centered on the Pacific (at least 60 × 90 cm, 24 × 36 in), or a globe with removable dots
- A drawing compass or a loop of string with a pencil, a ruler and colored pencils
- Push pins or dot stickers in four colors
- Your Great White Fleet port table from Lesson 2.3 and the maps in this lesson
- A notebook for the evaluation

Steps

1. Mark the American bases of 1914 in blue: Norfolk, Key West, Guantánamo Bay, San Juan, the Panama Canal Zone, San Diego, Mare Island (San Francisco), Puget Sound, Pearl Harbor, Guam, Cavite (Manila Bay) and Tutuila (Pago Pago). Mark Midway and Wake as small dots: American, but not yet bases.
2. Mark the main bases of other powers in the Pacific in red: Hong Kong, Singapore, Esquimalt and Sydney (Britain), Tsingtao and the German islands of Micronesia (until 1914), and Yokosuka and Sasebo (Japan).
3. Choose a planning radius. Assume (for illustration) a fleet operating from a base can strike out and return within 1,500 nm. Using the map scale near each base, set your compass and draw a 1,500 nm circle around each blue base. (On a Mercator map,

measure the radius near the latitude of each base, since the scale changes with latitude.)

4. Shade the waters inside your circles. Where are the gaps? Which important sea lanes lie outside American reach?
5. Note which American bases lie inside another power's circle. Which would be hardest to defend?
6. Write a one-page evaluation with three headings: **Complete?** (does the network cover the routes Mahan cared about?), **Defensible?** (which bases are strong, which are hostages?), **Worth it?** (strategic gain against the costs in money, lives and the consent of the people who lived there).
7. Add one sentence of hindsight: In December 1941 Guam, Wake and the Philippines fell to Japan within months, while Hawaii and the canal held. What does that tell you about Mahan's warning that bases must be defensible?

Tips

- Keep the evaluation fair. Give Mahan's strategic reasoning its due before you weigh the costs.
- Use the stepping-stones diagram to check distances you measure on the map.
- Keep your map and evaluation: they become the core of the unit portfolio.

Check your work

- My map shows at least twelve American bases and six bases of other powers, correctly placed.
- I drew range circles with the scale measured correctly and shaded the covered waters.
- I identified at least two gaps and at least one base that would be hard to defend.
- My evaluation addresses completeness, defensibility and cost, with evidence.

MAP NOTEBOOK

1. Draw a cross-section of the Panama Canal from the Atlantic to the Pacific: Gatún Locks (three steps up), Gatún Lake, the Culebra Cut, Pedro Miguel Locks (one step down) and Miraflores Locks (two steps down). Label Gatún Lake at about 26 m (85 ft).
2. Copy the stepping-stones diagram and add the year the United States acquired each island: Midway (1867), Hawaii (1898), Guam (1898), Wake (1899), Tutuila (1899).
3. Trace Britain's chain of bases from Gibraltar to Hong Kong and write the distance you measure between each pair.

From history. When the Panama Canal opened on August 15, 1914, the first official ship through was the steamship SS *Ancon*, which had carried cement and supplies for the builders. The grand celebration the builders had hoped for never came: the opening was overshadowed by the news from Europe, where the First World War had begun less than three weeks earlier. Nature also had a say. Landslides in the Culebra Cut, where the canal crosses the continental divide, closed the canal for months in 1915 and 1916, a reminder

that even the greatest feat of engineering must still reckon with the ground it is dug through.

WORKED EXAMPLES

Example 1. The route from New York to San Francisco around Cape Horn is about 22,500 km (14,000 miles); through the Panama Canal it is about 9,500 km (5,900 miles). How much distance does the canal save, and what percent is that? How many days does each voyage take for a ship averaging 10 knots?

1. Saving: $22,500 - 9,500 = 13,000$ km (about 8,100 miles).
2. Percent saved: $13,000 \div 22,500 \times 100 = 58$ percent.
3. 10 knots = $10 \times 1.852 = 18.52$ km/h. Around the Horn: $22,500 \div 18.52 = 1,215$ hours = 50.6 days.
4. Through the canal: $9,500 \div 18.52 = 513$ hours = 21.4 days, plus about a day to pass through the locks. Saving: about 28 to 29 days.

Answer: The canal saves about 13,000 km (8,100 miles), or 58 percent of the distance, cutting the voyage from about 51 days to about 22 days at 10 knots. For the Navy it meant one fleet could shift between oceans in three weeks instead of two months, which is why Mahan saw the canal as concentration on a continental scale.

Example 2. Use the diagram. A coal-burning ship crosses from Honolulu to Guam. Compare the direct leg with the route by way of Midway and Wake. How much longer is the stepping-stone route, in nm and percent? What is the longest single leg on each route?

(Use the map or drawing “Compare the direct Honolulu–Guam leg with the route through Midway and Wake.” shown earlier in this lesson.)

1. Direct: 3,310 nm in one leg.
2. Stepping stones: $1,140 + 1,030 + 1,310 = 3,480$ nm.
3. Extra distance: $3,480 - 3,310 = 170$ nm; $170 \div 3,310 \times 100 = 5.1$ percent.
4. Longest leg: direct route 3,310 nm; stepping-stone route 1,310 nm (Wake to Guam).

Answer: The stepping-stone route is only about 170 nm (5 percent) longer, but its longest leg is 1,310 nm instead of 3,310 nm, less than half. A ship (or, later, an aircraft) with a range of 1,500 nm could cross by the islands but never directly. That is why tiny islands such as Midway and Wake mattered far beyond their size.

Example 3. Assume (for illustration) a battleship of 1900 can steam 4,500 nm at 10 knots on full bunkers. San Francisco to Manila is about 6,050 nm by great circle. Can it go directly? Can it go by way of Honolulu alone (2,080 nm, then about 4,600 nm to Manila)? By way of Honolulu and Guam (2,080, 3,310 and 1,380 nm)?

(Use the map or drawing “Check each leg against the ship’s range.” shown earlier in this lesson.)

1. Direct: 6,050 nm is more than 4,500 nm. Not possible without coaling at sea.
2. Via Honolulu: first leg 2,080 nm is fine, but the second leg, about 4,600 nm, exceeds 4,500 nm. Not possible, and no captain would sail with zero reserve.
3. Via Honolulu and Guam: legs of 2,080, 3,310 and 1,380 nm are all under 4,500 nm. Possible.
4. Reserve on the longest leg: $4,500 - 3,310 = 1,190$ nm, about 26 percent of full range, enough for bad weather or a detour.

Answer: Only the route with both Honolulu and Guam works for this ship, with a safe reserve of about 1,190 nm on the longest leg. In 1898 the United States gained both Hawaii and Guam. Mahan’s “land birds” could now fly to Asia.

PRACTICE

1. **EASY** Mahan wrote that without bases abroad, American warships in war would be “like land birds, unable to fly far from their own shores.” What did he mean, and what did he say the government should do?
2. **EASY** When did the United States gain the right to use Pearl Harbor, and when and how was Hawaii annexed?
3. **EASY** Tell briefly how Guam became American in 1898.
4. **EASY** When did the Panama Canal open? Give the width and length of its original lock chambers in metric and U.S. units.
5. **MEDIUM** USS *Oregon* steamed about 14,000 miles from San Francisco to the Caribbean in 66 days in 1898. What was her average speed in mph and in knots, counting all days?
6. **MEDIUM** The Gatún Locks raise a ship about 26 m (85 ft) in three equal steps. How much does each step lift, in meters and feet? On the Pacific side, the ship is lowered in one step at Pedro Miguel and two at Miraflores. How many lock steps does a ship pass through in all?
7. **MEDIUM** An *Iowa*-class battleship was 108 ft 2 in wide; the lock is 110 ft wide. How much room was left on each side, in inches and centimeters, if she were exactly centered?
8. **MEDIUM** Use the diagram. A ship has a range of 2,500 nm. Can it go from San Francisco to Manila through Honolulu, Midway, Wake and Guam? Can it go if Midway and Wake are not available?

(Use the map or drawing “Use this diagram for Problem 8.” shown earlier in this lesson.)

9. **HARD** Guam has an area of about 544 km² (210 sq mi) and Oahu about 1,545 km² (597 sq mi). How many times larger is Oahu? Both are tiny next to the Pacific Ocean.

Explain in one or two sentences why Mahan valued such small islands.

10. **HARD** Use the world map. List, in order, the British bases a ship would pass on the route from Gibraltar through the Suez Canal to Hong Kong.
(Use the map or drawing "Use this map for Problem 10." shown earlier in this lesson.)
11. **HARD** Explain in three or four sentences Mahan's warning that a weak base can be a liability rather than an asset.
12. **CHALLENGE** In 1898 many Americans, including former President Grover Cleveland, Andrew Carnegie and Mark Twain, opposed taking overseas islands. Write a paragraph presenting the strongest argument of Mahan's side and the strongest argument of the critics of the time, then give your own reasoned judgment.

COMMON MISTAKES

- Thinking any island base is an asset. Mahan insisted bases be defensible; a weak, distant base can be a hostage that drags the fleet away from its main task.
- Thinking oil ended the need for bases. Oil extended range and allowed refueling at sea, but fleets still needed ports for ammunition, repairs, dry docks and supplies.
- Forgetting the human cost. The canal and the island acquisitions came at a real price in lives and in the consent of the peoples affected, and Americans argued about that price at the time.

Make it a game • Stepping Stones. Draw a long strip of paper as the Pacific, with San Francisco at one end and Manila at the other, and mark Honolulu, Midway, Wake and Guam at distances to scale (1 cm = 100 nm works well). Each player gets a "ship" paper clip and secretly draws a range card: 1,200, 1,500, 2,500 or 3,500 nm. Players take turns hopping from stop to stop; a hop longer than your range strands you. Before each round, one player may "capture" an island and remove it for that round. Score 3 points for reaching Manila. Discuss afterward which islands were worth most and why.

Scripture. "For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it?" (Luke 14:28, KJV)

The French began the Panama canal in 1881 and failed; the Americans finished it in 1914 only after counting the cost far more carefully, especially in fighting disease. The verse also applies to bases: Mahan warned that a nation should hold only the outposts it can truly defend. Wise counsel counts the full cost, in money, lives and justice, before building.

Practice answers

1. Steam warships depend on coal and repairs, so without friendly ports abroad they could not operate far from home in war. He said providing "resting-places" where they could coal and repair would be one of the first duties of a government that wanted sea power.
2. The right to use Pearl Harbor as a coaling and repair station came in an 1887 treaty with the Kingdom of Hawaii. Hawaii was annexed by a joint resolution of Congress in July 1898, during the Spanish-American War.

3. On June 20, 1898, the cruiser *Charleston* under Captain Henry Glass entered Apra Harbor and fired at the fort. The Spanish officials, unaware of the war, thought it was a salute; the governor surrendered the next day. Spain ceded Guam to the United States in the Treaty of Paris (December 1898).
4. August 15, 1914. The chambers are 33.5 m (110 ft) wide and 305 m (1,000 ft) long.
5. $66 \times 24 = 1,584$ hours. $14,000 \div 1,584 = 8.8$ mph. $8.8 \div 1.151 = 7.7$ knots.
6. $26 \div 3 = 8.7$ m per step; $85 \div 3 = 28.3$ ft. In all, $3 + 1 + 2 = 6$ steps.
7. 110 ft = 1,320 in; 108 ft 2 in = 1,298 in. Total gap = 22 in; each side = 11 in (about 28 cm).
8. With all stops: legs of 2,080, 1,140, 1,030, 1,310 and 1,380 nm are all under 2,500 nm, so yes. Without Midway and Wake the Honolulu-Guam leg is 3,310 nm, more than 2,500 nm, so no.
9. $1,545 \div 544 = 2.8$ times larger ($597 \div 210 = 2.8$). Mahan valued them for their position, not their size: a harbor with coal and repair shops in the middle of a vast ocean extends the reach of every ship that can use it and denies that reach to rivals.
10. Gibraltar, Malta, Alexandria (near the canal's Mediterranean end), Aden, Trincomalee (Ceylon), Singapore, Hong Kong.
11. A base is useful only if it can hold out on its own while the fleet does its real work of seeking out the enemy fleet. If it is weakly defended, the enemy can threaten it, and the fleet must either abandon it or tie itself down guarding it, breaking the principle of concentration. A captured base also gives its coal and harbor to the enemy. So Mahan preferred a few strongly fortified bases to many weak ones.
12. Answers will vary. Mahan's side: in an age of steam, a nation with two long coasts and growing trade needed coaling stations and a canal to protect itself and its commerce; if the United States did not hold Hawaii or a Pacific base, a rival power would, and could threaten the west coast. The critics: governing distant peoples without their consent contradicted the principles of the Declaration of Independence; Hawaii's queen had been overthrown and Filipinos who wanted independence were fought in a costly war; distant islands would be expensive to defend and could draw the country into Asian wars. A good judgment weighs both, judges people by what they knew and believed in 1898, and may distinguish between cases (for example, the strategic case for Hawaii and the canal versus the far harder case of the Philippines).

2.5 WEIGHING MAHAN

OBJECTIVES

- Identify what Mahan got right about sea power, bases and trade, with evidence from the two world wars and the present (as of 2026).
- Explain how submarines and aircraft changed naval war, and why Mahan's dismissal of commerce raiding and his focus on the battleship proved mistaken.
- Weigh Mahan's ideas against his critics (Corbett, Mackinder, Kennedy) using prediction and counterexample, and support the judgment with calculations of convoy size, patrol gaps and striking range.

Warm-up. Make a quick balance: hang a coat hanger from a doorknob and hook a paper cup on each end with paper clips. Label one cup "Mahan was right" and the other "Mahan was wrong." From memory of this unit, write one fact on a slip of paper for each side and drop it in, adding one coin for a weak fact, two for a strong one. Which way does the hanger tip before you have studied this lesson? Keep it; you will use it again.

Watch. *What happened to the USS Arizona? (Pearl Harbor)* (Jared Owen, 14:41).

https://www.youtube.com/watch?v=WZI_g6WMbCk

After the story: look inside a battleship and see how airplanes sank the USS Arizona at Pearl Harbor, the same danger Billy Mitchell warned about in 1921.

Note: Captions were not available to check; preview it first. This is a careful 3D animation reviewed by naval historians, but it explains how 1,177 crewmen died aboard the Arizona, which may be hard for younger students.

Backup video. *Why did Japan Attack Pearl Harbor? (Short Animated Documentary)* (History Matters, 3:14). https://www.youtube.com/watch?v=9_e_1fNH2aI

With the big idea: watch why Japan chose to strike the American fleet at Pearl Harbor, and notice how oil and the Pacific sea lanes shaped that choice. Note: Captions were not available to check; preview it first. The channel sometimes uses light, joking narration.

KEY TERMS

unrestricted submarine warfare

Sinking merchant ships without warning, including neutral ships in declared zones.

Germany adopted it in February 1917 and again in the Second World War.

convoy

A group of merchant ships sailing together under the protection of warships, the main defense against submarines in both world wars.

aircraft carrier

A warship that carries, launches and recovers aircraft, which strike at ranges of hundreds of miles; it replaced the battleship as the main capital ship during the Second World War.

sea denial

Preventing an enemy from using the sea without being able to use it fully yourself, as submarines, mines and land-based aircraft can do.

limited command

Julian Corbett's idea that command of the sea is usually partial and local, in place and time, and that navies matter chiefly by what they make possible on land.

CORE IDEAS

The story. On July 21, 1921, off the Virginia capes, the same waters where de Grasse had fought in 1781, U.S. Army bombers under Brigadier General William "Billy" Mitchell attacked the former German battleship *Ostfriesland*. She had survived the Battle of Jutland and been handed over to the United States after the war. Admirals, generals and officials watched from a transport ship nearby. Heavy bombs exploding close alongside opened her hull, and soon after the final attack she rolled over and sank. Navy officers protested that the test proved little: the ship was anchored, empty, undefended and unable to repair damage. They were partly right. But twenty years later, aircraft would sink battleships that were fully manned, under way and shooting back. The test raised the question this lesson asks: how much of Mahan's thought survived the airplane and the submarine?

What Mahan got right. Much of his core held. The sea remained the great highway: as of 2026, more than 80 percent of world trade by volume still travels by sea, through the same straits and canals he studied. In both world wars, command of the sea decided what land power could do. In 1914-1918 the Royal Navy's blockade slowly starved Germany of food and materials, while Allied control of the Atlantic carried some two million American soldiers to France. In the Pacific war of 1941-1945, the fight was a Mahanian contest for fleets and bases: Midway, Guadalcanal, Saipan and Okinawa were fought over because they were harbors and airfields on the road to Japan. Bases mattered exactly as he had said. From the Mariana Islands, about 2,400 km (1,500 miles) from Tokyo, American bombers could reach Japan. His warning about defensibility also proved true: in December 1941 Guam fell within days and Wake within weeks, while fortified Hawaii and the Panama Canal held.

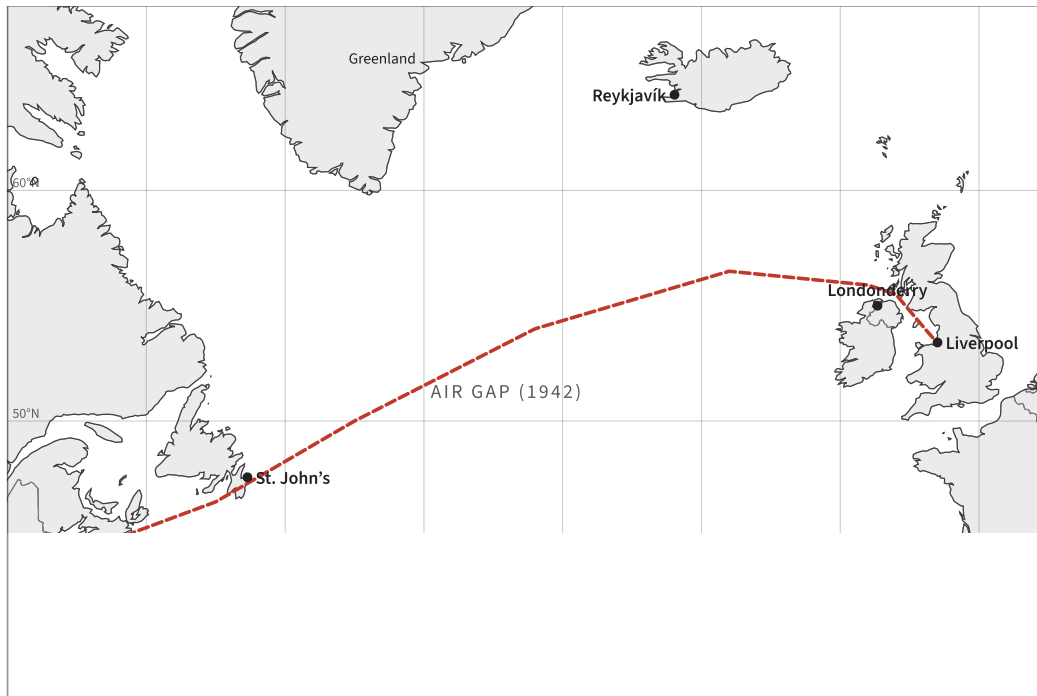
What submarines changed. Mahan judged that commerce raiding could not defeat a nation that held command of the sea. The submarine nearly proved him wrong twice. A U-boat could slip beneath a surface fleet it could not hope to fight. After Germany declared unrestricted submarine warfare in February 1917, U-boats sank more than 800,000 tons of Allied and neutral shipping in April alone, and Britain faced the possibility of starvation. The answer was the **convoy**, adopted in 1917. In the Second World War the Battle of the Atlantic lasted from 1939 to 1945; the Allies lost some 3,500 merchant ships, and Germany lost about 780 U-boats and most of their crews. Winston Churchill later wrote, "The only thing that ever really frightened me during the war was the U-boat peril." In the Pacific, American submarines sank more than half of all the Japanese merchant tonnage lost in the war and strangled the island nation's imports of oil, food and raw materials. Defenders of Mahan reply that convoys were simply command of the sea brought close around the merchant

ships, and that sea control finally won. Both points are fair; but the weapon Mahan dismissed came close to deciding a world war.

What airplanes changed. On November 11–12, 1940, a handful of British torpedo planes from the carrier *Illustrious* crippled the Italian battle fleet in harbor at Taranto. On December 7, 1941, Japanese carrier aircraft struck the U.S. fleet at Pearl Harbor. Three days later, on December 10, Japanese land-based bombers sank the British battleship *Prince of Wales* and battlecruiser *Repulse* off Malaya, the first capital ships sunk by aircraft alone while under way on the open sea. At the Battle of the Coral Sea in May 1942, for the first time, the opposing fleets fought without ever sighting each other. At Midway on June 4, 1942, American carrier planes sank four Japanese carriers. Notice the irony: Midway was the kind of decisive fleet battle Mahan prized, won by concentration, but fought with aircraft at ranges of hundreds of miles instead of guns at a few miles. The carrier replaced the battleship. Sea control became three-dimensional, reaching up into the air and down beneath the waves, and land-based aircraft could now deny the sea near any coast to surface ships.

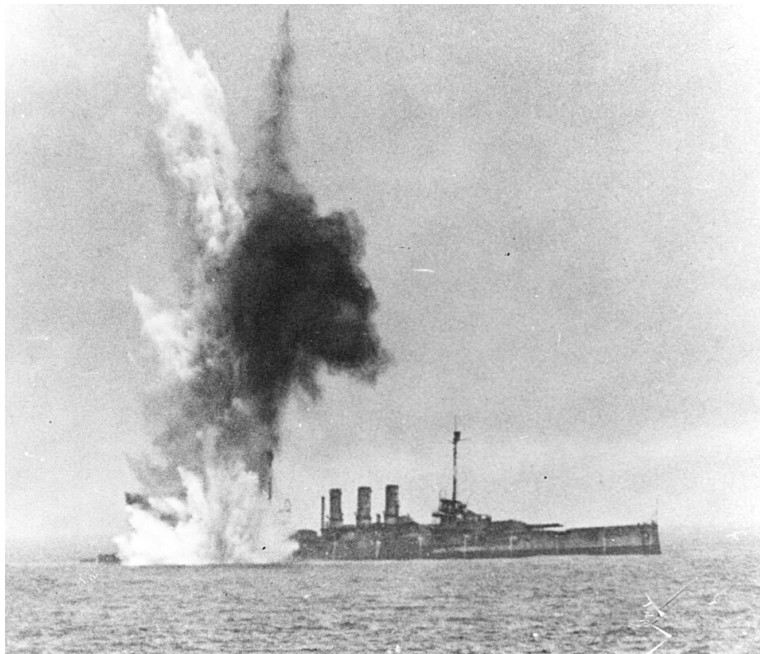
The critics. The British historian Julian Corbett, in *Some Principles of Maritime Strategy* (1911), argued that command of the sea is usually partial and temporary, and that because people live on land, wars are decided by what armies do ashore, or by what a fleet makes it possible for an army to do. Halford Mackinder argued in 1904 that railways were opening the great interior of Eurasia to land power that could ignore the sea, the subject of Unit 3. Paul Kennedy argued that Britain's naval mastery rested on its industry and finance more than on any naval principle. Others note that Mahan built general rules from a few British cases, and that Germany's fleet, built on his advice, failed for reasons his own first element explained. As of 2026, strategists debate whether long-range missiles, drones and satellites now make large surface ships vulnerable near a hostile coast; informed experts disagree, and the question is open.

The big idea: weighing Mahan. Use the tests from Lesson 1.5. *Prediction:* Mahan predicted that the canal and Pacific bases would matter, that the United States would need a navy to match its trade, and that command of the sea would shape great wars; all came true. *Counterexample:* he underrated the submarine, could not foresee the airplane, and fixed on the battleship and the decisive battle. What endures is his geography: sea lanes, choke points, bases and the bond between trade and naval power. What faded is his technology. Mahan himself was a devout Christian, and in 1909 he published a book of devotional reflections, *The Harvest Within*. He would likely have agreed with the psalm that stands over every strategy in this course: "Except the LORD keep the city, the watchman waketh but in vain" (Psalm 127:1).



The North Atlantic convoy route and the mid-ocean “air gap” beyond the reach of land-based patrol aircraft in 1942. The gap was closed in 1943 by very-long-range aircraft and escort carriers.

PICTURE STUDY



A 2,000-Pound Bomb Bursts Beside the Former German Battleship Ostfriesland, U.S. Army Air Service photographer, July 21, 1921 · Black-and-white aerial photograph · Naval History and Heritage Command, Washington, D.C. (NH 111328)

This photograph was taken from the air during Billy Mitchell’s bombing tests off the Virginia capes. The great columns of white water are bombs exploding beside the *Ostfriesland*, a battleship that had fought at Jutland and was thought to be nearly unsinkable. Mitchell made

sure the tests were photographed and filmed, because he meant to persuade the public, not only the admirals.

The picture is evidence, but it must be read with care, as all evidence should. The ship was anchored and unmanned, with no crew to fight fires or pump out water, and no guns firing at the planes. Navy officers pointed this out at the time. Yet the photograph also shows something that could not be argued away: a few airplanes costing a small fraction of a battleship had sunk one.

Look closely

- Find the battleship and the columns of water. Are the bombs hitting the ship or exploding beside it?
- Look at the size of the splashes compared with the ship. Why might a near miss be as dangerous as a hit?
- Is the ship moving? What would be different if she were steaming at speed and firing back?
- Where was the photographer? What does that tell you about how the test was organized?

Talk about it

1. Mitchell wanted to prove that air power had made the battleship obsolete. What does this photograph prove, and what does it not prove?
2. How would Mahan have answered if he had lived to see this photograph (he died in 1914)?
3. Compare this picture with the Great White Fleet photograph of 1907. What changed in naval power in fourteen years?

PROJECT: MAHAN ON THE BALANCE: AN EVIDENCE SCALE AND A FORMAL DEBATE

Historians weigh ideas the way a merchant weighs goods: piece by piece, with honest weights. You will build a balance scale, turn each piece of evidence from this unit into a weighted card, and see which way the evidence tips. Then you will hold a short formal debate and write your own verdict on Mahan.

You will need

- A sturdy coat hanger or a ruler balanced on a pencil, two paper cups and string or paper clips
- Washers, coins or marbles of equal weight (about 30)
- Twenty index cards and a marker
- Your notes, maps and project work from Lessons 2.1–2.4
- A timer

Steps

1. Label the cups “Mahan’s ideas hold” and “Mahan’s ideas fail.” Hang them from the ends of the hanger and check that the empty scale balances.
2. Write ten evidence cards for each side from the whole unit, each with a specific fact, place and date (for example, “Yorktown 1781: brief French sea control decides the war,” or “April 1917: U-boats sink over 800,000 tons”).
3. Give each card a weight from 1 to 3 washers, using three tests: Is the fact certain? Does it bear directly on one of Mahan’s claims? Is it typical or an exception? Write the weight and your reason on the back.
4. Drop the cards and their washers into the cups one at a time, alternating sides. Record the total weight on each side.
5. Hold a formal debate (opening 3 minutes each, rebuttal 2 minutes each, closing 1 minute each) on the resolution: “Mahan’s ideas about sea power remain sound today.” One side must argue each position regardless of personal opinion.
6. Write a 600-word verdict: which parts of Mahan endure, which do not, and why. Include at least one calculation from this unit and one primary-source quotation.

Tips

- A strong card names a place, a date and a number. “Submarines were important” is weak; “U.S. submarines sank more than half of Japan’s lost merchant tonnage” is strong.
- Weigh honestly. If a card hurts the side you prefer, it still gets its full weight.
- Separate Mahan’s geography (routes, bases, choke points) from his technology (the battleship) when you write your verdict.

Check your work

- I built a working balance and recorded the weights on each side.
- I wrote twenty evidence cards, each with a fact, place, date and reasoned weight.
- I argued my assigned side in the debate using evidence from my cards.
- My written verdict is balanced, uses a calculation and a quotation, and reaches a clear judgment.

MAP NOTEBOOK

1. Copy the North Atlantic map. Draw circles around St. John’s, Reykjavík and Londonderry to show patrol aircraft reach and shade the air gap left in the middle.
2. Draw two circles to the same scale: a battleship’s gun range (about 20 nm) and a carrier’s strike radius (about 200 nm). Label each and write the ratio of their areas.
3. Make a two-column chart, “Mahan’s geography” and “Mahan’s technology,” and list three ideas under each. Star the ones you judge still hold as of 2026.

From history. Alfred Thayer Mahan died in Washington, D.C., on December 1, 1914, four months after the outbreak of the First World War, the great naval war his ideas had helped to shape. An order from President Woodrow Wilson asking officers, active and

retired, not to comment publicly on the war meant that the most famous naval writer in the world spent its opening weeks largely silent. Besides his histories he left a book of Christian reflection, *The Harvest Within: Thoughts on the Life of the Christian* (1909), in which the strategist turned from the command of the sea to the command of the soul.

WORKED EXAMPLES

Example 1. Operations researchers in the Second World War noticed that the escorts a convoy needs depend on the length of its perimeter, while the number of merchant ships depends on its area. For a roughly circular convoy, area grows with the number of ships N , so the perimeter grows with $\sqrt{N}$. Suppose (for illustration) a 40-ship convoy needs 6 escorts. How many would an 80-ship convoy need? Compare escorts per merchant ship.

1. Doubling the ships doubles the area, so the radius and perimeter grow by $\sqrt{2} = 1.414$.
2. Escorts for 80 ships: $6 \times 1.414 = 8.5$, so 9 escorts.
3. Escorts per ship, 40-ship convoy: $6 \div 40 = 0.15$.
4. Escorts per ship, 80-ship convoy: $9 \div 80 = 0.11$, about 25 percent fewer per ship.

Answer: About 9 escorts for 80 ships instead of 6 for 40. Large convoys needed fewer escorts per ship, and the ocean was so vast that a single large convoy was hardly easier for U-boats to find than a small one. This reasoning helped persuade the British to sail larger convoys in 1943.

Example 2. Use the map. St. John's, Newfoundland, is about 1,730 nm (3,200 km) from Londonderry in Northern Ireland. Suppose (for illustration) land-based patrol aircraft in 1942 could cover about 600 nm out from each end. How wide was the gap in the middle with no air cover? How long did an 8-knot convoy spend crossing it?

(Use the map or drawing "The air gap lay in mid-ocean, beyond the reach of aircraft from Newfoundland, Ic" shown earlier in this lesson.)

1. Covered from both ends: $600 + 600 = 1,200$ nm.
2. Gap: $1,730 - 1,200 = 530$ nm (982 km, 610 miles).
3. Time in the gap: $530 \div 8 = 66$ hours.
4. Days: $66 \div 24 = 2.8$ days.

Answer: A gap of about 530 nm (980 km, 610 miles), which a slow convoy needed nearly three days to cross. U-boat packs gathered in exactly this "air gap." Aircraft from Iceland narrowed it, and very-long-range aircraft and small escort carriers closed it in 1943, when U-boat losses soared.

Example 3. A battleship's heavy guns could reach roughly 20 nm. In 1942, carrier aircraft could strike about 200 nm from their ship (illustrative round figures). How many times greater is the carrier's radius? How many times greater is the area of sea it can strike? Give both areas.

1. Radius ratio: $200 \div 20 = 10$.
2. Battleship area: $\pi \times 20^2 = 3.1416 \times 400 = 1,257$ square nm.
3. Carrier area: $\pi \times 200^2 = 3.1416 \times 40,000 = 125,664$ square nm.
4. Area ratio: $125,664 \div 1,257 = 100$, which equals 10^2 .

Answer: The carrier's reach is about 10 times the battleship's in radius and about 100 times in area (about 125,700 square nm against 1,260). That is why fleets at the Coral Sea and Midway fought without ever seeing each other, and why the carrier replaced the battleship as the heart of the fleet.

PRACTICE

1. **EASY** What happened on July 21, 1921, off the Virginia capes, and why did Navy officers say it proved less than it seemed?
2. **EASY** Name three things Mahan got right, with one example of each.
3. **EASY** Who was Julian Corbett, and what was his main criticism of a Mahan-style view of sea power?
4. **EASY** What was new about the Battle of the Coral Sea (May 1942), and what happened at Midway (June 4, 1942)?
5. **MEDIUM** In April 1917, U-boats sank more than 800,000 tons of shipping. If the average ship sunk was 4,000 tons (for illustration), how many ships is that, and how many per day?
6. **MEDIUM** The Battle of the Atlantic ran from September 1939 to May 1945. About how many months is that? If the Allies lost about 3,500 merchant ships, what was the average loss per month?
7. **MEDIUM** The Mariana Islands are about 2,400 km from Tokyo. Convert to miles and nautical miles. How far is a round trip for a bomber, in km?
8. **MEDIUM** If a carrier's aircraft can strike 250 nm away, what area of sea lies within its reach? How many times the area of a battleship with a 20 nm gun range?
9. **HARD** Using the perimeter rule (escorts grow with $\sqrt{N}$), if a 30-ship convoy needs 5 escorts, how many does a 120-ship convoy need? Compare escorts per ship.
10. **HARD** Use the map. If patrol aircraft could reach 700 nm from St. John's and from Londonderry (1,730 nm apart), how wide would the air gap be? How long would a 9-knot convoy take to cross it?
(Use the map or drawing "Use this map for Problem 10." shown earlier in this lesson.)
11. **HARD** In three or four sentences, explain how the American submarine campaign against Japan both contradicts and supports Mahan.

12. **CHALLENGE** Write a well-organized paragraph answering: “Was Mahan more right than wrong?” Use at least one prediction, one counterexample and one critic by name, and keep your judgment fair to the standards and knowledge of his own time.

COMMON MISTAKES

- Concluding that because the battleship became obsolete, Mahan’s ideas did too. His technology dated; much of his geography (routes, bases, choke points) did not.
- Treating the *Ostfriesland* test as complete proof. It showed aircraft could sink a battleship, but under ideal conditions; the full proof came in 1940–1942.
- Judging Mahan for failing to foresee aircraft and practical submarines that did not exist when he wrote in 1890. Weigh him by the evidence available to him, then test his ideas against what came later.

Make it a game • Right, Wrong or Changed?. Prepare twenty slips, each stating one of Mahan’s claims or predictions (for example, “Commerce raiding cannot win a war,” “A canal will let one fleet serve two oceans,” “Weak bases are hostages,” “The battleship is the heart of the fleet”). A player draws a slip and must vote Right, Wrong or Changed by technology, then name one piece of evidence with a place and date. The other players may challenge with a counterexample. A vote backed by evidence scores 1 point; surviving a challenge scores 2. End by tallying which category has the most slips, and discuss what that tells you about Mahan.

Scripture. “Except the LORD build the house, they labour in vain that build it: except the LORD keep the city, the watchman waketh but in vain.” (Psalm 127:1, KJV)

This verse is the faith thread of the whole course. Mahan’s fleets, bases and canals were watchmen on the walls of nations, and good watchmen are needed. Yet the battleships he trusted were overtaken in a single generation. Strategy is a real duty, but it is never the final safety of any people.

Practice answers

1. Army bombers under Billy Mitchell sank the former German battleship *Ostfriesland* with heavy bombs. Officers objected that she was anchored, unmanned, undefended and unable to repair damage, unlike a warship in battle.
2. Any three, for example: the sea remained the main highway of trade (more than 80 percent of world trade by volume goes by sea as of 2026); command of the sea shaped the world wars (the blockade of Germany, two million Americans carried to France); bases mattered (the Marianas as bomber bases against Japan); bases must be defensible (Guam and Wake fell in 1941, Hawaii held); the canal let one fleet serve two oceans.
3. A British naval historian who wrote *Some Principles of Maritime Strategy* (1911). He argued that command of the sea is usually partial and temporary, and that since people live on land, wars are decided by what armies do ashore or by what the fleet makes it possible for armies to do.

4. At the Coral Sea, for the first time, the opposing fleets fought entirely with aircraft and never sighted each other. At Midway, American carrier planes sank four Japanese carriers, a decisive blow that turned the Pacific war.
5. $800,000 \div 4,000 = 200$ ships; April has 30 days, so $200 \div 30 \approx 6.7$ ships per day.
6. September 1939 to May 1945 is 5 years and 8 months = 68 months. $3,500 \div 68 \approx 51$ ships per month.
7. $2,400 \div 1.609 = 1,492$ miles; $2,400 \div 1.852 = 1,296$ nm. Round trip = 4,800 km (about 2,980 miles).
8. $\pi \times 250^2 = 3.1416 \times 62,500 = 196,350$ square nm. Battleship: $\pi \times 20^2 = 1,257$ square nm. Ratio = $196,350 \div 1,257 \approx 156$ (which equals $(250 \div 20)^2 = 12.5^2 = 156$).
9. $120 \div 30 = 4$ times the ships; $\sqrt{4} = 2$, so $5 \times 2 = 10$ escorts. Escorts per ship: $5 \div 30 = 0.167$ versus $10 \div 120 = 0.083$, half as many per ship.
10. $1,730 - (700 + 700) = 330$ nm (611 km, 380 miles). Time = $330 \div 9 = 36.7$ hours, about 1.5 days.
11. It contradicts him because it was commerce raiding, which he said could not decide a war, and it strangled Japan's imports of oil, food and raw materials, sinking more than half of Japan's lost merchant tonnage. It supports him because it worked only as part of a larger American command of the sea and air, built on fleets and island bases, and because Japan, an island power dependent on sea trade, was exactly the kind of nation Mahan said lives or dies by the sea lanes. Technology changed the weapon, while Mahan's geography of trade routes remained true.
12. Answers will vary. A strong answer: Mahan was right on the large geographic questions: sea lanes, bases, choke points, the canal and the link between trade and naval power, and his predictions about the Panama Canal, Pacific bases and the role of sea control in great wars came true. He was wrong about commerce raiding, as the U-boat campaigns and the American submarine war against Japan showed, and his battleship-centered view could not anticipate aircraft, which made the carrier the new capital ship. Corbett rightly argued that sea power matters chiefly by what it enables on land, and Kennedy that industry underlies naval strength. Judged by what could be known in 1890, before practical submarines and airplanes existed, his errors were understandable, and his geography still repays study, so on balance he was more right than wrong, provided his ideas are tested rather than accepted as doctrine.

UNIT 2 TEST

Answer each question. Show your work for every calculation, give units, and give distances in nautical miles and in kilometers or statute miles where asked (1 nm = 1.852 km = 1.151 miles). Use complete sentences for explanations. A calculator is allowed. The test is worth 100 points.

1. (6 pts) State Mahan's main argument in *The Influence of Sea Power upon History* (1890) in two or three sentences, including his chain of three links and what he meant by command of the sea.
2. (7 pts) Adam Smith wrote that a wagon with 2 men and 8 horses carried about 4 tons between London and Edinburgh in about six weeks. Suppose a ship with 6 men carries 150 tons in the same time. How many wagons, men and horses would match the ship? How many tons per man does each carry, and what is the ratio?
3. (7 pts) De Grasse sailed from Cap-Français (19.8° N) to the Chesapeake capes (37.0° N). Find the north-south distance (the difference in latitude) in nm and km, a lower limit on his voyage. If his real route was 1,300 nm and he averaged 2.5 knots, how many days did it take? How many days passed from the Battle of the Chesapeake (September 5, 1781) to the surrender at Yorktown (October 19, 1781), and why did Mahan treat the battle as decisive?
4. (6 pts) List Mahan's six elements of sea power in order, and sort them into those given mainly by geography and those that depend mainly on people.
5. (8 pts) The sea route from Brest to Toulon around Spain is about 1,650 nm; the straight-line distance overland is about 1,000 km. Convert the sea route to km and miles, find the ratio to the overland distance, and find the time at 6 knots. Explain what this shows about France's position.
6. (6 pts) A signal station stands 200 m above the sea on the Rock of Gibraltar. Using $d = 3.57 \sqrt{h}$ km, how far is its horizon in km, miles and nm? Can it see across the 14 km Strait at its narrowest?
7. (7 pts) The Great White Fleet steamed about 43,000 nm in 434 days. Find its average distance per day and overall average speed. If the ships were actually under way for about 190 days, what was their average speed while steaming? What did the voyage reveal about American dependence on foreign colliers?
8. (7 pts) Explain how Kaiser Wilhelm II and Admiral Tirpitz applied Mahan's ideas, how Britain responded, and why Mahan's own first element explains the German fleet's failure.
9. (6 pts) A dreadnought making 21 knots chases a pre-dreadnought making 17 knots with a 16 nm head start. How long until it catches up? Why did the *Dreadnought* make the Great White Fleet second-class before it sailed?
10. (8 pts) New York to San Francisco is about 22,500 km around Cape Horn and about 9,500 km through the Panama Canal. Find the distance saved (km, miles and percent) and the voyage times at 12 knots. Explain why Mahan valued the canal for the Navy.

11. (8 pts) The Pacific legs are: San Francisco–Honolulu 2,080 nm; Honolulu–Midway 1,140; Midway–Wake 1,030; Wake–Guam 1,310; Guam–Manila 1,380; and Honolulu–Guam direct 3,310. A ship has a range of 1,200 nm. Which legs can it make and which can it not? How much longer is Honolulu–Midway–Wake–Guam than the direct leg?
12. (6 pts) Summarize, factually, how the United States gained Pearl Harbor rights, Hawaii and Guam, and name one argument made against overseas expansion by Americans at the time.
13. (8 pts) St. John’s and Londonderry are about 1,730 nm apart. If patrol aircraft reach 550 nm from each end, how wide is the air gap, and how long does a 7-knot convoy take to cross it? Then, using the rule that escorts grow with $\sqrt{N}$, if a 50-ship convoy needs 7 escorts, how many does a 200-ship convoy need?
14. (10 pts) Essay (about 300 words): Weigh Mahan. Explain at least two things he got right and two things submarines and airplanes changed, refer to at least one critic by name, and reach a reasoned judgment that is fair to the knowledge of his own time.

UNIT PROJECT: MAHAN’S WORLD: THE NAVAL BASES OF 1900, MAPPED AND WEIGHED

Make a large hand-drawn or carefully annotated world map of the main naval bases about 1900, color-coded by nation (Britain, France, Germany, Russia, Japan, the United States), with an inset of Europe’s home bases. On it, trace the route of the Great White Fleet, mark the Panama Canal and the Pacific stepping stones with their distances, and draw range circles from the American bases showing the reach of a coal-burning fleet. Beside the map, include your sea-power scorecards from Lesson 2.2, your Great White Fleet distance table from Lesson 2.3, and your network evaluation from Lesson 2.4.

Finish with a written evaluation of 800 to 1,000 words titled “Mahan’s Ideal Network: Sound or Flawed?” that judges whether the American network of 1914 met Mahan’s own tests (complete, defensible, worth the cost), what the world wars later proved about it, and which of Mahan’s ideas you judge still hold as of 2026. Present at least one critic’s view fairly and give real costs and achievements their due.

- **Map accuracy:** Bases, routes, canal and stepping stones are correctly placed and labeled; range circles use the map scale correctly; the key and nation colors are clear.
- **Quantitative work:** Distance tables, voyage times, range checks and scorecards are complete, with calculations shown and units in nautical miles and kilometers or miles.
- **Reasoned evaluation:** The essay applies Mahan’s own tests, uses evidence from 1890–1945 and the present, presents at least one critic fairly, and reaches a clear, balanced judgment.
- **Historical honesty and care:** Real achievements and real wrongs are stated plainly and judged by the standards of the time; quotations are exact; the whole portfolio is neat, organized and easy to read.

Answer key

1. The sea is a great highway and common, and nations grow wealthy through production, shipping and colonies or overseas ports that receive and shelter the ships. A navy exists to

protect that chain and break the enemy's; its first aim in war is command of the sea, control of the main routes, won by defeating or bottling up the enemy's concentrated battle fleet. Commerce raiding alone cannot defeat a nation that holds that command.

2. $150 \div 4 = 37.5$, so 38 wagons; $38 \times 2 = 76$ men; $38 \times 8 = 304$ horses. Ship: $150 \div 6 = 25$ tons per man. Wagon: $4 \div 2 = 2$ tons per man. Ratio $25 \div 2 = 12.5$.
3. $(37.0 - 19.8) \times 60 = 17.2 \times 60 = 1,032$ nm (1,911 km). $1,300 \div 2.5 = 520$ hours $\div 24 = 21.7$ days. September 5 to October 19 = $25 + 19 = 44$ days. Although the battle itself was indecisive, Graves withdrew, France held local command of the sea, Cornwallis could not be relieved or evacuated by sea, and he surrendered to the armies besieging him.
4. Geographical position; physical conformation; extent of territory; number of population; national character; character of the government. Geography: position, physical conformation, extent. People: population (especially the seafaring part), national character, government.
5. $1,650 \times 1.852 = 3,056$ km; $1,650 \times 1.151 = 1,899$ miles. Ratio $\approx 3,056 \div 1,000 \approx 3.1$. Time = $1,650 \div 6 = 275$ hours = 11.5 days. France had to divide its navy between two coasts, and uniting the fleets meant a long voyage past British-held Gibraltar where they could be seen and intercepted; position worked against concentration.
6. $\sqrt{200} = 14.14$; $d = 3.57 \times 14.14 = 50.5$ km = 31.4 miles = 27.3 nm. Yes: 50.5 km is far more than 14 km, so in clear weather it can watch the whole strait.
7. $43,000 \div 434 = 99$ nm per day; $99 \div 24 = 4.1$ knots overall. Under way: $43,000 \div (190 \times 24) = 43,000 \div 4,560 = 9.4$ knots. The United States had few coaling stations abroad and a small merchant fleet, so much of the coal was carried by chartered foreign colliers; in war these could have been withheld, leaving the fleet stranded, just as Mahan had warned.
8. Wilhelm read Mahan eagerly and had copies put on his ships; Tirpitz built a concentrated battle fleet under the Navy Laws of 1898 and 1900 (goal of 38 battleships), using the risk theory. Britain answered with the two-power standard, HMS *Dreadnought* (1906), a building race and closer ties with France and Russia. Germany's coast faces only the North Sea, and Britain lies across both exits (the Strait of Dover and the gap between Scotland and Norway); from Scapa Flow the Grand Fleet could block the north without fighting, so after Jutland (1916) the German fleet stayed mostly in port.
9. Closing speed $21 - 17 = 4$ knots; $16 \div 4 = 4$ hours. The *Dreadnought* (1906) had ten 12-inch guns (eight on a broadside, twice the four of a pre-dreadnought) and turbines for 21 knots, so she could both catch and outgun any older battleship, including all sixteen of the Great White Fleet.
10. Saved: $13,000$ km = 8,080 miles (about 8,100); $13,000 \div 22,500 = 58$ percent. 12 knots = 22.22 km/h. Around the Horn: $22,500 \div 22.22 = 1,013$ hours = 42.2 days. Through the canal: $9,500 \div 22.22 = 428$ hours = 17.8 days (plus about a day for the locks). The canal let a single fleet move between the Atlantic and the Pacific in weeks instead of months, applying his principle of concentration to both coasts, and it turned the Caribbean into a great highway that the Navy had to guard.
11. It can make Honolulu-Midway (1,140) and Midway-Wake (1,030). It cannot make San Francisco-Honolulu (2,080), Wake-Guam (1,310), Guam-Manila (1,380) or Honolulu-Guam direct (3,310). Stepping-stone route: $1,140 + 1,030 + 1,310 = 3,480$ nm, which is 170 nm (about 5 percent) longer than 3,310 nm.
12. An 1887 treaty with the Kingdom of Hawaii gave the right to use Pearl Harbor as a coaling and repair station. In 1893 American residents and businessmen overthrew Queen Lili'uokalani with U.S. marines standing by; President Cleveland judged the American role improper and refused annexation, but Congress annexed Hawaii by joint resolution in July 1898. The cruiser *Charleston* took Guam in June 1898, and Spain ceded it in the Treaty of Paris (December 1898). Critics such as Cleveland, Carnegie and Mark Twain argued that

ruling peoples without their consent contradicted American founding principles and that distant islands would be costly to defend.

13. Gap = $1,730 - 1,100 = 630$ nm (1,167 km, 725 miles). Time = $630 \div 7 = 90$ hours = 3.75 days. $200 \div 50 = 4$; $\sqrt{4} = 2$; $7 \times 2 = 14$ escorts (0.07 per ship instead of 0.14).

14. Answers will vary. A full-credit essay: (1) credits Mahan's lasting geography: the sea as the main highway of trade (over 80 percent of world trade by volume as of 2026), the importance of bases, choke points and the canal, the role of sea control in both world wars (the blockade of Germany, carrying American armies to France, the island war in the Pacific), and his warning that bases must be defensible (Guam and Wake fell in 1941, Hawaii and Panama held); (2) shows what changed: U-boats nearly starved Britain in 1917 and in the Battle of the Atlantic, and U.S. submarines strangled Japan, refuting his dismissal of commerce raiding; aircraft at Taranto, Pearl Harbor, off Malaya, at the Coral Sea and Midway displaced the battleship with the carrier; (3) names a critic such as Corbett (limited command; wars decided on land), Mackinder (railways and land power) or Kennedy (industry beneath sea power); (4) reaches a balanced judgment that separates his enduring geography from his dated technology and does not fault him for failing to foresee weapons that did not exist in 1890.

MACKINDER AND THE HEARTLAND

In 1890 Alfred Thayer Mahan told the world that sea power was the key to history. Fourteen years later an Oxford geographer, Halford Mackinder, rose before the Royal Geographical Society in London and argued the opposite case. The age of easy sea power that began with Columbus was ending, he said, and the deepest fact of history was the great interior of Eurasia, which ships could not reach and which railways were now opening to land power. He called it the **pivot area**, and in 1919 the **Heartland**, and he summed up his warning in the most famous sentence in geopolitics: “Who rules East Europe commands the Heartland; Who rules the Heartland commands the World-Island; Who rules the World-Island commands the World.”

In this unit you will read Mackinder in his own words, draw his map, follow the Trans-Siberian Railway that worried him, and test his ideas against the Russo-Japanese War, two world wars and the Cold War. You will also face a hard chapter plainly: how Friedrich Ratzel’s metaphor of the state as a living organism and Mackinder’s own map were taken up by Karl Haushofer and twisted by the Nazi regime into a doctrine of “living space” that served conquest and mass murder. Finally you will weigh Mackinder fairly, with his strengths, his failures and his own revision of 1943, and write a dialogue in which he debates Mahan.

Throughout, remember the course’s rule: a geopolitical theory is an idea to weigh, not a doctrine to accept. Geography sets the stage and the costs; people, with their tools, alliances and choices, act on it, and over all the nations stands the God who “hath determined the times before appointed, and the bounds of their habitation” (Acts 17:26). The midterm exam on Units 1 to 3 is given separately at the end of this unit.

BEFORE YOU BEGIN

- Can explain Mahan’s argument for sea power and his six elements (Unit 2)
- Can read latitude and longitude and convert between kilometers, miles and nautical miles
- Can compute speed, time and distance, population density and percentages
- Knows the outline of the First and Second World Wars

MASTERY CHECKLIST

- I can explain Mackinder’s 1904 pivot area and his three zones, and the geographic facts behind them.
- I can quote Mackinder’s dictum exactly and test each of its three links against real events.
- I can explain why Mackinder thought railways were changing the balance of land and sea power, and use the Trans-Siberian and the Russo-Japanese War to weigh that claim.

- I can describe how Ratzel's and Haushofer's ideas were abused by the Nazi regime, and name the warning signs of geography abused.
- I can weigh Mackinder's strengths, failures and 1943 revision, and use numbers (distances, travel times, population shares) as evidence.
- I can write a fair dialogue in which Mahan and Mackinder each make their strongest case.

OPTIONAL BOOKS AND RESOURCES

- **The Empire That Was Russia: The Prokudin-Gorskii Photographic Record Recreated (Library of Congress)** (<https://www.loc.gov/exhibits/empire/>): Free online exhibit of color photographs of the Russian Empire about 1909 to 1915, including railways, bridges and the Urals (Lesson 3.3).
- **The Avalon Project at Yale Law School: German-Soviet Boundary and Friendship Treaty, September 28, 1939** (https://avalon.law.yale.edu/20th_century/gsbound.asp): Free. The text of the treaty whose signed map is the picture study for Lesson 3.4. Older students can read it with a parent and compare it with the map.

3.1 HALFORD MACKINDER AND THE GEOGRAPHICAL PIVOT OF HISTORY

OBJECTIVES

- Tell the story of Halford Mackinder and his paper “The Geographical Pivot of History,” read to the Royal Geographical Society in London on January 25, 1904.
- Explain Mackinder’s three zones (the pivot area, the inner or marginal crescent and the outer or insular crescent) and the geographic facts he used to draw them: inland drainage, the frozen Arctic coast and the open steppe.
- Use areas, sea-lane lengths and travel distances to test Mackinder’s claim that the “Columbian epoch” of easy sea power was ending, and state one strength and one weakness of the claim.

Warm-up. Take a bowl, a plate or a shallow pan and pour in a little water. Tip it gently and watch where the water runs. Now imagine a huge basin of land whose rivers all run either to a frozen sea or into a lake with no outlet. On a scrap of paper, write two sentences: What kind of ship could reach the middle of such a basin? What kind of traveler could cross it most easily? Keep your answer; Mackinder asked the same question in 1904.

Watch. *Examining Mackinder's Heartland Thesis* (Strategy Stuff, 14:01).

<https://www.youtube.com/watch?v=ZL8TLiOcF6c>

After the story: watch the chapters 'The World-Island' and 'The Heartland' (4:05–9:16) and trace on a map the pivot area Mackinder described in 1904.

Note: Captions were not available to check; preview it first. The creator notes that the sound quality is poor, and the video also covers Mackinder's later 1919 'Heartland' version of the idea. The video uses Mackinder's later word 'Heartland' (1919); his 1904 paper called the region the 'pivot area.'

KEY TERMS

pivot area

Mackinder’s 1904 name for the vast interior of Eurasia, “wholly continental,” whose rivers drain to the Arctic or to inland seas and which ships cannot reach. In 1919 he called it the Heartland.

inner or marginal crescent

The ring of lands around the pivot, “partly continental, partly oceanic”: Europe west of Russia, the Middle East, India and China.

outer or insular crescent

The ring of islands and overseas lands, “wholly oceanic”: Britain, Japan, the Americas, southern Africa and Australia.

Columbian epoch

Mackinder's name for the roughly four centuries after Columbus, when European sea powers explored and claimed most of the world against little resistance.

closed political system

Mackinder's phrase for a world with no empty spaces left to claim, in which every gain by one power is felt by the others.

inland (interior) drainage

A river system that empties into a lake or sea with no outlet to the ocean, such as the Volga into the Caspian Sea.

CORE IDEAS

The story. On the evening of January 25, 1904, a forty-two-year-old geographer named Halford John Mackinder rose to read a paper to the Royal Geographical Society in London. Its title was "The Geographical Pivot of History." Mackinder was born in 1861 in Gainsborough, Lincolnshire, studied natural science and history at Christ Church, Oxford, and in 1887 became the first Reader in Geography at Oxford. He was a teacher who wanted geography taken seriously as a university subject, and he was also an adventurer: on September 13, 1899, with the Alpine guides César Ollier and Joseph Brocherel, he made the first recorded ascent of Mount Kenya. By 1904 he was also director of the London School of Economics. Later he would sit in Parliament for a Glasgow seat (1910 to 1922), serve as British High Commissioner to South Russia during the Russian Civil War (1919 to 1920), and be knighted in 1920. The paper he read that night, about twenty pages long when it was printed in *The Geographical Journal* that April, became one of the most quoted and most argued-over essays in the history of geography.

The big idea. Mackinder began with a bold claim about his own moment. For about four hundred years, since Columbus, European explorers and sea powers had spread over the world, meeting little resistance from peoples who lacked their ships and guns. He called this the **Columbian epoch**. By 1900, he said, the map was nearly full. Only the polar regions remained to be explored, and almost every habitable land had been claimed by someone. From now on, in what he called the post-Columbian age, the world would be a **closed political system**: there would be no empty room for any power to grow into without pressing on another, and every shock would be felt on the far side of the globe. In such a world, he asked, which geographic facts would matter most? His answer was surprising to a British audience proud of the Royal Navy. The deepest fact of history, he argued, was not the ocean but the great interior of Eurasia.

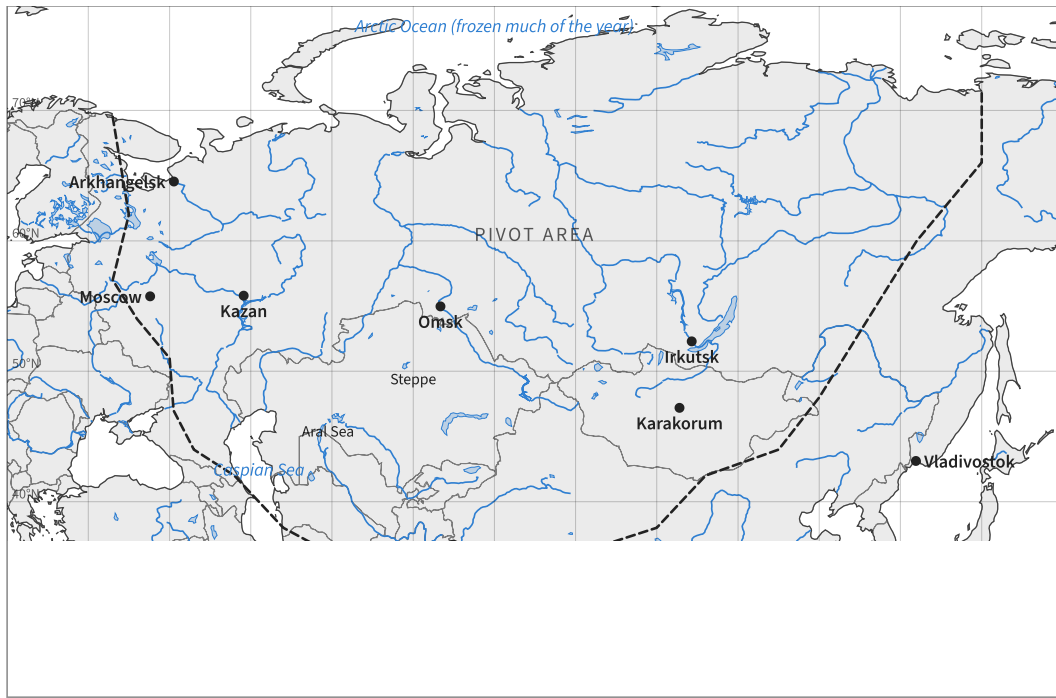
How he figured it out. Mackinder looked first at the rivers. The Ob, the Yenisei and the Lena, some of the longest rivers on earth, run north into the Arctic Ocean, which was locked in ice most of the year. The Volga, Europe's longest river, flows into the Caspian Sea, and the Amu Darya and Syr Darya flowed into the Aral Sea, and neither the Caspian nor the Aral has any outlet to the ocean. So an enormous region, from the Volga to eastern Siberia and from the Arctic to the mountains of Persia and Tibet, could not be reached by sea-going ships. Across its southern half ran the open steppe, a sea of grass from Hungary to Manchuria.

That steppe, he argued, had bred horse-riding peoples, the Huns, the Avars, the Magyars and above all the Mongols, who could move fast across open land and strike the settled peoples around its edges. In his telling, much of European history was a long response to pressure from the heart of Asia. Now Russia had replaced the Mongol Empire as master of that interior, and Cossacks and soldiers, not horse archers, held it. He called it the **pivot area** of world politics.

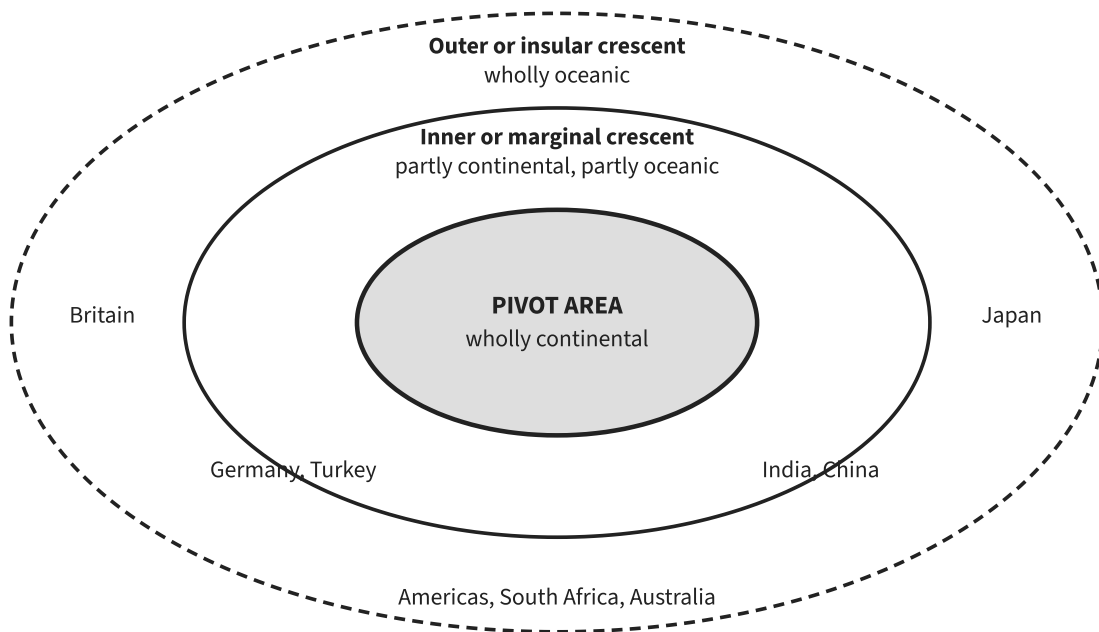
On the map. Mackinder illustrated his paper with a world map titled “The Natural Seats of Power.” It divided the world into three zones. The pivot area was “wholly continental.” Around it lay the **inner or marginal crescent**, “partly continental, partly oceanic”: Germany, Austria, Turkey, India and China, lands that could build both armies and fleets. Beyond the seas lay the **outer or insular crescent**, “wholly oceanic”: Britain, South Africa, Australia, the United States, Canada and Japan. Look at the sizes involved. The Russian Empire of 1904 covered about 22.8 million km² (8.8 million sq mi), roughly one-sixth of the world’s land. Britain and Ireland together covered about 314,000 km² (121,000 sq mi). The sea power of the outer crescent had ruled the Columbian epoch, because ships could reach every coast. But ships could not reach the pivot.

The warning. Mackinder then made a prediction that he hedged carefully. If the pivot state expanded over the marginal lands of Eurasia, it could use the vast resources of the continent to build fleets as well as armies, and, he wrote, “the empire of the world would then be in sight.” This might happen, he said, if Germany allied itself with Russia. He also imagined other combinations, including China organized by Japan overrunning Russia, and he used the phrase “yellow peril,” a common and fearful expression in Europe at the time that reflected the racial thinking of his day. His answer for Britain was not despair but alliances: France, Italy, Egypt, India and Korea, he suggested, could become bridgeheads where outside navies supported armies on the continent. Notice, too, that Mackinder did not claim geography decided everything. He closed by saying that the actual balance of power at any time is the product of geographic conditions on one hand and, on the other, of the number, energy, equipment and organization of the competing peoples.

Technology overcoming geography. Why did Mackinder think the old advantage of the sea was fading? Because of the railway. For centuries, a ship could carry goods across the ocean far more cheaply than a cart could haul them across a continent. But Russian railways were already pushing across Siberia, and the Trans-Siberian line was nearly finished. If railways could move armies and grain across the steppe as easily as ships moved them across the sea, then the power holding the pivot would have the same mobility that sea powers had enjoyed, and much more land, safe from naval attack. Lesson 3.3 follows that railway. For now, hold Mackinder to the test from Unit 1: what geographic fact does he point to (inland drainage, frozen coasts, the steppe), what does he claim about power, what technology is he thinking about, and what evidence would prove him wrong?

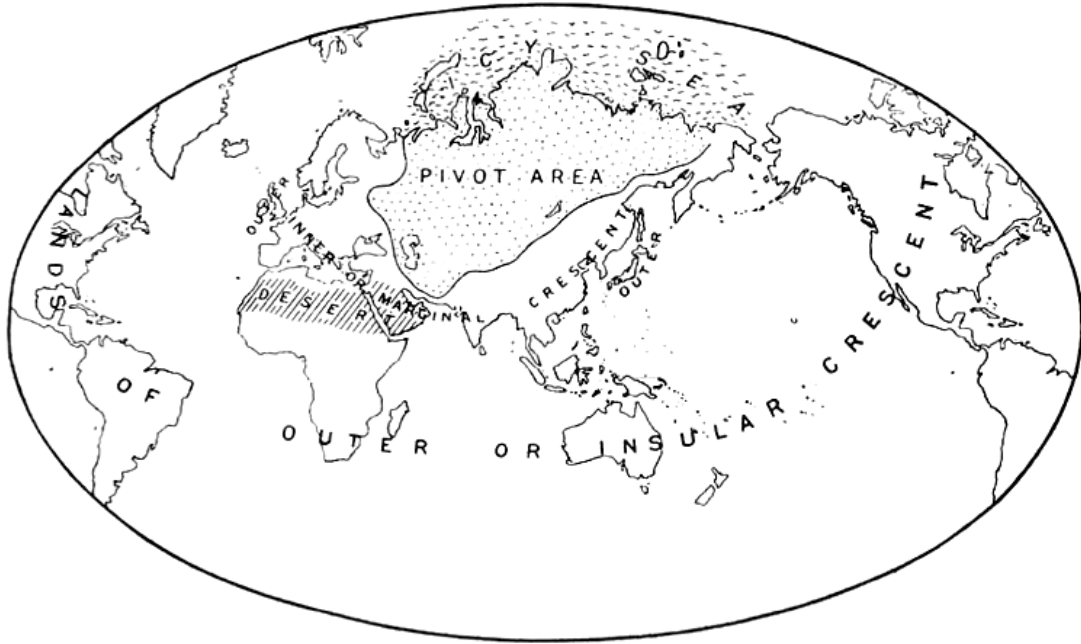


Mackinder's pivot area of 1904 (approximate outline, after his map). Its rivers drain to the frozen Arctic or to inland seas.



Mackinder's three zones in schematic form.

PICTURE STUDY



The Natural Seats of Power, Halford J. Mackinder, 1904 · Printed map illustrating “The Geographical Pivot of History,” *The Geographical Journal*, vol. 23, no. 4 (April 1904) · Published by the Royal Geographical Society, London; the journal is held in research libraries worldwide

This small black-and-white map is one of the most famous maps of the twentieth century. Mackinder drew it to illustrate his 1904 paper, and he gave it a confident title: “The Natural Seats of Power.” It has no rivers, cities or railways on it. It shows only three zones, because Mackinder wanted his listeners to see the whole world at once as a single stage.

Like every map, it makes choices. It puts the interior of Eurasia at the center of attention and pushes the oceans and the Americas to the edges. That choice is itself an argument. As you study it, ask both what it shows truly and what it leaves out.

Look closely

- Find the pivot area. Which modern countries lie inside it? Which lie just outside?
- Read the key. What does “wholly continental” mean, and why would that matter to an admiral?
- Find Britain and Japan. Which zone are they in? What do they have in common?
- Look at where the map is centered and how the Americas are placed. Which projection does it appear to use, and how does that affect the sizes you see?

Talk about it

1. What does the title “The Natural Seats of Power” claim? Is “natural” a fair word?
2. If an American geographer of 1904 had drawn a map of world power, where might he have centered it, and why?

3. What would you add to this map to test Mackinder's argument: population, railways, coal, harbors? Explain one choice.

PROJECT: DRAW MACKINDER'S PIVOT AREA

You will draw the unit map by hand: Mackinder's pivot area with its rivers, inland seas and frozen coast, and the two crescents around it. Drawing it yourself will show you why Mackinder thought this region was out of reach of sea power, and it will become part of your unit portfolio.

You will need

- A large sheet of paper (at least 11 × 17 inches) or two sheets taped together
- An atlas or a printed outline map of Eurasia and the world
- Colored pencils (blue for rivers and seas, green for the steppe, brown for mountains, gray hatching for the pivot area)
- A ruler, a piece of string and a fine black pen

Steps

1. Lightly trace or sketch the outline of Europe, Asia and Africa, and place the Americas, Britain, Japan and Australia around the edges.
2. Draw in blue the Ob, Yenisei and Lena flowing north to the Arctic Ocean, and the Volga flowing south into the Caspian Sea. Draw the Caspian and the Aral Sea and label them "no outlet."
3. Shade the Arctic coast with light blue hatching and label it "frozen most of the year."
4. In green, draw the steppe belt from the plains of Hungary and southern Russia east to Mongolia and Manchuria.
5. In brown, draw the mountain wall to the south: the Caucasus, the mountains of Persia, the Hindu Kush, the Pamirs, the Tian Shan, the Himalaya and Tibet.
6. Using Figure hd-pivot-area as a guide, outline the pivot area in heavy black and hatch it in gray. Label it "Pivot area: wholly continental."
7. Label the inner crescent (Germany, Austria-Hungary, Turkey, Persia, India, China) and the outer crescent (Britain, the United States, Canada, South Africa, Australia, Japan), using Mackinder's own wording in the key.
8. Add a scale bar from your atlas. Use the string to measure the width of the pivot area from the upper Volga to the Lena and write the distance in kilometers and miles.
9. Beneath the map write three sentences: the geographic facts Mackinder used, his warning, and one question you would ask him.

Tips

- Mackinder's outline is approximate. What matters is the reason for it: drainage that ships cannot use.
- Keep labels few and neat. A map of an idea should make one point clearly.

Check your work

- My map shows the Arctic rivers, the Volga and the inland seas correctly.
- The three zones are labeled with Mackinder's own descriptions.
- I measured one distance and wrote it in both kilometers and miles.

MAP NOTEBOOK

1. Draw a small cross-section of a river basin draining into a lake with no outlet. Label it with the Volga and the Caspian Sea and write: "No ship can sail in from the ocean."
2. Make a three-column chart titled "Natural Seats of Power" with the headings Pivot area, Inner crescent and Outer crescent, and list at least three lands in each.
3. Copy Mackinder's warning phrase "the empire of the world would then be in sight" and write one sentence on what he feared would bring it about.

From history. Mackinder's climb of Mount Kenya in 1899 was partly an argument for his subject. He wanted to show that a university geographer could also be a field explorer. His party spent weeks cutting through forest and bamboo and lost men to desertion and hardship before Mackinder, Ollier and Brocherel reached the summit, the peak now called Batian, at about 5,199 meters (17,057 feet), the highest point of Mount Kenya. The next recorded ascent of Batian did not come until 1929.

WORKED EXAMPLES

Example 1. Mackinder dated the Columbian epoch from Columbus's first voyage in 1492 to his own paper in 1904. How many years is that? Magellan's expedition, completed by Juan Sebastián Elcano, returned to Spain in 1522 after the first circumnavigation. How long after 1492 was that, and what fraction of the Columbian epoch had passed by then?

1. Length of the epoch: $1904 - 1492 = 412$ years, "about four centuries," as Mackinder said.
2. First circumnavigation: $1522 - 1492 = 30$ years.
3. Fraction: $30 \div 412 \approx 0.073$, about 7 percent of the epoch.
4. Meaning: within a single generation of Columbus, Europeans had proved that every ocean was connected. The remaining 93 percent of the epoch was spent filling in the map and claiming the lands that the sea now reached.

Answer: 412 years; the circumnavigation came 30 years in, about 7 percent of the way through the epoch.

Example 2. In 1904 the Russian Empire covered about 22.8 million km² (8.8 million sq mi). Britain and Ireland together covered about 314,000 km² (121,000 sq mi). The land surface of the earth is about 149 million km² (57.5 million sq mi). (a) How many times larger was the Russian Empire than the British Isles? (b) What fraction of the world's land did the Russian Empire cover?

(Use the map or drawing "The pivot area lay almost entirely inside the Russian Empire of 1904." shown earlier in this lesson.)

1. (a) $22,800,000 \div 314,000 \approx 72.6$. Check in miles: $8,800,000 \div 121,000 \approx 72.7$.
2. (b) $22.8 \div 149 \approx 0.153$, about 15 percent.
3. One-sixth is about 16.7 percent, so "roughly one-sixth of the world's land" is a fair description.
4. Meaning: Britain's power did not rest on area. It rested on the sea lanes that joined its small home islands to an empire overseas. Mackinder was asking what would happen if a power with vast area also gained the mobility of the sea.

Answer: (a) About 73 times larger. (b) About 15 percent, roughly one-sixth of the world's land.

Example 3. The sea route from London to Bombay (Mumbai) around the Cape of Good Hope is about 10,700 nautical miles; through the Suez Canal (opened 1869) it is about 6,300 nautical miles. (One nautical mile = 1.852 km.) (a) How much shorter is the Suez route, in nautical miles, kilometers and percent? (b) A steamer averages 10 knots (10 nautical miles per hour). How many days does each route take at sea? (c) Which of Mackinder's zones does this sea lane run through?

1. (a) $10,700 - 6,300 = 4,400$ nautical miles saved. $4,400 \times 1.852 \approx 8,150$ km.
Percent: $4,400 \div 10,700 \approx 0.41$, about 41 percent shorter.
2. (b) Cape route: $10,700 \div 10 = 1,070$ hours $\div 24 \approx 44.6$ days. Suez route: $6,300 \div 10 = 630$ hours $\div 24 \approx 26.3$ days.
3. (c) The Suez route runs from the outer crescent (Britain) through the waters of the inner crescent (the Mediterranean, Egypt, the Red Sea, Arabia) to India, also in the inner crescent. It never comes near the pivot area.
4. Meaning: sea power's highways ran around the edges of Eurasia. Mackinder's point was that the interior lay beyond their reach.

Answer: (a) About 4,400 nautical miles (about 8,150 km), roughly 41 percent shorter. (b) About 45 days by the Cape, about 26 days by Suez. (c) From the outer crescent (Britain) through the waters of the inner crescent to India, ringing the pivot but never reaching it.

PRACTICE

1. **EASY** Give the title, date and place of Mackinder's famous 1904 paper.
2. **EASY** Name Mackinder's three zones and give his short description of each.
3. **EASY** Name three rivers that drain the pivot area into the Arctic and one that drains it into an inland sea.
4. **EASY** List two facts from Mackinder's life before 1904 that show he was both a scholar and an adventurer.
5. **MEDIUM** Place each in Mackinder's zones: (a) Japan; (b) Germany; (c) the Siberian plain; (d) India; (e) the United States.
6. **MEDIUM** Russia's area in 2026 is about 17.1 million km². Convert to square miles (1 km² ≈ 0.386 sq mi) and find what percent of the world's 149 million km² of land it covers.
7. **MEDIUM** Moscow lies at about 55.75° N and Arkhangelsk, on the White Sea, at about 64.5° N, almost due north. Using 111 km (69 miles) per degree of latitude, estimate the distance. Why was Arkhangelsk a poor answer to Russia's need for a seaport?
(Use the map or drawing "Use the map for Problems 7 and 9." shown earlier in this lesson.)
8. **MEDIUM** Karakorum, the Mongol capital in central Mongolia, lies about 5,100 km (3,170 miles) in a straight line from Kyiv. If a Mongol army averaged 40 km (25 miles) a day, how long would that distance take? Why did the actual Mongol campaign of 1237 to 1240 take years?
9. **HARD** Explain in your own words why Mackinder called the interior of Eurasia a "pivot." What turns around it?
10. **HARD** What did Mackinder mean by a "closed political system," and why did he think it changed the rules of world politics after 1900?
11. **HARD** Mackinder ended his paper by saying that the balance of power depends both on geography and on the number, energy, equipment and organization of peoples. Why is this sentence important when we judge whether he was a geographic determinist?
12. **CHALLENGE** Write a paragraph of 6 to 8 sentences imagining that you were in the audience at the Royal Geographical Society on January 25, 1904. State Mackinder's main argument fairly, then raise one objection a thoughtful listener of that day might have made.

COMMON MISTAKES

- Thinking the pivot area means all of Russia or all of Asia. Mackinder defined it by drainage and reach: the inland region that ships could not enter.
- Treating the 1904 paper as a prophecy that Russia would rule the world. Mackinder warned of a possibility, under certain conditions, such as a German alliance with Russia.
- Calling Mackinder a pure determinist. He said geography sets the conditions, while the number, equipment and organization of peoples decide the balance.

Make it a game · Pivot or Crescent?. One player names a place (Mongolia, Egypt, Japan, the Volga basin, Persia, Canada, Germany, the Lena River, Australia, India). The

others call out “Pivot,” “Inner” or “Outer,” then must give one geographic reason (drainage, coast, steppe, island). One point for the right zone and one for a good reason. For a bonus, name a place that is hard to classify and argue for your answer.

Scripture. “And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;” (Acts 17:26, KJV)

Mackinder searched for the “geographical causation” of history in rivers, steppes and seas. Paul told the Athenians that the times and bounds of the nations are appointed by God, and that all nations are of one blood. Geography is real and worth studying, but it is part of God’s ordering of the world, not a rival to it.

Practice answers

1. “The Geographical Pivot of History,” read to the Royal Geographical Society in London on January 25, 1904, and printed in *The Geographical Journal* in April 1904.
2. Pivot area: wholly continental. Inner or marginal crescent: partly continental, partly oceanic. Outer or insular crescent: wholly oceanic.
3. Arctic: the Ob, the Yenisei and the Lena. Inland: the Volga (into the Caspian Sea); also the Amu Darya or Syr Darya (into the Aral Sea).
4. He became the first Reader in Geography at Oxford in 1887 (and director of the London School of Economics); he made the first recorded ascent of Mount Kenya on September 13, 1899.
5. (a) outer crescent; (b) inner crescent; (c) pivot area; (d) inner crescent; (e) outer crescent.
6. $17.1 \times 0.386 \approx 6.6$ million sq mi. $17.1 \div 149 \approx 0.115$, about 11.5 percent.
7. $64.5 - 55.75 = 8.75^\circ$; $8.75 \times 111 \approx 970$ km ($8.75 \times 69 \approx 600$ miles). Arkhangelsk’s harbor freezes for several months each winter, and the White Sea opens onto the Arctic, far from the main trade routes.
8. $5,100 \div 40 \approx 128$ days, about four months ($3,170 \div 25 \approx 127$ days). The real campaign took years because of sieges of cities, battles, winter halts, resting and gathering horses, and conquest along the way, not just travel.
9. A pivot is the fixed point around which something turns. Mackinder argued that the great inland region, unreachable by ships and open to fast movement across the steppe, was the fixed center around which the history of the surrounding lands turned: invasions came out of it, and the marginal and outer lands had to respond to whatever power held it.
10. He meant a world with no unclaimed lands left to explore and settle. In the Columbian epoch, powers could expand into lands where they met little organized resistance from other great powers. In a closed system, any expansion presses directly on another power, and every shock is felt around the globe, so the relative strength of great regions matters more than ever.
11. It shows that Mackinder did not claim geography decides outcomes by itself. He treated geography as setting the conditions while human numbers, skill, technology and organization decide how those conditions are used. A fair critic should judge his strong predictions, but should not accuse him of saying that maps alone rule history.
12. Answers vary. A strong answer states the argument accurately (the Columbian epoch is ending; the interior of Eurasia, unreachable by ships and open to land mobility, is the pivot of history; railways are giving its master new strength; an alliance or conquest that joined it to

the marginal lands could make a world empire possible). A good objection fits the time: for example, that Russia was poor and badly organized, that sea power still carried most of the world's trade cheaply, that new inventions might change the balance again, or that history is made by choices and faith as much as by maps.

3.2 THE HEARTLAND AND THE WORLD-ISLAND

OBJECTIVES

- Explain how Mackinder revised his 1904 pivot area into the larger Heartland of *Democratic Ideals and Reality* (1919), and define the World-Island.
- Quote his famous dictum exactly and test each of its three links against the events of 1914 to 1919, especially the Treaty of Brest-Litovsk.
- Use land areas, population shares and distances across East Europe to check Mackinder's numbers and his advice to the peacemakers of 1919.

Warm-up. Lay a world map or globe in front of you. With your finger, trace a path on land from Lisbon to Cape Town to Singapore to the Bering Strait, without crossing open ocean (a short strait or canal is allowed). Then try to do the same from New York to Sydney. What do you notice? Write one sentence: Which continents are really one great piece of land?

Watch. *4th June 1916: Russian Army begins the Brusilov Offensive on the Eastern Front of World War One* (HistoryPod, 2:36). <https://www.youtube.com/watch?v=pYvhTwlW--k>
With On the map: watch this short clip on the 1916 Brusilov Offensive and follow the fighting across Galicia on the Eastern Front, the wide stretch of land between Germany and Russia that Mackinder warned the 1919 peacemakers about.

Note: Captions were not available to check; preview it first. The video covers one 1916 battle, not the 1919 Peace Conference or Mackinder's Heartland idea, and it may mention heavy casualties. Covers the 1916 Brusilov Offensive, not the 1919 Paris Peace Conference or Mackinder's book itself.

KEY TERMS

Heartland

Mackinder's 1919 name for the enlarged pivot area: the interior of Eurasia that sea power cannot reach, now extended west to include East Europe, the Baltic and Black Sea basins, and south to Tibet, Mongolia and Persia.

World-Island

Europe, Asia and Africa considered as one continuous landmass, joined at Suez, which Mackinder called the greatest island on earth.

East Europe

In Mackinder's usage, the broad lands between Germany and Russia, from the Baltic to the Black Sea, which he saw as the gateway to the Heartland.

buffer tier

Mackinder's proposed belt of independent states between Germany and Russia, meant to keep either from controlling East Europe.

dictum

A short, formal saying that sums up an argument.

Treaty of Brest-Litovsk

The treaty of March 3, 1918, by which Bolshevik Russia left the First World War and gave up Poland, the Baltic lands, Finland and Ukraine to German and Austrian control or to independence.

CORE IDEAS

The story. On January 18, 1919, the victorious Allies opened the Peace Conference in Paris. Delegates from dozens of nations arrived to redraw the map of Europe after four years of war that had destroyed four empires: the German, the Austro-Hungarian, the Russian and the Ottoman. That same year, in London and New York, Halford Mackinder published a short book written for those peacemakers: *Democratic Ideals and Reality: A Study in the Politics of Reconstruction*. Its argument was that free peoples, who love peace and dislike thinking about war, tend to neglect the hard facts of geography until it is too late. Ideals are noble, Mackinder said, but they must be built on a sound reading of reality. He wished, he wrote, that some “airy cherub” would whisper a saying to the statesmen as they talked with the defeated enemy. That saying became the most famous sentence in the history of geopolitics.

The big idea: the World-Island. Mackinder asked his readers to look at a globe with fresh eyes. Europe, Asia and Africa are not really three continents, he argued, but one great landmass, joined at Suez and divided only by inland seas. He called it the **World-Island**. He reckoned that the ocean covered about nine-twelfths of the globe, the World-Island about two-twelfths, and all the other lands together (the Americas, Australia and the smaller islands) about one-twelfth. The World-Island also held, he estimated, about seven-eighths of the human race. From this point of view North America and Australia were only satellites, large islands offshore of the main one. A great continental power that united the resources of the World-Island could build a navy no island power could match. His own country, he reminded readers, owed its long naval supremacy partly to the fact that no single power had ever ruled the whole continent.

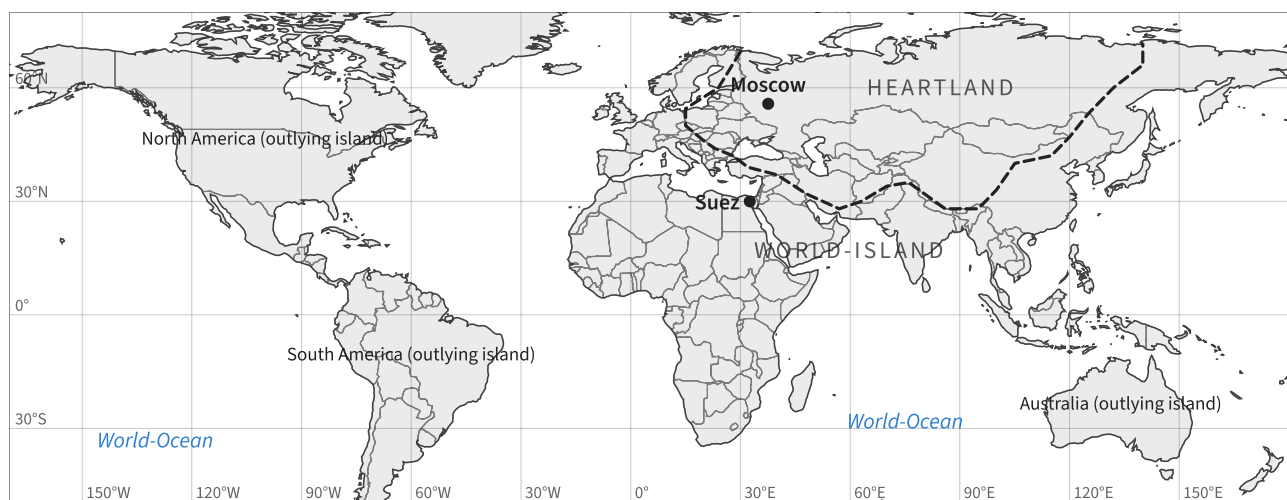
How he figured it out: the Heartland enlarged. In 1904 Mackinder had drawn the pivot area by drainage: the inland region ships could not reach. The war taught him a second test: which regions could a land power reach and hold that sea power could not contest? He therefore enlarged the pivot into the **Heartland**, adding the basins of the Baltic and the Black Sea, because a navy could be shut out of both at their narrow entrances (the Danish straits and the Bosphorus), and adding the highlands of Persia, Tibet and Mongolia. The western edge of this Heartland was **East Europe**, the open lands between Germany and Russia. There the North European Plain narrows between the Baltic and the Black Sea, about 1,200 km (750 miles) across, before widening into Russia. Whoever controlled that gateway could pour into the Heartland or defend it.

The dictum. So Mackinder wrote: “Who rules East Europe commands the Heartland; Who rules the Heartland commands the World-Island; Who rules the World-Island commands the World.” Notice that it is a chain of three claims, and each link can be tested separately. The war gave him a vivid example of the first link. After the Bolshevik revolution, Russia left the

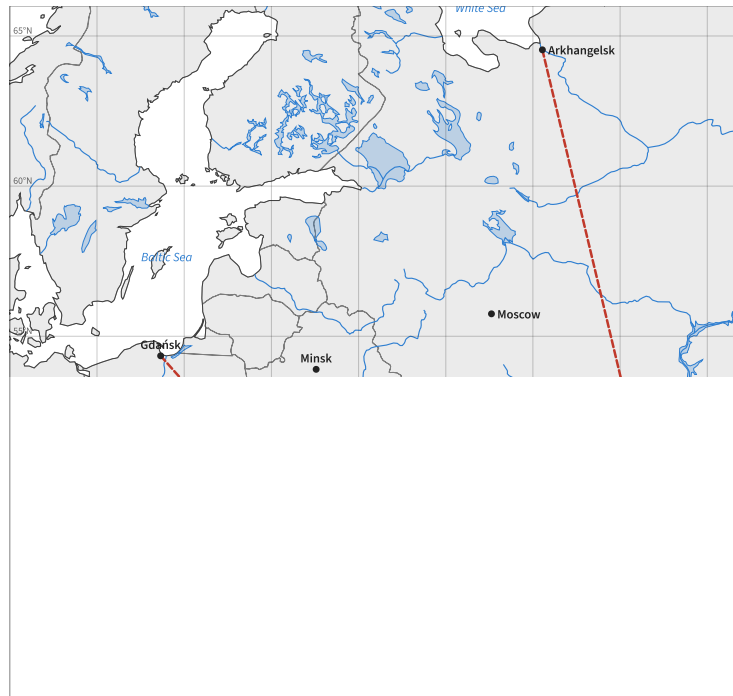
war by the Treaty of Brest-Litovsk on March 3, 1918, giving up Poland, the Baltic lands, Finland and Ukraine. For a few months in 1918 Germany and its ally Austria-Hungary dominated East Europe from the Baltic to the Black Sea and were drawing grain and coal from Ukraine. Only Germany's defeat in the west that autumn, with the help of British sea power and fresh American armies carried across the Atlantic, undid that settlement. To Mackinder, 1918 showed how near a single land power had come to the gate of the Heartland.

On the map: the advice. Mackinder's practical proposal was a **buffer tier** of independent states between Germany and Russia, strong enough to stand on their own and linked by railways and trade to the outside world. The peace settlement did create or recognize such a belt: Finland, Estonia, Latvia, Lithuania, Poland, Czechoslovakia, an enlarged Romania and the Kingdom of the Serbs, Croats and Slovenes (later Yugoslavia). Mackinder himself went to South Russia in 1919 and 1920 as British High Commissioner during the Russian Civil War, and he urged support for the anti-Bolshevik forces there; the British government did not follow his advice. Twenty years later his warning came true in the worst way. In August 1939 Germany and the Soviet Union made a pact, and in September they divided Poland between them. Lesson 3.4 tells that story.

Weighing the idea. The dictum is memorable because it is simple, and it is debatable for the same reason. Each verb, "commands," claims more than any map can prove. Rule of East Europe did not give Germany the Heartland in 1918 or in 1941, and the Soviet Union, which held both East Europe and the Heartland after 1945, never commanded the World-Island. Critics also note that Mackinder's World-Island counts deserts, ice and mountains as if they were all equally useful land, and that its people are divided into many nations, faiths and languages that no single power has ever united. Defenders answer that Mackinder offered a warning about what a hostile power might attempt, not a timetable, and that the twentieth century's two great wars and the long contest after 1945 were in large part struggles over exactly the lands he named.

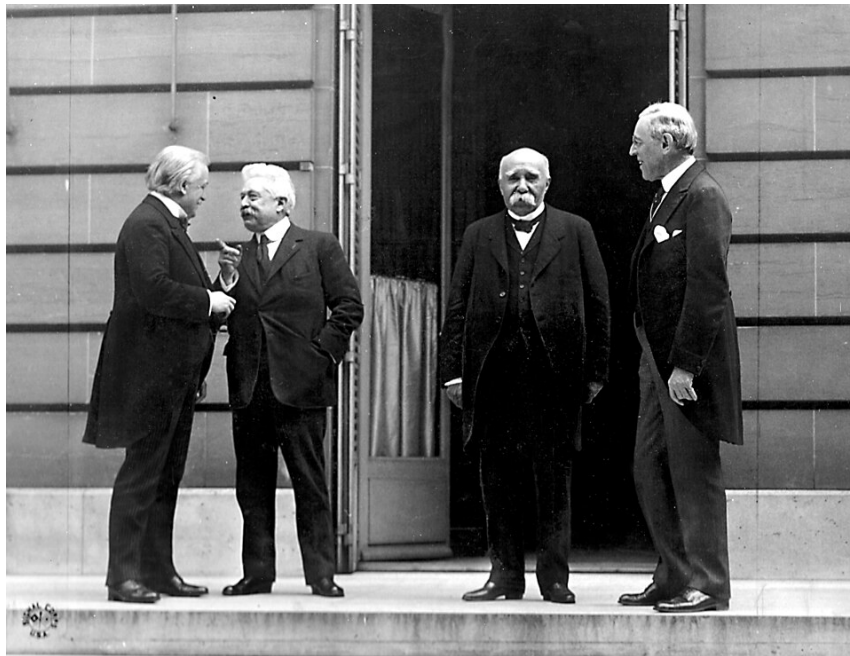


Mackinder's World-Island of 1919, with the enlarged Heartland (approximate) and the outlying islands.



The gateway of the Heartland: East Europe between the Baltic and the Black Sea.

PICTURE STUDY



The Big Four at the Paris Peace Conference, Edward N. Jackson, U.S. Army Signal Corps, May 27, 1919 · Black-and-white photograph · U.S. Army Signal Corps photograph, public domain; widely held in U.S. government and library collections

In the spring of 1919 the most important decisions of the Paris Peace Conference were made by four men: David Lloyd George of Britain, Vittorio Emanuele Orlando of Italy, Georges Clemenceau of France and Woodrow Wilson of the United States. An American Army

photographer, Edward N. Jackson, posed them together in May 1919. These are the statesmen to whom Mackinder hoped his “airy cherub” would whisper.

Notice who is missing. Neither defeated Germany nor revolutionary Russia sat at this table, yet the lands between them, East Europe, were among the hardest questions the four men faced.

Look closely

- Look at the four men’s faces and postures. Do they look like allies who agree, or tired men who must bargain?
- Which of the four led a sea power of the outer crescent, and which led powers of the inner crescent on the continent?
- Look at the room and the clothing. What does the photograph tell you about how the peace was made: by large assemblies or by a few leaders?

Talk about it

1. Mackinder thought the peacemakers needed to understand East Europe above all. Why might leaders from Britain, France, Italy and the United States have found those lands hard to judge?
2. What are the advantages and dangers of a few leaders redrawing the map of a whole continent?

PROJECT: WEIGH THE WORLD-ISLAND

Mackinder said the World-Island covers about two-twelfths of the globe and the other lands about one-twelfth. You will test his claim with scissors and a kitchen scale, using the fact that on an equal-area map, the weight of a cut-out piece of paper is proportional to the area it shows.

You will need

- Two identical printouts of a world map on an equal-area projection (such as Mollweide or Eckert IV), on heavy paper or card stock
- Scissors and a pencil
- A kitchen or postal scale that reads to 1 gram or better (a gram scale for jewelry or baking is best)
- A calculator and your map notebook

Steps

1. Weigh one whole, uncut map (land and sea together) and record the weight. This stands for the whole surface of the earth shown.
2. On the second copy, cut out Europe, Asia and Africa as one piece (keep them joined at Suez). Weigh it. This is the World-Island.

3. Cut out North America, South America and Australia and weigh them together. Weigh Antarctica separately if your map shows it.
4. Find each weight as a fraction of the whole map. Compare your World-Island fraction with Mackinder's two-twelfths (about 0.167).
5. Find the ratio of the World-Island's weight to that of the Americas and Australia together.
6. In your notebook, write a short report: your measurements, your fractions, how close you came to Mackinder, and two reasons your results might differ (projection, how the map is cropped at the poles, cutting errors, Antarctica).

Tips

- Do not use a Mercator map. Mercator enlarges lands far from the equator, so their paper weights would be badly wrong.
- If your scale is not precise, weigh several copies of each piece stacked together and divide.

Check your work

- I used an equal-area map and explained why it matters.
- My fractions are calculated correctly from my measured weights.
- My report compares my result fairly with Mackinder's estimate.

MAP NOTEBOOK

1. Copy Mackinder's dictum exactly in three lines, and draw an arrow from each line to the next. Beside each arrow write one event that supports it and one that challenges it.
2. Sketch the outline of the World-Island and shade the 1919 Heartland. Mark Suez, the Danish straits and the Bosphorus and explain why each was important to Mackinder.
3. Draw the buffer tier of 1919 as a column of boxes from the Baltic to the Adriatic and Black Sea: Finland, Estonia, Latvia, Lithuania, Poland, Czechoslovakia, Romania, Yugoslavia.

From history. When *Democratic Ideals and Reality* appeared in 1919, it sold few copies and drew little attention in Britain or America; the mood of the peace was against talk of power and strategy. Its fame came later. In the 1920s and 1930s German geopoliticians studied it closely, and during the Second World War it was reprinted in the United States (in 1942), when Americans suddenly wanted to understand why Germany and Japan had struck where they did.

WORKED EXAMPLES

Example 1. Test Mackinder's area estimate with modern figures. Asia covers about 44.6 million km², Europe about 10.2 million km² and Africa about 30.4 million km². The whole surface of the earth (land and sea) is about 510 million km². (a) What fraction of the globe is the World-Island? (b) Compare with Mackinder's two-twelfths. (c) Express the World-Island's area in square miles ($1 \text{ km}^2 \approx 0.386 \text{ sq mi}$).

(Use the map or drawing "Europe, Asia and Africa as one World-Island." shown earlier in this lesson.)

1. World-Island area: $44.6 + 10.2 + 30.4 = 85.2$ million km².
2. (a) Fraction of globe: $85.2 \div 510 \approx 0.167$.
3. (b) Two-twelfths = $1/6 \approx 0.167$. The modern figure agrees with Mackinder almost exactly.
4. (c) $85.2 \times 0.386 \approx 32.9$ million sq mi.

Answer: About 0.167 of the globe, matching Mackinder's two-twelfths; about 85 million km² (about 33 million sq mi).

Example 2. Test Mackinder's population estimate with figures as of 2026 (rounded). The world has about 8.3 billion people. The Americas (North, Central and South, with the Caribbean) have about 1.05 billion, and Oceania (Australia, New Zealand and the Pacific islands) about 0.05 billion. Find the share of humanity living on the World-Island and compare it with Mackinder's seven-eighths.

1. People outside the World-Island: $1.05 + 0.05 = 1.10$ billion.
2. People on the World-Island: $8.3 - 1.10 = 7.2$ billion.
3. Share: $7.2 \div 8.3 \approx 0.867$, about 87 percent.
4. Seven-eighths = 0.875, or 87.5 percent. The share today is within about one percentage point of Mackinder's estimate.

Answer: About 87 percent, very close to Mackinder's seven-eighths (87.5 percent). On the numbers of land and people, his World-Island is real; the debate is about whether it can ever be united.

Example 3. Gdańsk on the Baltic (54.35° N, 18.65° E) is about 1,220 km (760 miles) in a straight line from Odesa on the Black Sea (46.48° N, 30.72° E). Farther east, Arkhangelsk on the White Sea (64.5° N, 40.5° E) is about 2,080 km (1,290 miles) from Astrakhan near the Caspian (46.35° N, 48.03° E). (a) How many times wider is the eastern line? (b) A defending army needs, say, one division for every 20 km of front. How many divisions does each line need? (c) What does this suggest about why Mackinder saw East Europe as a gateway?

(Use the map or drawing “The narrowing of the plain between the Baltic and the Black Sea.” shown earlier in this lesson.)

1. (a) $2,080 \div 1,220 \approx 1.7$ times wider.
2. (b) Western line: $1,220 \div 20 = 61$ divisions. Eastern line: $2,080 \div 20 = 104$ divisions.
3. (c) The land between the seas is shaped like a funnel that widens toward Russia. An attacker from the west who gets through the narrower part faces an ever wider space to hold; a defender in the east must guard an ever longer front. Whoever controls the narrower western part holds the door.
4. Note: the “one division per 20 km” is a simple teaching assumption, not a fixed rule; real needs depend on terrain, roads and weapons.

Answer: (a) About 1.7 times. (b) About 61 divisions for the western line and about 104 for the eastern. (c) East Europe is the narrow neck of a funnel opening into the Heartland, so it is the natural gateway.

PRACTICE

1. **EASY** Write Mackinder’s dictum exactly, and give the title and year of the book in which it appeared.
2. **EASY** What three continents make up the World-Island, and where are two of them joined?
3. **EASY** Name two regions Mackinder added when he enlarged the pivot area into the Heartland in 1919.
4. **EASY** Why did Mackinder include the Baltic and Black Seas in the Heartland even though they are seas?
5. **MEDIUM** Mackinder estimated the ocean at nine-twelfths of the globe. Using 510 million km² for the earth’s surface, how many km² is that? The actual ocean area is about 361 million km². What fraction is that?
6. **MEDIUM** The Americas cover about 42.5 million km² and Australia about 7.7 million km². Compare their total with the World-Island (85.2 million km²).
7. **MEDIUM** Convert the Gdańsk to Odesa distance of 1,220 km to miles (1 km $\approx$ 0.621 mi). An army marching 25 km a day would take how many days to cover it?

(Use the map or drawing “Use this map for Problems 7 and 8.” shown earlier in this lesson.)

8. **MEDIUM** Berlin (52.52° N, 13.40° E) is about 1,610 km (1,000 miles) from Moscow (55.75° N, 37.62° E). Name three cities or regions of East Europe that lie between them and explain why this whole stretch is open to armies.
9. **HARD** Explain how the Treaty of Brest-Litovsk (March 3, 1918) seemed to support the first link of Mackinder's dictum, and why its results did not last.
10. **HARD** What was Mackinder's buffer tier, and name four states that formed it after 1918?
11. **HARD** Give one strong criticism of the claim "Who rules the World-Island commands the World."
12. **CHALLENGE** Mackinder's title sets "democratic ideals" against "reality." Write a paragraph of 6 to 8 sentences explaining what he meant and whether you think the two must be in tension.

COMMON MISTAKES

- Misquoting the dictum (for example "controls" for "commands," or "Eastern Europe" for "East Europe"). Quote it exactly, and remember that it has three links.
- Confusing the 1904 pivot area with the 1919 Heartland. The Heartland is larger and reaches west into East Europe and south into the high plateaus.
- Thinking Mackinder meant the World-Island was already ruled by one power. He was warning against a future in which one power might unite it.

Make it a game · Test the Link. Write the three links of the dictum on three cards. One player draws an event card prepared ahead (Brest-Litovsk 1918, the buffer states 1919, the German-Soviet pact 1939, the invasion of the Soviet Union 1941, the Soviet occupation of East Europe 1945, the fall of the Berlin Wall 1989). The others must place the event under one link and say whether it supports or challenges it. A good reason earns two points. The first to ten wins.

Scripture. "And he changeth the times and the seasons: he removeth kings, and setteth up kings: he giveth wisdom unto the wise, and knowledge to them that know understanding:" (Daniel 2:21, KJV)

In 1919 four empires had just fallen, and new states were being set up across East Europe. Daniel reminds us that the rise and fall of rulers is in God's hands. Wisdom about geography is His gift too, and it is meant to serve justice, not to replace it.

Practice answers

1. "Who rules East Europe commands the Heartland; Who rules the Heartland commands the World-Island; Who rules the World-Island commands the World." From *Democratic Ideals and Reality* (1919).
2. Europe, Asia and Africa. Africa and Asia are joined at the Isthmus of Suez.
3. Any two: East Europe, the basin of the Baltic Sea, the basin of the Black Sea, Persia, Tibet, Mongolia.
4. Because a land power could close their narrow entrances (the Danish straits and the Bosphorus) and shut out outside navies, so sea power could not reach them freely.

5. $9/12 \times 510 = 382.5$ million km². $361 \div 510 \approx 0.71$, a bit less than nine-twelfths (0.75), about 8.5 twelfths.
6. $42.5 + 7.7 = 50.2$ million km². $85.2 \div 50.2 \approx 1.7$, so the World-Island is about 1.7 times the area of the Americas and Australia together.
7. $1,220 \times 0.621 \approx 758$ miles. $1,220 \div 25 \approx 49$ days.
8. For example Warsaw, Brest, Minsk, Smolensk, Lithuania, Belarus. The stretch lies on the North European Plain, which has no high mountain barrier between Germany and Moscow; rivers such as the Vistula, Bug, Neman and Dnieper are obstacles but can be crossed.
9. By the treaty, Russia gave up Poland, the Baltic lands, Finland and Ukraine, so Germany and Austria-Hungary dominated East Europe from the Baltic to the Black Sea and could draw on its grain and coal, opening the way to the Heartland. It did not last because Germany was defeated in the west in 1918 by the Allies, aided by British sea power and American armies; the Armistice of November 11, 1918, required Germany to renounce the treaty.
10. A belt of independent states between Germany and Russia meant to keep either from controlling East Europe. Any four: Finland, Estonia, Latvia, Lithuania, Poland, Czechoslovakia, Romania, the Kingdom of the Serbs, Croats and Slovenes (Yugoslavia).
11. Possible answers: the World-Island's land is not equally useful (much is desert, ice or mountain); its peoples are divided into many nations, languages and faiths that no power has ever united; sea and air powers outside it (such as the United States) have proved able to hold the balance; and no power that held the Heartland, including the Soviet Union, ever commanded the World-Island.
12. Answers vary. A strong answer explains that Mackinder thought free peoples, devoted to peace and to their ideals, tend to ignore geography, power and preparation until a determined enemy forces war on them; he wanted ideals to be guarded by a sober understanding of reality. It weighs whether ideals and realism can work together (for example, a just peace that also creates defensible states), and it may note the danger on the other side: "realism" cut loose from moral ideals can excuse conquest, as Lesson 3.4 will show.

3.3 RAILWAYS AND LAND POWER: THE TRANS-SIBERIAN

OBJECTIVES

- Tell the story of the Trans-Siberian Railway from its start at Vladivostok in 1891 to the completion of the all-Russian route along the Amur in 1916, including the Lake Baikal gap and the Chinese Eastern Railway.
- Explain why Mackinder believed railways were giving land power the mobility that only sea power had enjoyed, and test that belief against the Russo-Japanese War (1904–1905) and the First World War.
- Compare rail and sea routes by distance, speed and capacity, using real figures for the Trans-Siberian and for the voyage of the Russian Baltic Fleet to Tsushima.

Warm-up. Lay a piece of string on a map or globe from Moscow to Vladivostok, first in a straight line and then bending it through Yekaterinburg, Omsk, Novosibirsk, Irkutsk and Khabarovsk, the way the railway goes. Mark both lengths on the string with a pen. Which is longer, and by about how much? Now guess: how many days would a train take to cover the longer line?

Watch. *Would the First World War have been "The Great War" without RAILWAYS?!* (Railways Explained, 11:32). <https://www.youtube.com/watch?v=CkXgx14JqnY>
With the big idea: watch how railways let the powers of Europe move whole armies to their borders in 1914, and think about why Russia wanted one long line across Siberia for the same reason.

Note: Captions were not available to check; preview it first. The video covers European railways in the First World War and probably says little or nothing about the Trans-Siberian itself. Covers railways in the First World War (1914–1918), not the building of the Trans-Siberian (begun 1891) or the Russo-Japanese War.

KEY TERMS

Trans-Siberian Railway

The railway across Russia from Moscow to Vladivostok, about 9,289 km (5,772 miles) long, begun in 1891 and completed on an all-Russian route in 1916.

Chinese Eastern Railway

A Russian-built shortcut across Manchuria from near Chita through Harbin to Vladivostok, with a branch south to Port Arthur, built under agreements with China from 1896.

interior lines

The advantage of a power that can move forces across the inside of a region faster than an enemy can move around its outside.

single track

A railway with one line of rails, on which trains going in opposite directions must wait for each other at passing sidings, which limits how many trains can run.

rail gauge

The distance between the two rails. Russia used a broad gauge of 5 feet (1,524 mm); most of Europe used 1,435 mm, so trains could not run straight through at the border.

train ferry

A ship that carries railway cars across water; on Lake Baikal the icebreaker *Baikal* carried cars across before a line around the lake was finished.

CORE IDEAS

The story. In May 1891, at Vladivostok on the Pacific, the heir to the Russian throne, the Tsarevich Nicholas, wheeled a barrow of earth and laid a stone to begin the eastern end of a railway that would cross the whole of Asia. Nicholas was returning from a long journey to the East, and his father, Tsar Alexander III, had decreed that the line be built. Sergei Witte, who became minister of finance in 1892, drove the project forward as the key to Russia's future in Siberia and the Pacific. It was built in sections from both ends at once: the West Siberian, the Central Siberian, the Transbaikal and the Ussuri lines. Gangs of laborers, soldiers, exiles and convicts cut through forest, bridged great rivers such as the Ob, the Yenisei and the Irtysh, and laid track across permafrost. By 1904 trains could run from European Russia to the Pacific, and the railway soon grew to about 9,289 km (5,772 miles) from Moscow to Vladivostok, the longest railway in the world.

How it worked. Two great obstacles slowed the work. The first was Lake Baikal, more than 600 km (about 400 miles) long and walled by steep cliffs at its southern end. Until a line could be blasted along the shore, an icebreaking train ferry, the *Baikal*, built in England and carried to the lake in pieces, ferried railway cars across. The Circum-Baikal line, with dozens of tunnels, was finished in 1904. The second obstacle was the Amur, where the Russian frontier with China bends far north. Russia found a shortcut: by agreements with China from 1896 it built the **Chinese Eastern Railway** straight across Manchuria through Harbin to Vladivostok, with a branch south to Port Arthur, the warm-water base Russia leased in 1898. Only in 1916, when the great bridge over the Amur at Khabarovsk opened, could trains cross from Europe to the Pacific entirely on Russian soil.

The big idea. Mackinder watched this railway with close attention. In 1904 he noted that Russian railways already ran some 6,000 miles from the German border to Vladivostok, and he argued that transcontinental railways were changing the conditions of land power. His reasoning went like this. For four centuries the sea had been the great highway, because a ship could carry men and goods farther, faster and cheaper than any cart or caravan. The steppe horsemen had once given land power its mobility, but horses could not carry heavy goods or whole armies with their guns. The railway could. If railways laced the interior of Eurasia, the power holding the pivot could shift armies, grain, coal and ore across the continent on **interior lines**, far from any enemy fleet, and could develop the vast resources of Siberia and Central Asia safe from blockade. The pivot would gain the mobility of the sea without its exposure.

The test of 1904. History tested Mackinder within days. On the night of February 8 to 9, 1904, two weeks after his lecture, Japan attacked the Russian fleet at Port Arthur, and the

Russo-Japanese War began. The Trans-Siberian was still mostly single track, and the Circum-Baikal line was not yet open. In the winter of 1904 Russian engineers laid rails across the ice of Lake Baikal and hauled cars over it. All through the war the railway carried hundreds of thousands of soldiers east, far more than the prewar planners had thought possible. Yet Russia lost. Port Arthur fell in January 1905, the Russian army was defeated at Mukden in March, and on May 27 and 28 the Baltic Fleet, which had sailed some 18,000 nautical miles around the world to reach the Pacific, was destroyed by Admiral Tōgō at Tsushima. President Theodore Roosevelt mediated the peace, signed at Portsmouth, New Hampshire, on September 5, 1905. Japan, an island power of the outer crescent, fought close to home, supplied by sea; Russia fought at the far end of a single thin thread of rail.

Weighing the idea. The war showed both sides of Mackinder's argument. The railway made it possible for Russia to fight in Manchuria at all; without it, Russia could have sent an army only by sea, as it sent its doomed fleet. But a single track could carry only so many trains a day, and a railway is easy to cut and slow to repair. The First World War taught a second lesson: railways favored the power with the densest network, not the largest territory. Germany, in the inner crescent, could shift whole army corps between its eastern and western fronts in days, while Russia's thinner network and its different **rail gauge** left it slow to mass its strength. Railways were a tool of land power, but they rewarded industry and organization as much as space.

Technology overcoming geography. Still, Mackinder saw something real. In 1941, when Germany invaded the Soviet Union, the Soviets moved more than 1,500 factories east by rail, many to the Urals and western Siberia, beyond the reach of German armies and bombers, and rebuilt them to make tanks and guns. Depth plus railways helped the Heartland survive. As of 2026, the Trans-Siberian, double-tracked and electrified along its whole length, remains one of the busiest freight railways in the world, and container trains run regularly between China and Europe overland. Yet ships still carry most of the world's trade by volume, because nothing yet moves heavy cargo as cheaply as a large vessel on the open sea. The railway narrowed the gap between land and sea power; it did not close it.



The Trans-Siberian Railway, the Chinese Eastern shortcut across Manchuria and the branch to Port Arthur (simplified).

PICTURE STUDY



Trans-Siberian Railway Metal Truss Bridge on Stone Piers, over the Kama River near Perm, Ural Mountains Region, Sergei Mikhailovich Prokudin-Gorskii, about 1910 · Color photograph made from a glass plate with three exposures (red, green and blue filters); modern digital color composite · Library of Congress, Prints and Photographs Division, Prokudin-Gorskii Collection, Washington, D.C.

Sergei Prokudin-Gorskii was a Russian chemist and photographer who found a way to take color photographs about a century ago. He made three exposures of each scene, one each through red, green and blue filters, on a single long glass plate. With the support of Tsar Nicholas II, the same Nicholas who had begun the Trans-Siberian at Vladivostok, he traveled across the empire from about 1909 to 1915 in a railway car fitted as a darkroom, photographing towns, churches, workers and railways. The Library of Congress bought his glass plates in 1948 and has made color images from them.

This photograph shows a railway bridge over the Kama River near Perm, on the western side of the Ural Mountains, where the lines from European Russia head into Siberia. Each of the great Siberian rivers had to be crossed by a bridge like this one.

Look closely

- Count the spans and the stone piers. Why would engineers build tall piers rather than many small ones across a big river?
- Look at the steel trusses. What shapes do you see repeated, and why are triangles used?
- Look at the land around the bridge. Is it crowded with towns, or empty? What does that tell you about the country the railway crossed?
- Notice the slight color fringes in some parts of the picture. What do they tell you about how the three exposures were taken?

Talk about it

1. How many bridges like this do you think the Trans-Siberian needed between Moscow and Vladivostok? Which rivers would require the biggest ones?
2. Why might a tsar want a photographer to record his empire's railways and bridges?
3. In wartime, why would a bridge like this be both a great strength and a weak point for a land power?

PROJECT: A TIME-DISTANCE MAP: RAIL VERSUS SEA, 1904

Ordinary maps show distance in kilometers. Strategists care about distance in days. You will make a time-distance map that redraws the routes from European Russia to the Pacific by how long they took, and compare the railway with the sea route the Baltic Fleet sailed in 1904 and 1905.

You will need

- A globe or world map and a piece of string
- Graph paper, a ruler, colored pencils
- Your answers to Worked Examples 1 and 2
- A copy of Figure hd-trans-siberian

Steps

1. With string on a globe, measure the straight-line distance from Moscow to Vladivostok, then the railway route (bend the string through the main stations on Figure hd-trans-siberian). Record both in kilometers and miles.
2. With string, trace the sea route from the Baltic around Europe, through the Mediterranean or around Africa, across the Indian Ocean and north to the Sea of Japan. Record its approximate length.
3. On graph paper, let 1 cm stand for 1 day of travel. Draw a straight line from "Moscow" to the right for the railway journey (use about 7 days for a modern passenger train and about 31 days for a 1904 troop train, as in Practice Problem 5).
4. Below it, draw the sea route using the Baltic Fleet's 224 days at the same scale. You will need to tape several sheets together or use 1 cm for 10 days and say so in your key.
5. Mark on each line the stops and dangers: Lake Baikal and the single track on the railway; coaling stops and hostile waters on the sea route.
6. Write a paragraph: In 1904, which route did Russia depend on, and why? Then add one sentence on what changed when the railway was double-tracked and the Amur line was finished.

Tips

- Keep your scale the same for both lines, or the comparison will mislead.
- Time on a time-distance map includes waiting, coaling and repairs, not just moving.

Check your work

- My map has a clear time scale and a key.
- Both routes are drawn to the same scale and labeled with their real distances.
- My paragraph uses the map to explain why the railway mattered to Mackinder.

MAP NOTEBOOK

1. Draw a single-track railway with a passing siding and two trains, one waiting. Write beside it why a single track limits how many trains can run each day.
2. Make a timeline from 1891 to 1916 with five dates: the start at Vladivostok (1891), the Chinese Eastern agreements (1896), the Port Arthur lease (1898), the Circum-Baikal line (1904) and the Amur bridge at Khabarovsk (1916).
3. Sketch two rails 1,435 mm apart and two rails 1,524 mm apart. Write one sentence on what a break of gauge at a border means for an invading army.

From history. The icebreaker *Baikal* was built by Armstrong Whitworth at Newcastle upon Tyne in England, taken apart, shipped to Russia and carried thousands of kilometers overland in numbered pieces, then reassembled on the shore of Lake Baikal. She entered service in 1900 and carried railway cars across the lake on tracks laid on her deck, with a smaller sister ship, the *Angara*, carrying passengers. In the Russian Civil War the *Baikal* was badly damaged by fire in 1918; the *Angara* survives today as a museum ship at Irkutsk.

WORKED EXAMPLES

Example 1. The Trans-Siberian route from Moscow to Vladivostok is about 9,289 km (5,772 miles). The straight-line (great-circle) distance between the cities is about 6,430 km (4,000 miles). (a) How many times longer is the railway than the straight line? (b) A modern passenger train takes about 7 days. What is its average speed in km/h and mph? (c) Why does the railway bend so far from the straight line?

(Use the map or drawing “Compare the curving rail route with a straight line from Moscow to Vladivostok.” shown earlier in this lesson.)

1. (a) $9,289 \div 6,430 \approx 1.44$, so the railway is about 44 percent longer.
2. (b) $7 \text{ days} \times 24 \text{ h} = 168 \text{ hours}$. $9,289 \div 168 \approx 55 \text{ km/h}$. In miles: $5,772 \div 168 \approx 34 \text{ mph}$.
3. (c) The straight line from Moscow to Vladivostok runs far to the north across Siberian forest and permafrost with few towns. The railway follows the southern belt of better land and settlement, linking the cities that grew up where the river crossings and farmland were, and it must swing around Lake Baikal and then follow the Amur, which forms the Chinese border, before turning south to Vladivostok.

Answer: (a) About 1.44 times longer. (b) About 55 km/h (34 mph) including stops. (c) It follows settled land, river crossings and the Chinese border rather than the empty northern straight line.

Example 2. The Russian Second Pacific Squadron (the Baltic Fleet) left Libau (Liepāja) on October 15, 1904, and met the Japanese fleet at Tsushima on May 27, 1905, after a voyage of about 18,000 nautical miles. (a) How many days was it under way? (b) What was its average speed in nautical miles per day and in knots? (c) Convert the voyage to kilometers (1 nautical mile = 1.852 km) and compare it with the 9,289 km railway.

1. (a) October 15 to 31: 16 days. November 30, December 31, January 31, February 28, March 31, April 30, May 27. Total = $16 + 30 + 31 + 31 + 28 + 31 + 30 + 27 = 224$ days.
2. (b) $18,000 \div 224 \approx 80$ nautical miles a day. $80 \div 24 \approx 3.3$ knots average, very slow, because the fleet spent long weeks coaling and waiting (it had few friendly coaling stations along the way).
3. (c) $18,000 \times 1.852 \approx 33,300 \text{ km}$. $33,300 \div 9,289 \approx 3.6$, so the sea route was about 3.6 times as long as the railway.

Answer: (a) 224 days. (b) About 80 nautical miles a day, an average of about 3.3 knots. (c) About 33,300 km, roughly 3.6 times the length of the Trans-Siberian. For Russia, the land route really was the shorter road to the Pacific.

Example 3. A teaching model of a single-track railway (the numbers are assumptions for practice, not historical records): suppose the line can run 10 trains a day eastbound, and each troop train carries 800 soldiers. (a) How many soldiers a day can the line move? (b) How many days to move an army of 120,000? (c) If doubling the track lets the line run 24 trains a day each way, how many days does the same army take? (d) What does this show about Mackinder's argument?

1. (a) $10 \times 800 = 8,000$ soldiers a day.
2. (b) $120,000 \div 8,000 = 15$ days of loading, plus the journey itself for the last train.
3. (c) $24 \times 800 = 19,200$ a day. $120,000 \div 19,200 = 6.25$, about 6 to 7 days.
4. (d) A railway's value depends on its capacity, not just its length. A thin single line across a continent gives far less mobility than a dense, double-tracked network. Railways favored the power that could build and run them well.

Answer: (a) 8,000 a day. (b) 15 days. (c) About $6\frac{1}{4}$ days. (d) Mobility on land depends on capacity, which depends on industry and organization; space alone is not enough.

PRACTICE

1. **EASY** In what year and at what city was the Trans-Siberian begun, and who presided?
2. **EASY** Name the two great obstacles that delayed an all-Russian route, and how each was overcome.
3. **EASY** Convert 9,289 km to miles ($1 \text{ km} \approx 0.621 \text{ mi}$).
4. **EASY** In one sentence, what did Mackinder think railways were doing to the balance between land power and sea power?
5. **MEDIUM** A troop train of 1904 averaged about 25 km/h (15.5 mph) while moving, and spent as long again waiting at sidings. How many days would 9,289 km take?
6. **MEDIUM** Russia's old broad gauge was 5 feet (60 inches, 1,524 mm); standard gauge is 4 feet $8\frac{1}{2}$ inches (1,435 mm). Find the difference in inches and in millimeters, and explain why so small a difference mattered to armies in 1914.
7. **MEDIUM** Use Figure hd-trans-siberian. Which city did the Chinese Eastern Railway pass through in Manchuria, and which branch led to Russia's warm-water port?
(Use the map or drawing "Use the map for Problems 7 and 8." shown earlier in this lesson.)
8. **MEDIUM** Why did losing the Russo-Japanese War cost Russia the use of the branch to Port Arthur?
9. **HARD** Explain how the Russo-Japanese War both supported and weakened Mackinder's claim about railways.
10. **HARD** Why did railways in the First World War favor Germany more than Russia, even though Russia was far larger?
11. **HARD** In 1941 the Soviet Union evacuated more than 1,500 factories east by rail. Explain how this event fits Mackinder's idea of the Heartland.
12. **CHALLENGE** As of 2026, container trains run between China and Europe, yet ships still carry most of the world's trade by volume. Write a paragraph explaining why, and what

this means for Mackinder's prediction.

COMMON MISTAKES

- Thinking the Trans-Siberian was finished all at once. It opened in sections, relied on a ferry across Baikal and a shortcut through Manchuria, and was not complete on Russian soil until 1916.
- Measuring a railway only by its length. Its capacity (track, sidings, locomotives, organization) decides how much it can really move.
- Assuming railways simply made land power stronger than sea power. They helped land powers with dense networks and strong industry most, and ships remained cheaper for heavy cargo.

Make it a game · Rail or Sail?. Each player gets cards naming a cargo and a route (troops from Moscow to Manchuria in 1904; 10,000 tons of grain from Odesa to London; urgent machine parts from China to Germany today; coal from Newcastle to Malta in 1900). Players say whether rail or sea is better and give one reason (distance, cost, speed, safety from enemy fleets, borders and gauges). The group votes on the best reason. Two points for a winning reason; play until every card is used.

Scripture. "Every valley shall be exalted, and every mountain and hill shall be made low: and the crooked shall be made straight, and the rough places plain:" (Isaiah 40:4, KJV)

Isaiah spoke of preparing the way of the Lord, a highway made straight across the wilderness. Railway engineers did something like it on a human scale, filling valleys and cutting through hills. Their works are real achievements, but Isaiah's highway leads somewhere no railway can: to the coming of the King.

Practice answers

1. 1891, at Vladivostok; the Tsarevich Nicholas (later Tsar Nicholas II), at the decree of his father, Tsar Alexander III.
2. Lake Baikal: first a train ferry (the icebreaker *Baikal*), then the Circum-Baikal line (1904). The Amur: first a shortcut across Manchuria by the Chinese Eastern Railway, then the Amur line, completed when the bridge at Khabarovsk opened in 1916.
3. $9,289 \times 0.621 \approx 5,770$ miles (the usual figure is 5,772).
4. He thought transcontinental railways were giving land powers the speed and carrying capacity that only sea powers had enjoyed, so the power holding the interior of Eurasia could move armies and resources across the continent beyond the reach of fleets.
5. Moving time: $9,289 \div 25 \approx 372$ hours. Doubled for waiting: about 744 hours. $744 \div 24 \approx 31$ days.
6. $60 - 56.5 = 3.5$ inches; $1,524 - 1,435 = 89$ mm. Wheels set for one gauge cannot run on the other, so at the border every load had to be moved to new cars (or the track relaid). An invader could not simply run its own trains into Russia, and Russia could not run straight into Germany either.

7. Harbin. The southern branch from Harbin ran to Port Arthur (Lüshun) on the Liaodong Peninsula.
8. By the Treaty of Portsmouth (1905), Russia gave its lease of Port Arthur and the southern part of the Manchurian railway (south of about Changchun) to Japan, so its rail link to a warm-water port on the Yellow Sea was lost.
9. Supported: the railway let Russia send large armies thousands of kilometers to Manchuria, something impossible by land a century earlier, and it was a far shorter route than the sea voyage the Baltic Fleet made. Weakened: the line was single-track and broken at Lake Baikal, so it could not carry enough; Japan, an island sea power fighting near home and supplied by sea, won on land and at sea.
10. Germany had a dense, well-organized rail network and short interior lines between its fronts, so it could shift army corps east or west in days. Russia's network was thin for its size, distances were vast, and its broad gauge meant that captured or connecting lines could not simply be used. Railways rewarded industry and organization, not size alone.
11. It shows the Heartland's depth combined with railways: factories could be moved thousands of kilometers inland, beyond the reach of the invader's armies and bombers, and rebuilt to keep producing weapons. This is the safe interior, joined by rail, that Mackinder described.
12. Answers vary. A strong answer explains that one large container ship carries many thousands of containers with a small crew and little fuel per ton, while a train carries perhaps a hundred or fewer containers and must cross several borders and gauges; rail is faster than sea but costs more per container, so it suits urgent or valuable goods. It concludes that railways narrowed the gap between land and sea, as Mackinder said, but did not overturn the cost advantage of the sea.

3.4 RATZEL, HAUSHOFER AND THE ABUSE OF GEOPOLITICS

OBJECTIVES

- Explain Friedrich Ratzel's organic theory of the state and his idea of *Lebensraum* (living space), giving his real achievements as a geographer their due.
- Tell how Karl Haushofer and the German school of *Geopolitik* turned Ratzel's metaphor and Mackinder's map into propaganda after 1918, and how the Nazi regime joined "living space" to racial ideology in a war of conquest and mass murder.
- Use population densities and distances from 1939 to 1941 to show that the claim of "need for space" was false on its own terms, and list the warning signs of geography abused.

Warm-up. Write the sentence "A state is a living thing that must grow or die" at the top of a page. Below it, list three things that are true of living things (they eat, grow, compete, die). Now ask of each: is this really true of a country, or only a figure of speech? Then write one sentence on what a ruler might do if he believed the sentence literally.

Watch. *The Molotov-Ribbentrop Pact - History Matters (Short Animated Documentary)* (History Matters, 2:34). <https://www.youtube.com/watch?v=iCXaC0TVDbY>

After the story: watch this short animation on the 1939 Molotov-Ribbentrop Pact and look for how its secret protocol split Eastern Europe between Germany and the Soviet Union.

Note: Captions were not available to check; preview it first. This channel uses a dry, joking tone (the description calls the secret protocols "fun stuff"), and the video touches on the invasion and partition of Poland.

Backup video. *22nd June 1941: Operation Barbarossa begins as German forces and their allies invade the USSR in WW2* (HistoryPod, 2:39). <https://www.youtube.com/watch?v=nUiHnwzUEHU>

After the story: watch how Germany broke the 1939 pact and invaded the Soviet Union on June 22, 1941, and notice that the narrator names the grab for farmland and raw materials as a goal, which is the *Lebensraum* idea the lesson describes. Note: Captions were not available to check; preview it first. It describes a huge invasion with very heavy losses and may touch on Nazi crimes in the East.

KEY TERMS

organic theory of the state

The idea, set out by Ratzel and Kjellén, that a state is like a living organism rooted in the soil, which grows, competes and declines; a metaphor later used to excuse conquest.

Lebensraum

German for "living space." Ratzel used it for the territory a people or species needs; the Nazi regime used it to mean land in the East to be seized from Poles, Russians, Ukrainians

and others.

Geopolitik

The German school of geopolitics of the 1920s to 1940s, led by Karl Haushofer, which mixed geography with the political aim of overturning the 1919 peace settlement.

autarky

National self-sufficiency: producing at home everything a nation needs, so it cannot be hurt by blockade.

pan-regions

Haushofer's scheme of a few great north-south blocs (such as Pan-America, Eur-Africa and Pan-Asia), each dominated by one great power.

suggestive map

A map drawn to persuade rather than inform, using arrows, shading and selective facts to make a political claim look like a fact of nature.

CORE IDEAS

The story. In January 1924, in Munich, a retired Bavarian general named Karl Haushofer helped launch a new monthly magazine, the *Zeitschrift für Geopolitik* (Journal of Geopolitics). Haushofer, born in 1869, had served as a military observer in Japan from 1908 to 1910 and had come home an admirer of Japan's rise. He had earned a doctorate at the University of Munich in 1913 with work on Japan, and after commanding troops in the First World War he lectured in geography there. One of his students and assistants was a young veteran named Rudolf Hess. In 1924 Hess was in Landsberg prison with Adolf Hitler, both jailed after the failed Munich putsch of November 1923, and Haushofer visited Hess there. During that imprisonment Hitler dictated much of *Mein Kampf*, which demanded "living space" in the East. Historians still debate how much Hitler took from Haushofer and how much he simply borrowed his words. What is not debated is that by the late 1930s the language of geopolitics had become part of the vocabulary of a regime bent on conquest.

Where the idea came from: Ratzel. The roots go back to Friedrich Ratzel (1844–1904), one of the founders of human geography. Ratzel trained in zoology, worked as a traveling journalist (including a long journey in North America in the 1870s), and became a professor at Munich and then Leipzig. His *Anthropogeographie* (1882 and 1891) studied how peoples are shaped by and spread across the land, and his careful attention to migration, settlement and culture influenced geographers in Europe and America. In *Political Geography* (1897) and an essay titled "*Der Lebensraum*" (1901), he described the state as an organism rooted in its soil, whose borders are like a living skin that grows or shrinks, and he borrowed the biologist's term "living space." Ratzel wrote in an age when Darwin's ideas were being applied to everything and when European powers were building empires; many writers of his day used such figures of speech. But a metaphor that says a nation must grow or die invites a terrible conclusion: that seizing a neighbor's land is as natural as a tree spreading its roots. The Swedish scholar Rudolf Kjellén, who coined "geopolitics" in 1899, carried the organism idea further, as you saw in Lesson 1.1.

How it was twisted: Haushofer's *Geopolitik*. Haushofer and his circle took three things and fused them. From Ratzel they took the organism and "living space." From Mackinder, whose 1904 paper Haushofer praised as one of the greatest of all geographic world views, they took the Heartland, but read in reverse: where Mackinder warned the sea powers against a German-Russian combination, Haushofer urged one. He called for a continental bloc of Germany, Russia and Japan that would dominate Eurasia and break the power of Britain and America. And from the bitterness of 1919 they took the aim of overturning the Versailles settlement. *Geopolitik* presented itself as science, but it was written to serve a political goal, and its "suggestive maps," with bold arrows, encircled Germanys and shaded "German soil" far beyond the borders, were made to persuade. Under the Nazi regime geopolitics was taught in schools, and its maps filled magazines and classrooms.

The abuse. The Nazi regime took "living space" and joined it to a racial ideology that geography never contained. Hitler's aim in the East was not merely to rearrange borders; it was to conquer land, remove or starve the peoples living on it and settle Germans in their place. On August 23, 1939, Germany and the Soviet Union signed a nonaggression pact with a secret protocol dividing East Europe. Germany invaded Poland on September 1; the Soviet Union invaded from the east on September 17; and on September 28 the two powers fixed their new frontier across Poland on a map signed by Stalin and Ribbentrop. For a moment Mackinder's nightmare, Germany allied with the master of the Heartland, had come true. Then on June 22, 1941, Hitler broke the pact and invaded the Soviet Union, the opposite of Haushofer's continental bloc. Plans drawn up for the East, such as the *Generalplan Ost*, foresaw the expulsion or death of tens of millions of Slavs. About six million Jews were murdered in the Holocaust, and millions of Soviet prisoners of war and Polish and Soviet civilians died by starvation, shooting and forced labor. These were crimes chosen by men, not forces of nature.

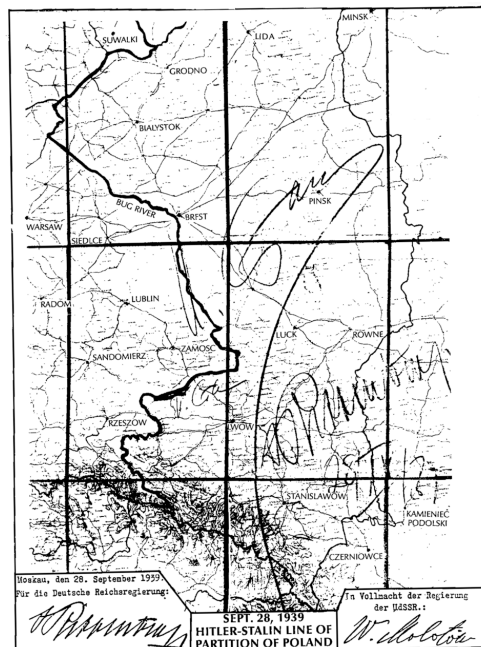
The end of the story. Haushofer's own life ended in ruin. His wife, Martha, had a Jewish father, and Hess for years protected the family. Their son Albrecht, also a geographer, joined contacts of the German resistance; after the failed attempt on Hitler's life on July 20, 1944, he was arrested and imprisoned in Moabit prison in Berlin, where he wrote the poems later published as the *Moabit Sonnets*. In the night of April 22 to 23, 1945, as Soviet troops closed on Berlin, he was taken out and shot by the SS. Karl Haushofer himself was held for a time in Dachau after the July plot. After the war he was questioned by the American Jesuit Edmund A. Walsh, who was gathering evidence for the Nuremberg trials, but he was not charged. In March 1946 he and Martha took their own lives. For decades afterward, the very word "geopolitics" was distrusted in Germany and America.

The warning. The lesson is not that geography is evil or that maps should not be studied. Mackinder, after all, wrote to defend a balance of free nations, and his Heartland was a warning against a would-be world conqueror. The lesson is to watch for the signs of geography abused: a metaphor treated as a law of nature ("states must grow"); scholarship written to serve a ruler's goal; maps that hide the people already living on the land; and, above all, the claim that geography or "necessity" excuses a moral choice. Geography describes costs and opportunities. It never commands a nation to covet its neighbor's fields. Every theory in this course must be weighed not only for its truth but for how it can be used.



The German-Soviet frontier of September 28, 1939 (approximate), and the road to Moscow in 1941.

PICTURE STUDY



Map of the German-Soviet Boundary in Poland, Signed by Stalin and Ribbentrop, German and Soviet officials; signed by Joseph Stalin and Joachim von Ribbentrop, September 28, 1939 · Printed map with colored pencil line and handwritten signatures · Political Archive of the Federal Foreign Office (Politisches Archiv des Auswärtigen Amts), Berlin

On September 28, 1939, four weeks after Germany invaded Poland and eleven days after the Soviet Union invaded from the east, German Foreign Minister Joachim von Ribbentrop came to Moscow. With Stalin present, the two powers signed a Boundary and Friendship Treaty

that fixed their new frontier across conquered Poland. This map, attached to it, shows the line, and Stalin and Ribbentrop signed it in large letters.

Look at it as a geographer and as a Christian. It is a real map, drawn with care, following rivers. It is also the record of a great crime: two dictatorships dividing a nation of more than thirty million people without asking any of them.

Look closely

- Follow the boundary line. Which rivers does it seem to follow? Why might negotiators choose rivers for a frontier?
- Find Warsaw. On which side of the line is it? Find the old city of Lwów (Lviv). Which side?
- Look at the size of the signatures compared with the towns on the map. What does that tell you about how the signers saw their power?
- What is missing from this map that would tell you about the people who lived there?

Talk about it

1. How does this map fulfill, for a time, the combination Mackinder feared in 1904 and Haushofer urged in the 1920s and 1930s?
2. Why is it important to say plainly that the line on this map was a moral choice, not a geographic necessity?

PROJECT: OVERLAY: THE LINE OF SEPTEMBER 28, 1939

You will draw the German-Soviet frontier of 1939 on tracing paper over a modern map of Poland and its neighbors, mark what happened in the cities on each side, and finish with a short list of warning signs of geography abused. The goal is to see how a line on a map, drawn by distant rulers, fell across real towns and families.

You will need

- A modern map of Poland, Lithuania, Belarus and western Ukraine (atlas or printout)
- Tracing paper or baking parchment, tape, a fine black pen and a red pencil
- Figure hd-1939-1941 and the picture study above
- Your map notebook

Steps

1. Tape the tracing paper over the modern map and trace the outline of Poland's borders as they were in 1939 (your teacher or an atlas of the Second World War can help).
2. In red, draw the frontier of September 28, 1939, following Figure hd-1939-1941: from the border of East Prussia along the Pisa and Narew rivers, then down the Bug past Brest, then west to the San and south along it to the Carpathians.
3. Mark and label Warsaw, Kraków and Lublin on the German side, and Białystok, Brest, Lwów (Lviv) and Wilno (Vilnius) on the Soviet side.

4. Shade lightly the lands Germany annexed directly to the Reich in the west, and write beside the eastern zone that it was annexed by the Soviet Union.
5. On a separate page write a factual paragraph: what happened to Poland in September 1939, using the dates August 23, September 1, September 17 and September 28.
6. Make a poster titled “Warning Signs of Geography Abused” with at least four signs from this lesson, each with one example.

Tips

- Keep your paragraph factual and plain; the facts are heavy enough without adjectives.
- Vilnius was handed by the Soviets to Lithuania in October 1939; note it carefully if you include it.

Check your work

- My overlay shows the 1939 line along the correct rivers and places the cities on the correct sides.
- My paragraph gives the four dates and what happened on each.
- My poster lists at least four clear warning signs with examples.

MAP NOTEBOOK

1. Make a three-column chart: Ratzel, Kjellén, Haushofer. For each, write dates, nationality, main work or idea, and one way the idea was later misused.
2. Draw Mackinder’s 1904 warning as an arrow joining Germany and Russia, and beside it Haushofer’s continental bloc as an arrow from Germany through Russia to Japan. Write under them: “Same map, opposite purposes.”
3. Copy Micah 2:2 and write one sentence connecting it to the Nazi idea of *Lebensraum*.

From history. Albrecht Haushofer’s *Moabit Sonnets*, eighty poems written in his cell in early 1945, were found after his death, reportedly in his hand or pocket when his body was recovered. In one of them, titled “Guilt,” he wrote that his guilt lay not in joining the resistance but in having seen the evil coming and not warning loudly and clearly enough. The sonnets were published in 1946 and are still read in Germany as a witness of conscience under tyranny.

WORKED EXAMPLES

Example 1. Test the claim that Germany “needed” more space. In 1939 Greater Germany (including Austria and the Sudetenland) had about 79 million people on about 580,000 km² (224,000 sq mi). Belgium had about 8.4 million people on about 30,500 km² (11,800 sq mi). As of 2026, Germany has about 83 million people on about 357,600 km² (138,000 sq mi). Find each population density in people per km² and per sq mi.

1. Greater Germany, 1939: $79,000,000 \div 580,000 \approx 136$ per km²; $79,000,000 \div 224,000 \approx 353$ per sq mi.
2. Belgium, 1939: $8,400,000 \div 30,500 \approx 275$ per km²; $8,400,000 \div 11,800 \approx 712$ per sq mi.
3. Germany, 2026: $83,000,000 \div 357,600 \approx 232$ per km²; $83,000,000 \div 138,000 \approx 601$ per sq mi.
4. Comparison: Belgium in 1939 was about twice as crowded as Germany, and today’s Germany is about 1.7 times as crowded as the Germany of 1939 ($232 \div 136 \approx 1.7$), on about 40 percent less land, yet it feeds and employs its people through work and trade.

Answer: Germany 1939: about 136 per km² (353 per sq mi). Belgium 1939: about 275 per km² (712 per sq mi). Germany 2026: about 232 per km² (601 per sq mi). The “need for space” was not a geographic fact but a political and ideological claim; denser nations have prospered by trade instead of conquest.

Example 2. On June 22, 1941, German armies crossed into the Soviet Union near Brest. Smolensk, about 630 km (390 miles) away in a straight line, was entered on about July 16. Moscow is about 370 km (230 miles) beyond Smolensk. By December 5, 1941, when the Soviet counteroffensive began, the Germans stood about 30 km (19 miles) from Moscow. Find the average straight-line advance per day (a) from Brest to Smolensk and (b) from Smolensk to the outskirts of Moscow.

(Use the map or drawing “Brest to Smolensk to Moscow, 1941.” shown earlier in this lesson.)

1. (a) June 22 to July 16: 8 days left in June (23 through 30) plus 16 days in July = 24 days. $630 \div 24 \approx 26$ km a day ($390 \div 24 \approx 16$ miles a day).
2. (b) Distance gained: $370 - 30 = 340$ km (about 211 miles). July 16 to December 5: 15 days left in July, 31 in August, 30 in September, 31 in October, 30 in November and 5 in December = 142 days. $340 \div 142 \approx 2.4$ km a day ($211 \div 142 \approx 1.5$ miles a day).
3. Comparison: the pace fell by a factor of about $26 \div 2.4 \approx 11$, as distance, supply lines on broad-gauge railways, autumn mud, winter and Soviet resistance took their toll.

Answer: (a) About 26 km (16 miles) a day. (b) About 2.4 km (1.5 miles) a day, roughly one-eleventh of the first pace. The depth of the Heartland, which Mackinder described, helped defeat the invader.

Example 3. Haushofer’s pan-regions ran north to south. His Eur-Africa would stretch from the North Cape of Norway (about 71.2° N) to the Cape of Good Hope (about 34.4° S). Using 111 km (69 miles) per degree of latitude, how long is that span? Why would a planner who thought only in such blocs be likely to ignore the peoples inside them?

1. Degrees of latitude: $71.2 + 34.4 = 105.6^\circ$ (one point is north of the equator and one south, so the degrees add).
2. Distance: $105.6 \times 111 \approx 11,720$ km; $105.6 \times 69 \approx 7,290$ miles.
3. Meaning: a single bloc 11,700 km long would contain hundreds of peoples, languages and faiths. A scheme that treats such a span as one “region” for one great power to dominate sees land and resources, not people with their own rights and histories.

Answer: About 105.6° of latitude, roughly 11,700 km (7,300 miles). Thinking in vast blocs turns peoples into territory, which is exactly the danger of abused geopolitics.

PRACTICE

1. **EASY** Give Ratzel’s dates and two of his works, and explain the meaning of *Lebensraum*.

2. **EASY** Who founded the *Zeitschrift für Geopolitik*, in what year and city, and which future Nazi leader was his student?
3. **EASY** Put these in order and give each date: the Soviet invasion of Poland; the German-Soviet pact; the German invasion of the Soviet Union; the German invasion of Poland; the boundary treaty and signed map.
4. **EASY** Give one real achievement of Ratzel as a geographer.
5. **MEDIUM** How did Haushofer read Mackinder “in reverse”?
6. **MEDIUM** Poland in 1939 had about 35 million people on about 389,000 km² (150,000 sq mi). Find its density and compare it with Greater Germany’s 136 per km².
7. **MEDIUM** Use Figure hd-1939-1941. Which three rivers did the September 28, 1939, frontier mainly follow? On which side were Warsaw and Brest?
(Use the map or drawing “Use the map for Problems 7 and 8.” shown earlier in this lesson.)
8. **MEDIUM** Berlin to Moscow is about 1,610 km (1,000 miles). Brest to Moscow is about 990 km (615 miles). What fraction of the Berlin-Moscow distance had Germany gained before June 22, 1941, by holding the line at Brest?
9. **HARD** Explain why the organic theory of the state is a dangerous metaphor, even if Ratzel did not intend the crimes later committed in its name.
10. **HARD** List four warning signs of geography abused, with an example of each from this lesson.
11. **HARD** Why is it accurate to say that the Nazi crimes in the East came from ideology rather than geography?
12. **CHALLENGE** Write a paragraph of 6 to 8 sentences comparing the purposes of Mackinder and Haushofer. Can the same map serve both a defender and a conqueror? What, then, makes the difference?

COMMON MISTAKES

- Blaming geography or geographers in general for Nazi crimes. The crimes were chosen by men driven by a racial ideology; the abuse of geography served them.
- Treating Ratzel, Kjellén and Haushofer as the same. Ratzel was a scholar of an earlier age whose metaphor was later misused; Haushofer deliberately built *Geopolitik* to serve political aims.
- Thinking the 1939 pact was Haushofer’s continental bloc fulfilled for good. It lasted less than two years and ended when Hitler invaded the Soviet Union in 1941.

Make it a game • Fact, Metaphor or Excuse?. One player reads a statement (for example: “The Bug River runs past Brest”; “A state is a living organism”; “Germany must have living space in the East”; “The Baltic’s entrance is narrow”; “A nation’s borders are its skin”). The others call out “Fact,” “Metaphor” or “Excuse” and give a one-sentence reason. Two points for a correct call with a good reason. Finish by writing three statements of your own for the next round.

Scripture. “And they covet fields, and take them by violence; and houses, and take them away: so they oppress a man and his house, even a man and his heritage.” (Micah 2:2,

Micah named the sin behind seizing land eight centuries before Christ: covetousness backed by violence. No theory of living space can turn that sin into a law of nature. A Christian studies geography to understand God's world and to love his neighbor, never to justify taking his neighbor's heritage.

Practice answers

1. Friedrich Ratzel, 1844–1904. *Anthropogeographie* (1882, 1891), *Political Geography* (1897) or the essay "*Der Lebensraum*" (1901). *Lebensraum* means "living space," the territory a people or species needs.
2. Karl Haushofer (with Kurt Vowinckel, Erich Obst and others), in 1924; Haushofer edited it from Munich, where he taught, though Vowinckel published it in Berlin. His student and assistant was Rudolf Hess.
3. German-Soviet pact (August 23, 1939); German invasion of Poland (September 1, 1939); Soviet invasion of Poland (September 17, 1939); boundary treaty and signed map (September 28, 1939); German invasion of the Soviet Union (June 22, 1941).
4. He helped found human geography, studying how peoples settle, migrate and adapt to the land in his *Anthropogeographie*, and he influenced geographers in Europe and America.
5. Mackinder warned the sea powers that a combination of Germany and Russia controlling the Heartland could threaten the world, so it must be prevented. Haushofer took the same map as advice for Germany: build a continental bloc of Germany, Russia and Japan to dominate Eurasia and defeat the sea powers.
6. $35,000,000 \div 389,000 \approx 90$ per km² ($35,000,000 \div 150,000 \approx 233$ per sq mi). Germany was more crowded, but Poland was a populated country, not empty "space"; seizing it meant taking land from millions of people.
7. The Narew, the Bug and the San (with the Pisa in the far north). Warsaw was on the German side; Brest was on the Soviet side.
8. Distance gained: $1,610 - 990 = 620$ km. $620 \div 1,610 \approx 0.39$, about 39 percent (in miles, $385 \div 1,000 \approx 0.39$). Measured from Berlin, the 1939 partition carried German power almost two-fifths of the way toward Moscow.
9. If a state is a living organism, then growth seems natural and necessary and borders seem like skin that must expand, so taking a neighbor's land looks like a law of nature rather than a choice. The metaphor hides human responsibility and ignores that land is already inhabited by people with their own rights. Ideas can be bent to uses their authors did not foresee, which is why metaphors must be tested against reality and morality.
10. Possible answers: (1) a metaphor treated as a law ("states must grow," the organic theory); (2) scholarship written to serve a political goal (*Geopolitik* aimed at overturning Versailles); (3) suggestive maps that hide the people living on the land (shaded "German soil," arrows of encirclement); (4) "necessity" used to excuse moral choices (*Lebensraum* as excuse for conquest); (5) treating peoples as mere territory (pan-regions, *Generalplan Ost*).
11. Geography described distances, soils and resources, but it did not require conquest; denser countries such as Belgium prospered without it. The decision to seize land, expel and starve its inhabitants and murder the Jews came from a racial ideology and from the choices of the regime's leaders. Treating these crimes as geographic necessity would excuse the guilty.
12. Answers vary. A strong answer notes that both used the Heartland map, but Mackinder wrote to warn free nations and preserve a balance of power, while Haushofer wrote to help

Germany overturn the peace and dominate Eurasia. It concludes that the same geographic facts can be used for opposite purposes; the difference lies in the aims, the respect for other peoples' rights and the moral limits of those who use the map. It may cite Micah 2:2 or the warning signs from the lesson.

3.5 WEIGHING MACKINDER: STRENGTHS, FAILURES AND THE REVISION OF 1943

OBJECTIVES

- Summarize Mackinder's 1943 article "The Round World and the Winning of the Peace," including his revised Heartland, Lenaland and the "Midland Ocean."
- Weigh Mackinder's ideas fairly: list what events after 1904 supported them, what events contradicted them, and what his critics (from Leo Amery in 1904 to later writers) said.
- Use population shares, travel times and distances to test whether the Heartland gained or lost weight in the twentieth century, and prepare for the midterm exam on Units 1 to 3 (given separately).

Warm-up. Draw a quick table with three columns: "Mackinder said," "What happened," and "Score (hit, miss or partly)." Fill in two rows from memory: his 1904 warning about a German-Russian combination, and his 1919 dictum about East Europe. Keep the table; you will finish it by the end of the lesson.

Watch. *28th November 1943: The Tehran Conference begins between Roosevelt, Churchill and Stalin* (HistoryPod, 2:27). <https://www.youtube.com/watch?v=P1iDj5zinQ8>
After the story: watch this short clip on the Tehran Conference of November 1943, a few months after Mackinder's article, and listen for the talks about Poland's borders and the postwar map of Europe.

Note: Captions were not available to check; preview it first. It covers the conference itself and does not discuss Mackinder or Spykman.

KEY TERMS

Midland Ocean

Mackinder's 1943 name for the North Atlantic and its connected seas, the basin around which Britain, France, the United States and Canada could balance the Heartland power.

Lenaland

Mackinder's 1943 name for the thinly peopled lands of eastern Siberia east of the Yenisei, which he set apart from the Heartland proper.

bridgehead

A secure foothold on a coast from which an outside power can land and supply forces; Mackinder named France as the bridgehead of the Midland Ocean powers.

counterexample

A real case that contradicts a general claim; one good counterexample can show that a claim is not a law.

revision

A thinker's own correction of an earlier idea in light of new evidence, as Mackinder revised his ideas in 1919 and 1943.

CORE IDEAS

The story. In July 1943, while the Second World War still raged, the American journal *Foreign Affairs* published an article by an eighty-two-year-old Englishman: "The Round World and the Winning of the Peace," by Sir Halford Mackinder. Its timing was striking. In February 1943 the German Sixth Army had surrendered at Stalingrad, and the Soviet Union, which had been Germany's partner in 1939, was now fighting beside Britain and the United States. Mackinder had been asked whether his Heartland idea still held. He answered that it was more useful and more valid than ever. If the Soviet Union came out of the war as conqueror of Germany, he wrote, it would be the greatest land power on the globe and in the strongest defensive position. Four months later, at the end of November 1943, Churchill, Roosevelt and Stalin met for the first time, at Tehran.

How he revised it. Mackinder made three important changes. First, he redrew the Heartland to match roughly the territory of the Soviet Union, but he set apart the vast, thinly peopled lands east of the Yenisei, which he called **Lenaland**; the true power of the Heartland lay west of it, from the Yenisei to the old Russian lands and the industry of the Urals. Second, he no longer spoke of the Heartland's master as a threat to be stopped at all costs. With Germany as the common enemy, he hoped the Soviet Union could be one partner in a balanced peace. Third, he described a counterweight: the **Midland Ocean**, the North Atlantic and its seas. Around it he saw a bridgehead in France, a moated aerodrome in Britain, and a reserve of trained manpower, farms and industry in the eastern United States and Canada. Less than a year later, on June 6, 1944, Allied armies sailed from Britain and landed in Normandy, using exactly that bridgehead. He also looked further ahead, to the day when the great populations of India and China, the monsoon lands of Asia, would grow in power and weight.

What he got right. A fair judge gives Mackinder real credit. He saw early that the world had become one closed system, in which a war in one region shakes the rest. He named East Europe as the hinge of world politics, and both world wars and the long Cold War turned on it: the First began with a quarrel in the Balkans and was fought largely between Germany and Russia; the Second began over Poland; and after 1945 the Soviet Union ruled East Europe behind what Churchill in 1946 called the "iron curtain." His 1904 fear of a German-Russian combination came true briefly in 1939. His Midland Ocean looks very like the North Atlantic Treaty, signed on April 4, 1949, by twelve nations around that ocean. And his insight that railways and depth gave the Heartland staying power was confirmed in 1941, when the Soviet Union moved its factories east and survived a blow that would have destroyed a smaller country.

What he got wrong. The record also shows great misses. No power that held the Heartland ever commanded the World-Island. The Soviet Union held both East Europe and the Heartland for more than forty years, yet it never dominated Western Europe, the Middle East, India or China, and it broke up on December 26, 1991. The Heartland's harsh climate,

thin population, long distances from markets and frozen coasts were burdens as well as shields. The outer crescent, which Mackinder had treated as the weaker side, proved stronger: the United States, an island power in his scheme, became the greatest power in the world, and sea power with industry won both world wars. Mackinder also gave too little weight to the airplane. In the discussion after his 1904 lecture, the young Leo Amery argued that air power would soon join sea and rail, and that the powers with the greatest industrial base would win, whatever their position. Nuclear weapons and long-range missiles later made the Heartland's safety from attack a thing of the past. Critics such as Nicholas Spykman, whom you will read in Unit 4, argued that the coastal Rimland, not the Heartland, held the world's people and wealth.

On the map: weighing the numbers. Population tells part of the story. The Russian Empire's census of 1897 counted about 126 million people, about 8 percent of a world of roughly 1.6 billion. The Soviet census of 1989 counted about 287 million, about 5.5 percent of a world of about 5.2 billion. As of 2026, Russia has about 146 million people, under 2 percent of the world's 8.3 billion. Whatever its geography, the Heartland's share of humanity has been shrinking for more than a century, while the coastal lands of Asia have grown. As of 2026, writers still debate Mackinder: some see new railways and pipelines across Central Asia as a revival of the Heartland, and East Europe remains a region where the interests of great powers meet. The map has not stopped mattering, but it has not obeyed any single theory.

The big idea: how to weigh a thinker. Mackinder was neither a prophet nor a fraud. He was a careful geographer who drew a bold picture of the world and then had the honesty to revise it in 1919 and again in 1943. His best ideas are lenses, not laws: they help us notice distances, routes, barriers and the weight of great regions. His failures remind us that technology, industry, alliances, ideas and the choices of nations can overturn any map, and that power in God's world is never simply a matter of position. When you write your dialogue between Mahan and Mackinder, let each man make his best case, and let the evidence, not your preference, decide.



Mackinder's Midland Ocean of 1943: a bridgehead in France, a moated aerodrome in Britain and a reserve in North America.

PICTURE STUDY



Stalin, Roosevelt and Churchill at the Tehran Conference, U.S. Army Air Forces photographer (12th Air Force), Late November 1943 · Black-and-white photograph · Library of Congress, Prints and Photographs Division

From November 28 to December 1, 1943, Joseph Stalin, Franklin D. Roosevelt and Winston Churchill met at Tehran, the capital of Iran, for their first conference together. They were photographed on the portico of the Soviet embassy, where the meetings were held. Here sat the leaders of the Heartland power and the two great powers of Mackinder's Midland Ocean, the very combination Mackinder had described only four months earlier in *Foreign Affairs*.

At Tehran the three leaders agreed on the invasion of France the following year and began to discuss the future borders of Poland. Look at the photograph knowing what came after: an alliance that won the war, and a division of Europe that lasted more than forty years.

Look closely

- Find each of the three leaders. How does each one's clothing (uniform, cape, suit) fit the way he wanted to be seen?
- Look at the men standing behind. What does their presence tell you about the conference?
- Find Tehran on a map. Why might a meeting place in Iran, between the Soviet Union and the British and American supply routes, have been chosen?

Talk about it

1. Mackinder hoped the Heartland power and the Midland Ocean powers could balance each other in peace. What does this photograph suggest about that hope in 1943, and what happened after 1945?

2. Which of the three men led a land power and which led sea powers? Does the photograph show equals?
3. What questions about East Europe would you want to ask these three men?

PROJECT: A WRITTEN DIALOGUE BETWEEN MAHAN AND MACKINDER

This is the unit project. You will write a dialogue of 1,200 to 1,800 words in which Alfred Thayer Mahan and Halford Mackinder debate whether sea power or land power will shape the twentieth century. Let each man argue from his own books and his own time, then add a short afterword weighing their arguments against what really happened.

A real meeting is possible to imagine: in 1894 Mahan, then commanding the cruiser USS *Chicago* on a visit to Europe, received honorary degrees from both Oxford and Cambridge, while Mackinder was teaching geography at Oxford. You may set your dialogue there, in London in 1904 after Mackinder's lecture, or in another plausible place and time, but say clearly that the meeting is imagined.

You will need

- Your notes from Unit 2 (Mahan) and Unit 3 (Mackinder)
- Short passages from Mahan's *The Influence of Sea Power upon History* (1890) and Mackinder's "The Geographical Pivot of History" (1904) and *Democratic Ideals and Reality* (1919)
- Your pivot-area map from Lesson 3.1 and your time-distance map from Lesson 3.3
- Paper or a computer for drafting; a highlighter

Steps

1. Choose the setting and date. Write a two-sentence stage note describing the place and saying that the meeting is imagined.
2. List each man's three strongest arguments. Mahan: command of the sea, the six elements of sea power, the cheapness of sea transport, bases and coaling stations. Mackinder: the closing of the Columbian epoch, the unreachable pivot, railways and interior lines, the German-Russian danger.
3. List the evidence each would cite from history up to the date of your dialogue (for 1904: the British Empire, the Spanish-American War, the Trans-Siberian, the Mongol conquests).
4. Draft the dialogue. Each speaker should make his case, answer the other's strongest point and admit at least one weakness. Quote each man only with words you have checked; otherwise paraphrase.
5. Have each man refer to a map at least once (for example, Mackinder pointing to the pivot area and Mahan to the sea lanes around Eurasia).
6. Write an afterword of 200 to 300 words in your own voice. Using events from 1904 to 1991 (Tsushima, the world wars, the Soviet Union, NATO, air power), judge which man's ideas held up better and where each was wrong.

7. Revise for accuracy, then read the dialogue aloud with a partner or parent taking one part.

Tips

- Do not make one man a straw man. The best dialogues give both sides their strongest case.
- Mahan died in December 1914 and never saw the outcome of the First World War. If your dialogue is set after that, it cannot include him.

Check your work

- Both men argue from their real ideas, with accurate dates and evidence.
- Each answers the other's strongest point and admits a weakness.
- My afterword weighs the arguments against what happened and reaches a reasoned judgment.

MAP NOTEBOOK

1. Finish your warm-up table with at least eight rows covering 1904, 1919 and 1943, scoring each claim as hit, miss or partly.
2. Sketch the North Atlantic and label Mackinder's three pieces of the Midland Ocean: bridgehead (France), moated aerodrome (Britain), reserve (eastern United States and Canada). Mark Normandy and the date June 6, 1944.
3. Draw a simple bar chart of the Heartland power's share of world population in 1897, 1989 and 2026, using the numbers in this lesson.

From history. Mackinder lived to see the end of the war he had analyzed. He died on March 6, 1947, at Parkstone in Dorset, a few days before President Truman, on March 12, 1947, asked Congress for aid to Greece and Turkey and announced what became known as the Truman Doctrine. The Cold War that followed, a long contest between the Heartland power and an alliance around the Atlantic, made Mackinder's name more widely known after his death than it had been in most of his life.

WORKED EXAMPLES

Example 1. Find the Heartland power's share of world population at three dates: the Russian Empire in 1897 (about 126 million, world about 1.6 billion); the Soviet Union in 1989 (about 287 million, world about 5.2 billion); and Russia as of 2026 (about 146 million, world about 8.3 billion). What trend do you see?

1. 1897: $126 \div 1,600 \approx 0.079$, about 7.9 percent.
2. 1989: $287 \div 5,200 \approx 0.055$, about 5.5 percent.
3. 2026: $146 \div 8,300 \approx 0.018$, about 1.8 percent.
4. Note that the 1989 and 2026 figures describe different states: the Soviet Union included Ukraine, Belarus, Central Asia and the Caucasus, and Russia today does not. Even so, both figures are well below the 1897 share.

Answer: About 7.9 percent (1897), 5.5 percent (1989) and 1.8 percent (2026). The Heartland power's share of humanity has fallen steadily, which weakens the idea that holding the Heartland brings command of the world.

Example 2. Mackinder's Midland Ocean joined North America and Europe. New York to London is about 5,570 km (3,460 miles; about 3,010 nautical miles) by great circle. (a) A wartime convoy averaged about 9 knots. How many days would the crossing take? (b) A four-engine transport plane of 1943 cruised at about 400 km/h (250 mph). How many hours? (c) What does the comparison say about Mackinder's Midland Ocean?

(Use the map or drawing "The Midland Ocean, from the American reserve to the British aerodrome." shown earlier in this lesson.)

1. (a) $3,010 \div 9 \approx 334$ hours; $334 \div 24 \approx 13.9$ days, about two weeks (real convoys took longer, because they zigzagged and followed routes away from submarines).
2. (b) $5,570 \div 400 \approx 13.9$ hours ($3,460 \div 250 \approx 13.8$ hours).
3. (c) The plane is about 24 times faster ($334 \div 13.9 \approx 24$), so people and urgent cargo could cross in hours, but the ships carried the men, tanks, fuel and food in bulk. The Midland Ocean worked because sea power and air power together joined the American reserve to the British aerodrome and the French bridgehead.

Answer: (a) About 14 days. (b) About 14 hours. (c) Air shrank the ocean for people and messages, while ships still carried the bulk; both together made Mackinder's Midland Ocean a real alliance.

Example 3. Test Leo Amery's 1904 objection about air power. Moscow to Vladivostok is about 6,430 km (4,000 miles) in a straight line. A modern passenger train on the 9,289 km Trans-Siberian takes about 7 days. A jet airliner flies the straight line at about 800 km/h (500 mph). (a) How long does the flight take? (b) How many times faster is it than the train? (c) What does this mean for Mackinder's argument that railways gave the Heartland its mobility?

1. (a) $6,430 \div 800 \approx 8.0$ hours ($4,000 \div 500 = 8.0$ hours).
2. (b) Train: $7 \times 24 = 168$ hours. $168 \div 8.0 = 21$ times faster.
3. (c) The airplane does not care whether a land is wholly continental or ringed by sea; it flies over both. It shrank the Heartland's distances for its own government, but it also removed the Heartland's old safety, because enemy aircraft (and later missiles) could reach its interior too. Railways remain vital for heavy freight, but they no longer settle the balance between land and sea power by themselves.

Answer: (a) About 8 hours. (b) About 21 times faster than the train. (c) Air power cut across Mackinder's distinction between land and sea, as Amery warned, and took away the interior's safety from attack.

PRACTICE

1. **EASY** Give the title, journal and date of Mackinder's 1943 article, and his age when it appeared.
2. **EASY** Name the three pieces of Mackinder's Midland Ocean and the country he assigned to each.
3. **EASY** What was Lenaland, and why did Mackinder set it apart from the Heartland?
4. **EASY** Name one critic of Mackinder and state his objection in one sentence.
5. **MEDIUM** List three events between 1914 and 1991 that support Mackinder's ideas, with dates.
6. **MEDIUM** List three counterexamples to the dictum "Who rules the Heartland commands the World-Island."
7. **MEDIUM** The Soviet Union covered about 22.4 million km² (8.65 million sq mi). Russia as of 2026 covers about 17.1 million km². What percent of the Soviet area does Russia hold?
8. **MEDIUM** Use Figure hd-midland-ocean. The great-circle distance from Halifax to Liverpool is about 4,400 km. Convert it to miles and nautical miles, and find the days at sea for a convoy at 9 knots.
(Use the map or drawing "Use the map for Problem 8." shown earlier in this lesson.)
9. **HARD** In 1943 Mackinder wrote of the Soviet Union more hopefully than in 1904 or 1919. Explain why, and whether you think the change was wise.
10. **HARD** How did nuclear weapons and long-range missiles change the value of the Heartland's position?

11. **HARD** Why is Mackinder's willingness to revise his ideas in 1919 and 1943 a strength rather than a weakness?
12. **CHALLENGE** Write a balanced verdict of 8 to 10 sentences: "Mackinder's Heartland theory: lens or law?" Include at least two strengths, two failures, one critic and one revision, and end with your own judgment.

COMMON MISTAKES

- Judging Mackinder only by his famous dictum. Read his 1904, 1919 and 1943 work together and weigh the whole.
- Treating a theory as either all true or all false. Most great theories are partly right; the task is to say where and why.
- Forgetting that technology changes the test. A claim made in the age of railways must be weighed again in the age of airplanes and missiles.

Make it a game · Hit, Miss or Partly?. Write twelve of Mackinder's claims on cards (the closed world system, the pivot, railways transforming land power, the German-Russian danger, the dictum's three links, the buffer tier, the Midland Ocean, Lenaland, the rise of the monsoon lands). Players draw a card, call "Hit," "Miss" or "Partly," and must name one event with its date as evidence. A correct call with a dated event scores two points; the others may challenge with a counterexample for a bonus point.

Scripture. "And in the days of these kings shall the God of heaven set up a kingdom, which shall never be destroyed: and the kingdom shall not be left to other people, but it shall break in pieces and consume all these kingdoms, and it shall stand for ever." (Daniel 2:44, KJV)

Daniel saw the great empires of the earth as an image of gold, silver, brass and iron that would all be broken. Geopolitics weighs the rise and fall of powers, and Mackinder weighed them carefully. But no Heartland, World-Island or ocean will rule forever. The only kingdom that stands for ever is the one God sets up.

Practice answers

1. "The Round World and the Winning of the Peace," *Foreign Affairs*, July 1943. He was 82 (born February 1861).
2. A bridgehead (France), a moated aerodrome (Britain) and a reserve of manpower, farms and industry (the eastern United States and Canada).
3. The vast lands of eastern Siberia east of the Yenisei. He set them apart because they were thinly peopled and undeveloped; the Heartland's real strength lay west of the Yenisei.
4. Leo Amery (1904): air power would soon join sea and rail, and the powers with the greatest industrial base would win regardless of position. Or Nicholas Spykman: the coastal Rimland, not the Heartland, holds the world's people and wealth and is the key to Eurasia.
5. Any three: Brest-Litovsk gave Germany control of East Europe (March 3, 1918); the German-Soviet pact (August 23, 1939); the Soviet evacuation of factories east by rail (1941); the

Soviet domination of East Europe after 1945; the North Atlantic Treaty around his Midland Ocean (April 4, 1949); the Normandy landings using the French bridgehead (June 6, 1944).

6. Any three: the Soviet Union held the Heartland and East Europe for over forty years without commanding the World-Island; the Soviet Union dissolved on December 26, 1991; the United States, outside the World-Island, became the strongest power; sea power with industry won both world wars; China, India and Western Europe stayed outside the Heartland power's rule.
7. $17.1 \div 22.4 \approx 0.76$, about 76 percent. (In square miles: $6.6 \div 8.65 \approx 0.76$.)
8. $4,400 \times 0.621 \approx 2,730$ miles; $4,400 \div 1.852 \approx 2,380$ nautical miles. $2,380 \div 9 \approx 264$ hours ≈ 11 days.
9. In 1943 the Soviet Union was fighting Germany as an ally of Britain and the United States, and Mackinder's main concern was to defeat Germany and build a balanced peace, so he hoped the Heartland power could be one partner balancing the Midland Ocean powers. Answers on wisdom vary: some will say it was a reasonable wartime hope; others will note that after 1945 the Soviet Union dominated East Europe, exactly the danger his dictum described, and that the balance became a Cold War rather than a partnership.
10. Mackinder valued the Heartland as an interior safe from sea power. Long-range bombers, nuclear weapons and intercontinental missiles could strike any point on earth within hours or minutes, so depth and distance from the sea no longer gave safety from attack. Position still mattered for bases, warning time and routes, but the old safety was gone.
11. Revising an idea in light of new evidence (the war of 1914 to 1918, the rise of the Soviet Union, air power and the Atlantic alliance) is what a careful thinker should do. It shows he treated the Heartland as a working model to be tested, not a dogma. A critic should weigh his best and latest version as well as his first.
12. Answers vary. A strong answer gives strengths (the closed world system; East Europe as the hinge of two world wars and the Cold War; the German-Russian combination of 1939; railways and depth in 1941; the Midland Ocean and NATO), failures (no Heartland power commanded the World-Island; the Soviet collapse in 1991; underrating sea power, industry and air power; the shrinking share of world population), a critic (Amery or Spykman) and a revision (1919 Heartland or 1943 Midland Ocean and Lenaland). It concludes that the theory is a useful lens for noticing geographic weight, not a law that decides history.

UNIT 3 TEST

Answer each question. Show your work for every calculation, give units in both metric and U.S. customary where asked, and use complete sentences for explanations. The test is worth 100 points.

1. (6 pts) Give the title, date and place of Mackinder's 1904 paper, and explain what he meant by the end of the "Columbian epoch."
2. (6 pts) Name Mackinder's three zones with his descriptions, and place each of these in a zone: Britain, China, the Siberian plain, the United States, Germany.
3. (6 pts) What geographic facts made the pivot area unreachable by sea power? Name at least two rivers and one inland sea in your answer.
4. (8 pts) The sea route from London to Bombay was about 10,700 nautical miles by the Cape of Good Hope and about 6,300 by Suez. At 12 knots, how many days does each route take, and how many days does Suez save? Convert the saving in distance to kilometers.
5. (6 pts) Write Mackinder's dictum exactly, and name the book and year.
6. (8 pts) Asia covers about 44.6 million km², Europe about 10.2 million km² and Africa about 30.4 million km². The earth's surface is about 510 million km². Find the World-Island's share of the globe, compare it with Mackinder's estimate, and convert its area to square miles (1 km² $\approx$ 0.386 sq mi).
7. (6 pts) How did the Treaty of Brest-Litovsk (March 3, 1918) illustrate the first link of the dictum, and what was Mackinder's proposed remedy in 1919?
8. (8 pts) The Trans-Siberian from Moscow to Vladivostok is about 9,289 km (5,772 miles). The Baltic Fleet sailed about 18,000 nautical miles from Libau to Tsushima in 224 days. (a) Convert the fleet's voyage to kilometers. (b) How many times longer was it than the railway? (c) What was the fleet's average speed in knots?
9. (6 pts) Give three dates in the building of the Trans-Siberian and what happened on each.
10. (8 pts) Explain why Mackinder thought railways would strengthen the pivot power, and how the Russo-Japanese War both supported and weakened his view.
11. (6 pts) Define *Lebensraum* and the organic theory of the state, and name the geographer associated with each.
12. (8 pts) In 1939 Greater Germany had about 79 million people on about 580,000 km², and Belgium had about 8.4 million on about 30,500 km². Find both densities, and explain what the numbers show about the Nazi claim that Germany "needed" living space. Then name two warning signs of geography abused.
13. (8 pts) Describe Mackinder's 1943 revision: name the article, explain the Midland Ocean and its three parts, and say what he meant by Lenaland.
14. (10 pts) Write a reasoned paragraph (8 to 10 sentences) weighing Mackinder's Heartland theory. Include two strengths, two failures, one critic and one piece of numerical evidence, and give your own verdict.

UNIT PROJECT: MAHAN AND MACKINDER: A DIALOGUE, WITH MAPS

Assemble a portfolio that presents Mackinder's ideas and tests them against Mahan's. At its center is your written dialogue (1,200 to 1,800 words) between Alfred Thayer Mahan and Halford Mackinder, set in an imagined but plausible meeting, in which each man makes his strongest case, answers the other and admits a weakness, followed by your afterword judging their arguments against what happened between 1904 and 1991.

Include with it your hand-drawn map of Mackinder's pivot area and the two crescents (Lesson 3.1), your time-distance map of rail versus sea in 1904 (Lesson 3.3), your 1939 overlay and "Warning Signs of Geography Abused" poster (Lesson 3.4), and your completed "Hit, Miss or Partly" table of Mackinder's claims (Lesson 3.5).

- **Accuracy:** Dates, places, distances and quotations are correct; any quotation is exact, and paraphrases are not dressed as quotations.
- **Fairness:** Both Mahan and Mackinder argue from their real ideas at full strength, and each admits a genuine weakness; the Nazi abuse of geopolitics is described plainly and factually.
- **Reasoning with evidence:** The afterword and table use specific dated events and at least two calculations (distances, travel times or population shares) to reach a reasoned verdict.
- **Maps and care:** The maps are neat, labeled, keyed and drawn to a stated scale; the portfolio is complete and well presented.

Answer key

1. "The Geographical Pivot of History," read to the Royal Geographical Society in London on January 25, 1904. He meant that the roughly four centuries since Columbus, in which European sea powers explored and claimed most of the world against little resistance, were over; the world was now a closed political system with no empty lands left to claim.
2. Pivot area (wholly continental); inner or marginal crescent (partly continental, partly oceanic); outer or insular crescent (wholly oceanic). Britain: outer. China: inner. Siberian plain: pivot. United States: outer. Germany: inner.
3. Its rivers drain either to the Arctic Ocean, which is frozen most of the year (the Ob, Yenisei and Lena), or to inland seas with no outlet to the ocean (the Volga into the Caspian; the Amu Darya and Syr Darya into the Aral). Ships from the open ocean could not reach the interior, while the open steppe allowed fast movement by land.
4. Cape: $10,700 \div 12 \approx 892$ hours ≈ 37.2 days. Suez: $6,300 \div 12 = 525$ hours ≈ 21.9 days. Saving ≈ 15.3 days. Distance saved: $4,400$ nautical miles $\times 1.852 \approx 8,150$ km.
5. "Who rules East Europe commands the Heartland; Who rules the Heartland commands the World-Island; Who rules the World-Island commands the World." *Democratic Ideals and Reality*, 1919.
6. $44.6 + 10.2 + 30.4 = 85.2$ million km^2 . $85.2 \div 510 \approx 0.167$, matching Mackinder's two-twelfths ($1/6 \approx 0.167$). $85.2 \times 0.386 \approx 32.9$ million sq mi.
7. Russia gave up Poland, the Baltic lands, Finland and Ukraine, so Germany and Austria-Hungary dominated East Europe and stood at the gateway of the Heartland, drawing on

Ukraine's grain and coal. Mackinder proposed a buffer tier of independent states between Germany and Russia, from the Baltic to the Adriatic and Black Sea.

8. (a) $18,000 \times 1.852 \approx 33,300$ km. (b) $33,300 \div 9,289 \approx 3.6$ times. (c) $18,000 \div (224 \times 24) = 18,000 \div 5,376 \approx 3.3$ knots.
9. Any three: 1891, construction begun at Vladivostok by the Tsarevich Nicholas; 1896, agreements with China for the Chinese Eastern Railway across Manchuria; 1898, Russia leased Port Arthur; 1900, the train ferry *Baikal* entered service; 1901 to 1903, through service via Manchuria; 1904, Circum-Baikal line finished and rails laid across the ice of Baikal in wartime; 1916, Amur bridge at Khabarovsk opened, completing the all-Russian route.
10. He thought railways would give land power the mobility once held only by sea power, letting the pivot power move armies and resources across the continent on interior lines, beyond the reach of fleets. Supported: the railway let Russia send large armies to Manchuria, by a route far shorter than the sea voyage. Weakened: the single track and the Baikal gap limited capacity, and Japan, supplied by sea near its home islands, won the war (Port Arthur, Mukden, Tsushima; Treaty of Portsmouth, September 5, 1905).
11. *Lebensraum* (living space): the territory a people or species needs; used by Friedrich Ratzel (essay of 1901) and later turned by the Nazi regime into a demand for conquered land in the East. The organic theory of the state: the state is like a living organism that must grow or decline; set out by Ratzel and carried further by Rudolf Kjellén.
12. Germany: $79,000,000 \div 580,000 \approx 136$ per km². Belgium: $8,400,000 \div 30,500 \approx 275$ per km². Belgium was about twice as crowded yet did not need conquest, so the "need for space" was a political and racial claim, not a geographic fact. Warning signs (any two): a metaphor treated as a law of nature; scholarship serving a political goal; suggestive maps that hide the people on the land; "necessity" used to excuse moral choices; treating peoples as mere territory.
13. "The Round World and the Winning of the Peace," *Foreign Affairs*, July 1943. The Midland Ocean is the North Atlantic and its seas, around which the Western powers could balance the Heartland: a bridgehead in France, a moated aerodrome in Britain and a reserve of manpower, farms and industry in the eastern United States and Canada. Lenaland is the thinly peopled region of eastern Siberia east of the Yenisei, which he set apart from the Heartland proper.
14. Answers vary. Full credit requires accurate strengths (for example East Europe as the hinge of both world wars and the Cold War; the German-Soviet pact of 1939; the Soviet evacuation of factories east in 1941; the Midland Ocean and NATO, 1949), accurate failures (no Heartland power commanded the World-Island; the Soviet Union dissolved in 1991; underrating sea power, industry and air power), a critic (Leo Amery in 1904 or Nicholas Spykman), numerical evidence (for example the Heartland power's share of world population falling from about 7.9 percent in 1897 to about 1.8 percent in 2026, or air travel 21 times faster than the Trans-Siberian), and a balanced verdict such as "a useful lens, not a law."

SPYKMAN, CONTAINMENT AND AFTER

In the spring of 1942, with the United States newly at war on two oceans, a Yale professor named Nicholas Spykman told Americans that their oceans and their hemisphere would no longer keep them safe. He took Mackinder's map of the world and moved its center of gravity from the Heartland to the crowded belt around it, the **rimland** of Europe, the Middle East, India and East Asia. Within a few years his warning seemed to come true. In this unit you will read Spykman's dictum in his own words, follow George Kennan from a sickbed in Moscow to the policy of **containment**, and go back to 1823 to see how the Monroe Doctrine turned a hemisphere and two oceans into a policy.

Then you will look at the world from the top. Richard Edes Harrison's maps for *Fortune* and his 1944 atlas *Look at the World* showed a generation of Americans that the United States and the Soviet Union were neighbors across the Arctic, and the air age turned that fact into radar lines, air bases and missiles. You will build a polar map by hand and redraw the Cold War on it.

Last, you will weigh Spykman as a scientist weighs a theory. Nearly every war of the Cold War was fought on the rimland, and the West's alliances ringed it. But the rimland was never one bloc, ideas and civil wars often counted for more than position, nuclear missiles leapt over the map, and the strategy had real costs. As always in this course, we study these ideas carefully and humbly: "Except the LORD keep the city, the watchman waketh but in vain" (Psalm 127:1).

BEFORE YOU BEGIN

- Can state Mackinder's Heartland idea and his 1919 dictum (Unit 3)
- Can convert between kilometers and miles and use 111 km per degree of latitude
- Can use the cosine of a latitude to find the length of a degree of longitude
- Knows the main events and alliances of the Second World War

MASTERY CHECKLIST

- I can state Spykman's rimland dictum exactly and compare his map of Eurasia with Mackinder's.
- I can explain containment as a geographic idea and quote the key sentence of Kennan's X article.
- I can explain how the oceans, the winds and the Royal Navy made the Monroe Doctrine workable in 1823, and how it was later stretched.
- I can read a polar azimuthal map and compare great-circle and rhumb-line distances.
- I can weigh Spykman's theory against the evidence of the Cold War, giving its strengths, its critics and later revisions.
- I can use distances, travel times, areas and choke-point traffic to reason about geopolitical claims.

OPTIONAL BOOKS AND RESOURCES

- **“Kennan and Containment, 1947,” Office of the Historian, U.S. Department of State** (<https://history.state.gov/milestones/1945-1952/kennan>): Free. A short, reliable account of the Long Telegram and the X article, with links to related documents (Lesson 4.2).
- **The Monroe Doctrine (1823), National Archives Milestone Documents** (<https://www.archives.gov/milestone-documents/monroe-doctrine>): Free. Images of the original message and a transcript; read the two key passages in Monroe’s own words (Lesson 4.3).
- **David Rumsey Map Collection** (<https://www.davidrumsey.com/>): Free. Search for Richard Edes Harrison to view plates from *Look at the World* (1944) and other World War II maps for the picture study and the polar map project (Lessons 4.4 and 4.5).

4.1 NICHOLAS SPYKMAN AND THE RIMLAND

OBJECTIVES

- Tell the story of Nicholas Spykman and his two books, *America's Strategy in World Politics* (1942) and *The Geography of the Peace* (1944), and state his rimland dictum exactly.
- Compare Mackinder's Heartland with Spykman's Rimland on a map of Eurasia, naming the main parts of the rimland, the marginal seas and the offshore islands.
- Use areas, populations and distances (as of 2026) to test Spykman's claim that the rimland, not the Heartland, holds the greater share of Eurasia's people and power.

Warm-up. Put a dinner plate upside down on a table and lay a ring of coins, buttons or cereal pieces all around its edge. The plate is a great inland region; the ring is the crowded edge between it and the sea. Count the items on the plate (none) and on the ring. Now ask: if you wanted to control the whole table, would you start with the empty middle or the crowded edge? Keep your answer; Spykman gave his in 1944.

Video. Coming soon. Search Hillsdale Studios and The History Guy for lectures on American grand strategy in World War II and the ideas of Mackinder and Spykman; Library of Congress Geography and Map Division talks on World War II maps; university lecture channels on the history of geopolitics (candidates, need vetting), previewed by a parent first.

KEY TERMS

rimland

Spykman's name for the wide belt of lands between the Heartland and the oceans: coastal Europe, the Middle East, India, Southeast Asia and China. Mackinder had called it the inner or marginal crescent.

Heartland

Mackinder's name for the vast interior of Eurasia drained by rivers that flow to the Arctic or to inland seas, out of reach of sea power. Spykman accepted the region but doubted its power.

amphibious

Able to act both on land and at sea. Spykman said rimland states must be amphibious, defending themselves against land power from the interior and sea power from the oceans.

marginal seas

The seas that wash the rimland and link it to the ocean: the Mediterranean, the Red Sea, the Persian Gulf, the Bay of Bengal, the South China Sea and the Sea of Japan, among others.

offshore islands and continents

Spykman's term for lands just off Eurasia (Britain and Japan) and the more distant land masses beyond (Africa and Australia), which sea power can use as bases against the mainland.

balance of power

A situation in which no one state or bloc is strong enough to dominate the others, so each is checked by the rest. Spykman held that American safety depended on a balance in Eurasia.

CORE IDEAS

The story. In the spring of 1942, a few months after Pearl Harbor, a Yale professor published a long and unsettling book. Nicholas John Spykman had been born in Amsterdam in 1893. As a young man he worked as a newspaper correspondent in the Near East and in the Dutch East Indies, so he had seen the edges of Asia with his own eyes. He came to the United States after the First World War, earned a doctorate at the University of California, joined the Yale faculty in 1925 and became an American citizen. In 1935 he became the first director of the new Yale Institute of International Studies. His 1942 book, *America's Strategy in World Politics: The United States and the Balance of Power*, told Americans something many did not want to hear. The oceans would not keep them safe. A nation that stayed home behind its two oceans and its own hemisphere, he argued, would one day face an Old World united under hostile powers, and would be surrounded. Spykman fell ill with cancer and died in New Haven on June 26, 1943, at the age of forty-nine. His colleague Helen R. Nicholl gathered his lectures, notes and maps into a short second book, *The Geography of the Peace*, published in 1944. It is there that the rimland is set out most plainly.

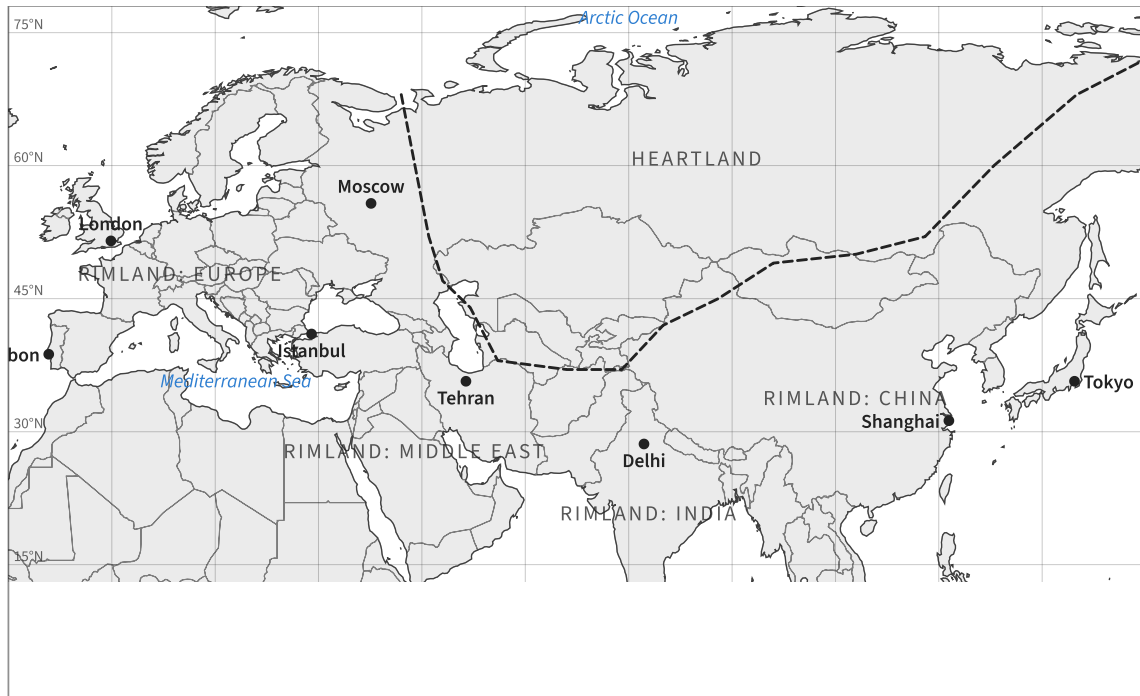
How he figured it out. Spykman began with Mackinder, whom you read in Unit 3. Mackinder had divided the world into a Heartland, an inner or marginal crescent around it, and an outer crescent of islands and distant continents. Spykman kept the map but questioned the weights on it. The Heartland, he noted, is cold in the north and dry in the south; much of it is forest, steppe and desert, thinly settled, with rivers that run into the frozen Arctic or into landlocked seas. The great populations, the great farms and most of the great factories of Eurasia lay elsewhere: in the belt from Western Europe through the Middle East to India, Southeast Asia, China and Korea. He renamed that belt the **rimland**. It faces both ways. Behind it lies the land power of the interior; in front of it lie the marginal seas and the ocean. Its peoples must therefore be **amphibious**, ready to fight on land and at sea. Spykman also looked at history. The great alignments of modern times, he wrote, were not simply sea power against land power. Again and again Britain and Russia, the two flanking powers, had joined against a single rimland power that threatened to dominate Europe: Napoleon's France, the Kaiser's Germany, Hitler's Germany.

The big idea. From this Spykman turned Mackinder's famous dictum on its head. Mackinder had written that whoever rules the Heartland commands the World-Island. Spykman wrote instead: "Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world." For the United States, he drew a practical lesson. America's safety did not lie in owning territory overseas, but in preventing any single power or alliance

from uniting the rimland against it. That meant a **balance of power** in Europe and in Asia, kept with allies, bases and the ability to project force across both oceans. It also meant something many found shocking in 1942. Spykman warned that after victory a Russian state stretching to the North Sea would be no better for America than a German state stretching to the Urals, and he suggested that a defeated Germany and Japan might one day be needed as counterweights. He thought a modernized China would become a great power in Asia. Critics called his realism cold and his balance-of-power language old-fashioned. Within five years, much of the postwar world would look the way he had described.

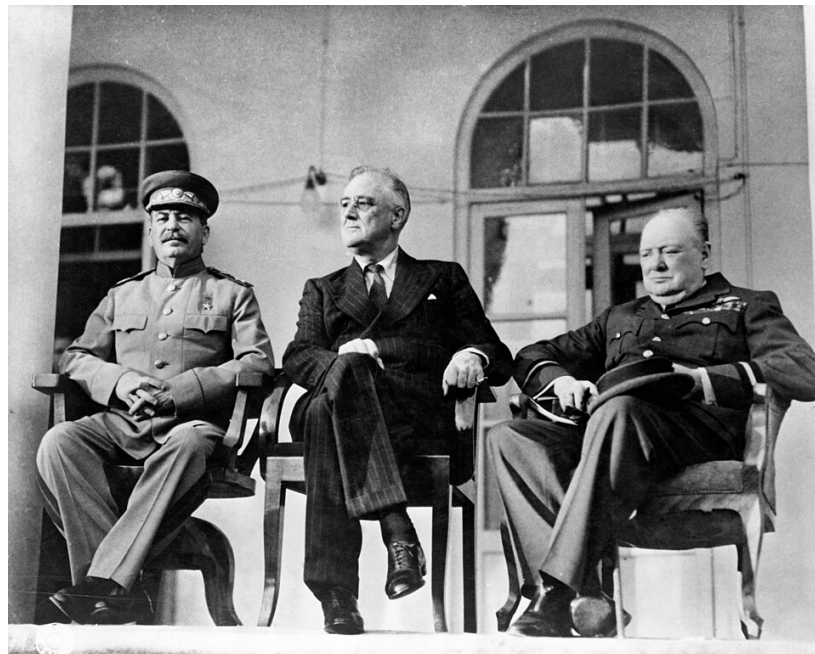
On the map. Read the Heartland and Rimland map in this lesson as an argument, not a fact of nature. The simplified line marks roughly the edge of Mackinder's Heartland. Outside it, Spykman's rimland runs in a great arc of about 11,900 km (7,400 miles) from Lisbon to Shanghai, and much more if you follow the coast around Arabia, India and Southeast Asia. Along that arc sit the marginal seas and many of the narrow passages of world trade: Gibraltar, the Turkish Straits, Suez, Bab-el-Mandeb, Hormuz and Malacca. Beyond them are the offshore islands, Britain and Japan, and farther still the offshore continents, Africa and Australia, and across both oceans the New World. Spykman drew this picture in the middle of a world war in which every one of those regions was a battlefield or a base.

Technology overcoming geography. Mahan wrote in the age of the steamship and the coaling station; Mackinder worried about the railway that could carry armies across the steppe. Spykman wrote in the age of the long-range bomber and the aircraft carrier. He knew that air power could reach across the marginal seas and that the oceans were no longer simple moats. Yet he did not think the airplane abolished geography. Aircraft needed bases, fuel, factories and supply lines, and those still lay on the ground, mostly in the rimland. A wise student weighs him the same way as the others. What geographic fact does he point to? The concentration of Eurasia's people and industry on its rim. What does he claim about power? That whoever unites that rim can threaten the world. What evidence could prove him wrong? We will test that in Lesson 4.5. And we will remember the prophet's words to King Nebuchadnezzar, that it is God who "removeth kings, and setteth up kings" (Daniel 2:21). Maps can show where power gathers. They cannot promise who will hold it.



Heartland and Rimland compared. The line is a simplified edge of the Heartland; Spykman's rimland is the crowded belt between it and the sea.

PICTURE STUDY



The Big Three at the Tehran Conference, U.S. Army Signal Corps photographer, late November 1943 · Black-and-white photograph · Library of Congress (U.S. Army Signal Corps photograph); widely reproduced

Five months after Spykman died, the leaders of the Soviet Union, the United States and Britain met for the first time together, at the Soviet embassy in Tehran, Iran, from November 28 to December 1, 1943. They agreed on the invasion of France for 1944 and began to talk about the shape of the peace, including the borders of Poland. This photograph of Joseph

Stalin, Franklin Roosevelt and Winston Churchill became one of the most famous images of the war.

Look at it with Spykman's map in mind. The meeting was held in the rimland, in a country that British and Soviet troops had occupied in 1941 to secure a supply route to Russia. The three men were allies against Germany and Japan. Spykman had warned that once the common enemy was gone, the question of who would control the rimland would divide them.

Look closely

- Find the three leaders. Which one is the Heartland power, which one the offshore island, and which one the power from across the ocean?
- Look at the uniforms and the cape. What does each man's dress suggest about how he wanted to be seen?
- Find the officers standing behind. Why do photographs of summits often include them?
- Notice the setting: a city in Iran. Find Tehran on the Heartland and Rimland map. Why would all three powers care about this country?

Talk about it

1. Spykman wrote that Britain and Russia had often joined against a single rimland power. How does this photograph show that pattern, and what did he predict would happen after the war?
2. Why might leaders meeting in 1943 have had different maps of the peace in their minds?
3. What can a photograph of a meeting tell us, and what can it not tell us, about the decisions made there?

PROJECT: HEARTLAND AND RIMLAND COMPARED: AN OVERLAY MAP

You will draw the unit map: one outline of Eurasia with two clear overlays, Mackinder's view and Spykman's view. Then you will put numbers on each region so the map can be weighed, not just admired.

You will need

- An atlas or a printed outline map of Eurasia and the surrounding seas (the Library of Congress and many free outline-map sites have them)
- Two sheets of tracing paper or baking parchment, and one sheet of heavy paper for the base
- Colored pencils, a fine black pen, a ruler, a piece of string and a calculator

Steps

1. On the heavy paper, trace Eurasia, northern Africa, Britain and Japan at a size that fills the page. Add a latitude grid every 15° and a scale bar from your atlas.

2. Overlay 1 (Mackinder): trace the Heartland using the map in this lesson as a guide. Shade it lightly in brown and label it. Mark the inner crescent around it with a dashed line.
3. Overlay 2 (Spykman): shade the rimland in green from Western Europe through the Middle East and India to Southeast Asia, China and Korea. Label the marginal seas and the six choke points named in the lesson. Label Britain and Japan as offshore islands.
4. On the base map, write the population (as of 2026) of these countries in their places: Russia about 146 million; China about 1.41 billion; India about 1.45 billion; the European Union about 450 million; Japan about 123 million.
5. Use the string and scale bar to measure the arc from Lisbon to Shanghai, first in a straight line along the rimland and then following the coast. Record both in kilometers and miles.
6. In a box in the corner, write Spykman's dictum exactly, and under it Mackinder's. Then write two sentences: which numbers on your map support Spykman, and which fact on your map he may have underrated.

Tips

- The edges of both regions are fuzzy. Draw them softly and add the word "approximate."
- Keep the base map clean. If an overlay gets crowded, move the numbers into a small table in the margin.

Check your work

- My map shows the Heartland, the rimland, the marginal seas, the offshore islands and six choke points, all labeled.
- I measured the Lisbon to Shanghai arc two ways and gave both units.
- My two sentences use evidence from the map to weigh Spykman's idea.

MAP NOTEBOOK

1. Draw a quick circle-and-ring sketch: Heartland in the middle, rimland as a ring, marginal seas as a thinner ring, and offshore islands as dots. Label each part.
2. Copy Spykman's dictum and Mackinder's side by side. Underline the one word in each that names the key region.
3. List the three rimland powers that Spykman said Britain and Russia had joined against, with a date for each.

From history. Spykman's first article on the subject, "Geography and Foreign Policy," appeared in two parts in the *American Political Science Review* in 1938. In it he argued that geography is the most fundamental factor in a nation's foreign policy because it is the most permanent: ministers and even dictators come and go, but mountain ranges and coastlines remain. He was careful to add that geography conditions policy without determining it, a point his critics have not always noticed.

WORKED EXAMPLES

Example 1. Measure the rimland. Lisbon lies at about 9.1° W and Shanghai at about 121.5° E. Treat the rimland arc as running east and west along an average latitude of 35° N. One degree of longitude at the equator is about 111 km (69 miles), and at latitude ϕ it is $111 \times \cos \phi$ km. How long is the straight arc from Lisbon to Shanghai?

(Use the map or drawing “Find Lisbon and Shanghai at the two ends of the rimland.” shown earlier in this lesson.)

1. Difference in longitude: Lisbon is west of Greenwich and Shanghai is east, so add: $9.1^\circ + 121.5^\circ = 130.6^\circ$.
2. Length of one degree of longitude at 35° N: $\cos 35^\circ \approx 0.819$, so $111 \times 0.819 \approx 90.9$ km ($69 \times 0.819 \approx 56.5$ miles).
3. Arc length: $130.6 \times 90.9 \approx 11,870$ km. In miles: $130.6 \times 56.5 \approx 7,380$ miles.
4. Interpretation: this is the shortest outline of the belt. Following the real coasts around Arabia, India and Southeast Asia makes it far longer, which is why holding the whole rimland takes great sea power.

Answer: About 11,900 km (about 7,400 miles) in a straight east and west arc; the coastal length is much greater.

Example 2. Test Spykman with population (as of 2026, rounded). Russia, the main Heartland power, has about 146 million people on about 17.1 million km^2 (6.6 million sq mi). Four rimland and offshore powers have: China about 1.41 billion, India about 1.45 billion, the European Union about 450 million, Japan about 123 million. Find the total for the four and how many times larger it is than Russia’s population. Then find Russia’s density.

1. Add the four: $1,410 + 1,450 + 450 + 123 = 3,433$ million, about 3.43 billion people.
2. Ratio: $3,433 \div 146 \approx 23.5$. The four together have about 23 to 24 times as many people as Russia.
3. Russia’s density: $146,000,000 \div 17,100,000 \text{ km}^2 \approx 8.5$ people per km^2 ($146,000,000 \div 6,600,000 \approx 22$ per sq mi).
4. Interpretation: people, farms and factories crowd the rim, as Spykman said. But population is not power by itself; organization, industry and unity matter, and the rimland is divided among many states.

Answer: About 3.43 billion, roughly 23.5 times Russia’s 146 million. Russia’s density is about 8.5 per km^2 (22 per sq mi).

Example 3. Spykman argued that the oceans were wide but no longer safe. New York to Lisbon is about 5,420 km (3,370 miles); San Francisco to Tokyo is about 8,270 km (5,140 miles). A 1940s convoy averaged about 9 knots (about 16.7 km/h). How many days would each crossing take at that speed, and what does the comparison suggest about America's two fronts?

1. Atlantic: $5,420 \div 16.7 \approx 325$ hours; $325 \div 24 \approx 13.5$ days.
2. Pacific: $8,270 \div 16.7 \approx 495$ hours; $495 \div 24 \approx 20.6$ days.
3. Ratio: $8,270 \div 5,420 \approx 1.5$, so the Pacific crossing is about one and a half times as long.
4. Interpretation: both oceans could be crossed in weeks, not months, by a power with ships and bases, which is why Spykman thought the two oceans were highways as well as moats. The Atlantic front lies closer, which helps explain why the United States chose to defeat Germany first.

Answer: Atlantic about 13.5 days; Pacific about 20.6 days, about 1.5 times as long. Both oceans could be crossed in a few weeks by a power with ships and bases.

PRACTICE

1. **EASY** Name Spykman's two books on geography and strategy, with their dates.
2. **EASY** Write Spykman's rimland dictum exactly.
3. **EASY** What did Mackinder call the region that Spykman renamed the rimland?
4. **EASY** Name the five main parts of the rimland in order from west to east.
5. **MEDIUM** Why did Spykman say rimland states must be amphibious?
6. **MEDIUM** Convert 11,900 km to miles ($1 \text{ km} \approx 0.621 \text{ mi}$).
7. **MEDIUM** Name three times in modern history when, by Spykman's reading, Britain and Russia stood together against a single rimland power.
8. **MEDIUM** India has about 1.45 billion people on about 3.29 million km^2 (1.27 million sq mi). Find its population density in both units and compare it with Russia's 8.5 per km^2 .
9. **MEDIUM** Using the Heartland and Rimland map and the lesson, name the offshore islands and the offshore continents (Australia lies south of the map's edge), and say what Spykman thought they were good for.
(Use the map or drawing "Use the map for Problems 9 and 11." shown earlier in this lesson.)
10. **HARD** Shanghai is at about 31.2° N and Lisbon at about 38.7° N . Recompute the Lisbon to Shanghai arc using the cosine of the average of these two latitudes instead of 35° N . Does the answer change much?
11. **HARD** Name six choke points on or beside the rimland and the waters each one joins.
12. **CHALLENGE** In a paragraph of 6 to 8 sentences, explain why Spykman's 1942 book shocked many American readers and why some of its predictions came true within a few years.

COMMON MISTAKES

- Thinking Spykman rejected Mackinder entirely. He used Mackinder's map but moved the weight of power from the Heartland to the rimland.
- Treating the rimland as one country or bloc. It is a belt of many states, cultures and faiths, often divided against each other.
- Forgetting that *The Geography of the Peace* was published after Spykman died, assembled from his lectures and notes by Helen R. Nicholl.

Make it a game · Heart or Rim?. One player names a place (Moscow, Paris, Delhi, Kazakhstan, Shanghai, Baghdad, Britain, Japan, Siberia, the Suez Canal, Korea). The others call out "Heart," "Rim," "Offshore" or "Choke point." A correct call scores one point; a correct call plus one sentence of geographic reason (rivers, coast, climate, population) scores two. Arguable cases, such as Turkey or Afghanistan, score three for a good argument either way. Play to fifteen.

Scripture. "And he changeth the times and the seasons: he removeth kings, and setteth up kings: he giveth wisdom unto the wise, and knowledge to them that know understanding:" (Daniel 2:21, KJV)

Daniel spoke these words before he explained a dream about the rise and fall of empires. Spykman tried to read where power would gather on the earth. Study it carefully, because God gives knowledge to those who seek understanding; but remember who sets up kings and removes them.

Practice answers

1. *America's Strategy in World Politics: The United States and the Balance of Power* (1942) and *The Geography of the Peace* (1944, published after his death).
2. "Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world."
3. The inner or marginal crescent.
4. Western and coastal Europe; the Middle East; India (South Asia); Southeast Asia; China and Korea (East Asia).
5. Because the rimland lies between the land power of the Heartland behind it and the sea power of the oceans in front of it, its states must be ready to defend themselves on land and at sea.
6. $11,900 \times 0.621 \approx 7,390$ miles, about 7,400 miles.
7. Against Napoleon's France (1812-1815), against the Kaiser's Germany (1914-1917) and against Hitler's Germany (1941-1945).
8. $1,450,000,000 \div 3,290,000 \approx 441$ per km²; $\div 1,270,000 \approx 1,140$ per sq mi. About $441 \div 8.5 \approx 52$ times as dense as Russia.
9. Offshore islands: Britain and Japan. Offshore continents: Africa and Australia. Sea powers can use them as bases, ports and sources of supply to act against or support the mainland.
10. Average latitude = $(31.2 + 38.7) \div 2 = 34.95^\circ$, almost exactly 35° . $\cos 34.95^\circ \approx 0.820$, so one degree $\approx 111 \times 0.820 \approx 91.0$ km and the arc $\approx 130.6 \times 91.0 \approx 11,880$ km (7,380 miles), only

about 10 km more than with 35°. The answer hardly changes.

11. Gibraltar (Atlantic and Mediterranean); the Turkish Straits (Black Sea and Mediterranean); Suez (Mediterranean and Red Sea); Bab-el-Mandeb (Red Sea and Gulf of Aden); Hormuz (Persian Gulf and Gulf of Oman); Malacca (Indian Ocean and South China Sea).
12. Answers vary. A strong answer notes that many Americans hoped the oceans and the hemisphere would keep them safe and that he told them they would be encircled if one power united the Old World. It mentions his balance-of-power language, which sounded cold to some, and his warning that a Russia reaching the North Sea would be no better than a Germany reaching the Urals, at a time when the Soviet Union was an ally. It notes that within five years the wartime alliance had split, the United States was supporting Western Europe and soon Japan against Soviet power, and conflicts gathered in the rimland. It ends by noting that predictions coming true do not prove a whole theory right.

4.2 KENNAN AND CONTAINMENT

OBJECTIVES

- Tell the story of George F. Kennan's "Long Telegram" of February 22, 1946, and his "X" article of July 1947, and quote the key sentence on containment exactly.
- Explain containment as a geographic idea: pressure and counterpressure along the edge of Soviet power, from the Baltic to the Turkish Straits, Iran and the Pacific.
- Use distances, loads and dates from the Iron Curtain and the Berlin Airlift (1948-1949) to reason about how geography shaped the early Cold War, and compare strongpoint and perimeter defense.

Warm-up. Fill a sandwich bag with water and seal it well. Press on one side with your finger and watch the water bulge out somewhere else. Now cup your other hand around the bulge so it cannot grow. Ask: did you stop the water from pushing, or only from spreading? Where would you need to put your hand next? That is the picture Kennan drew of Soviet pressure and of the policy he called containment.

Watch. *22nd February 1946: The 'Long Telegram' sent by George Kennan, a senior US diplomat in Moscow* (HistoryPod, 2:30). <https://www.youtube.com/watch?v=cknR1vvqXqs>
After the story: watch this short summary of Kennan's Long Telegram of February 22, 1946, and listen for his call to hold back Soviet expansion without starting a war.

Note: Captions were not available to check; preview it first. The description gives the telegram as 5,363 words; other sources give a different word count, so a number in the book may not match.

Backup video. *24th September 1946: 'Containment' suggested to President Truman by Clark Clifford and George Elsey* (HistoryPod, 2:24). <https://www.youtube.com/watch?v=BN7Ah2PB1nA>

As review: watch how Clark Clifford and George Elsey built on Kennan's telegram in their September 1946 report to President Truman, and listen for the phrase "too strong to be beaten and too determined to be frightened." Note: Captions were not available to check; preview it first.

KEY TERMS

containment

The American policy, named by Kennan in 1947, of holding Soviet expansion in check by firm counterpressure wherever it pushed, while waiting for Soviet power to change or weaken from within.

Long Telegram

Kennan's message of February 22, 1946, sent from the U.S. embassy in Moscow in five parts, explaining the sources of Soviet behavior and how the United States should

respond.

Iron Curtain

Churchill's image, in a speech at Fulton, Missouri, on March 5, 1946, for the line dividing Soviet-controlled Eastern Europe from the West.

strongpoint defense

Defending a few vital places, such as the main centers of industry, rather than every point on a frontier. Kennan favored it.

perimeter defense

Resisting expansion at every point along a frontier, wherever it occurs. NSC-68 (1950) moved American policy in this direction.

enclave

A piece of territory surrounded by another state or zone. West Berlin was a Western enclave deep inside the Soviet zone of Germany.

CORE IDEAS

The story. In February 1946 the American embassy in Moscow was run for a few weeks by its second-ranking diplomat, George Frost Kennan, a forty-two-year-old Foreign Service officer from Milwaukee who spoke fluent Russian and had served in Moscow, Riga, Prague and Berlin. He was sick in bed with a cold and fever. On February 9 Joseph Stalin had given a speech in Moscow blaming the war on capitalism and calling for new five-year plans of heavy industry. In Washington, the Treasury Department asked the embassy why the Soviet Union would not join the new World Bank and International Monetary Fund. Kennan decided to answer the whole question at once. On February 22, 1946, he dictated a message of more than 5,000 words to his secretary and sent it to the State Department in five parts. It became known as the Long Telegram. Secretary of the Navy James Forrestal had copies made and passed around official Washington, and Kennan, as he later wrote, became famous almost overnight.

How he figured it out. Kennan began with geography and history, not with Marxism. "At bottom of Kremlin's neurotic view of world affairs," he wrote in the clipped style of a telegram, "is traditional and instinctive Russian sense of insecurity." Originally, he explained, this was the insecurity of a peaceful agricultural people trying to live on a vast exposed plain in the neighborhood of fierce nomadic peoples. That is Mackinder's Heartland seen from the inside: no mountains or seas to guard the plain, invaders from the steppe in the east and from Europe in the west. Communist ideology, Kennan argued, gave the Soviet rulers a justification for the old fears and for their own harsh rule at home. Such a power would push outward wherever it found weakness, patiently and without a fixed timetable. But it was cautious. It would retreat when it met strong resistance. In the same telegram he urged Americans to keep their own society healthy and confident, which he thought was half the battle.

The big idea. In July 1947 Kennan, now head of the State Department's new Policy Planning Staff, published "The Sources of Soviet Conduct" in the journal *Foreign Affairs*, signed only "X." Its central sentence gave the policy its name: "the main element of any United States

policy toward the Soviet Union must be that of a long-term, patient but firm and vigilant containment of Russian expansive tendencies." Soviet pressure, he wrote, could be contained by counterforce applied at "a series of constantly shifting geographical and political points." That is a geographic idea. It imagines the edge of Soviet power as a long frontier around Eurasia, mostly through Spykman's rimland, along which pressure might come at any place. Kennan expected that if the pressure were held for ten or fifteen years, the Soviet system would mellow or break down from its own strains.

On the map. The early pressure points run around the rim like beads on a string. In Europe, Churchill told an audience at Fulton, Missouri, on March 5, 1946: "From Stettin in the Baltic to Trieste in the Adriatic an iron curtain has descended across the Continent." In Iran, Soviet troops stayed past the agreed date of March 2, 1946, and left only in May after strong protests. In August 1946 Moscow demanded a share in the defense of the Turkish Straits. In Greece a civil war raged from 1946 to 1949. On March 12, 1947, President Truman asked Congress for \$400 million in aid to Greece and Turkey; on June 5, 1947, Secretary of State George Marshall proposed the plan for European recovery that bears his name. In June 1948 the Soviets cut the road, rail and canal links to West Berlin, an enclave about 160 km (100 miles) inside their zone of Germany. The Western powers answered with an airlift through three air corridors, each 20 miles (32 km) wide, until the blockade was lifted on May 12, 1949. In April 1949 the North Atlantic Treaty was signed; in June 1950 North Korea invaded South Korea.

Strongpoint or perimeter? Kennan soon worried that his idea was being read too broadly. In lectures in 1948 he argued that only five centers in the world had the industry and skilled people to build modern military power: the United States, Britain, Germany and the Rhine valley, the Soviet Union and Japan. Four of them were outside Soviet control, and the task was to keep them so, chiefly by economic and political means. That was a **strongpoint** idea. The journalist Walter Lippmann, in a series of columns collected as *The Cold War* (1947), attacked the X article for the opposite reason: he feared it committed America to defend every point on the vast Eurasian rim, often through weak or unpopular governments. NSC-68, a secret policy paper of April 1950, leaned toward that **perimeter** view and a large military buildup. Kennan spent much of his long life (he died in 2005 at 101) saying containment had been meant more as a political than a military policy.

Technology overcoming geography. Berlin shows both the power of the land and the power of the new machine. On the ground the city was surrounded. In the air it was not. From June 26, 1948, to September 30, 1949, American and British aircraft, chiefly the four-engine C-54, carried about 2.3 million tons of food, coal and supplies into the city in some 278,000 flights, with landings at Tempelhof only a few minutes apart in good weather. On one day in April 1949 they delivered nearly 13,000 tons. Geography had made Berlin a trap; technology, organization and will turned it into a demonstration.



The edge of Soviet power, 1946–1949: Churchill's line, the Berlin air routes, and the pressure points of Greece, the Turkish Straits and Iran.

PICTURE STUDY



Berliners Watch a C-54 Land at Tempelhof, Henry Ries, for the U.S. Air Force, 1948 · Black-and-white photograph · U.S. Air Force photograph; copies in the U.S. National Archives

During the Berlin Airlift, Berliners gathered at the edge of Tempelhof airfield to watch the transports come in. Many stood on piles of rubble left by the bombing and fighting of 1945. The planes were American C-54s and British aircraft carrying flour, coal, milk powder and medicine into a city of more than two million people cut off by land.

This photograph is a good companion to Kennan's idea. Containment did not mean war. In Berlin it meant holding a position firmly, without firing a shot, until the other side decided the pressure was not worth the cost.

Look closely

- Find the airplane. How low is it? What does that tell you about where the runway is?
- Look at what the people are standing on. What does the rubble tell you about the city three years after the war?
- Look at the faces and posture of the watchers. Are they afraid, hopeful or simply curious?
- Find any buildings in the background. How close was the airfield to the homes of the city?

Talk about it

1. Why was an airlift possible when a road convoy would have risked war?
2. Only three years earlier, American and British bombers had flown over Berlin to attack it. What changed, and what does that show about how quickly the map of friends and enemies can change?
3. What does this photograph show about the limits of a land blockade in the air age?

PROJECT: A CONTAINMENT MAP AND A TELEGRAM OF YOUR OWN

You will map the edge of Soviet power from 1946 to 1950 and then write a short telegram, in Kennan's style, explaining what the map shows. The goal is to see containment as a line of pressure points on real geography.

You will need

- An outline map of Europe, the Middle East and East Asia (or two maps, one for each end of Eurasia)
- Colored pencils, a fine pen, a ruler and a piece of string
- The text of the Long Telegram or the X article (the Office of the Historian page in the unit resources explains both; the full texts are free online, for example in the Wilson Center Digital Archive)

Steps

1. Draw and label Churchill's line from Stettin to Trieste. Shade the lands east of it lightly in red.
2. Mark and date the pressure points: Iran (March to May 1946), the Turkish Straits (August 1946), Greece (1946-1949), Berlin (June 1948 to May 1949), Korea (June 1950).
3. Draw West Berlin as an island in the Soviet zone and draw the three air corridors from Hamburg, Hanover and Frankfurt.

4. Circle Kennan's five centers of industrial power in a different color: the United States (draw an arrow off the map), Britain, the Rhine valley, the Soviet Union and Japan.
5. Measure with string and scale bar: Stettin to Trieste, Frankfurt to Berlin, and Moscow to each pressure point. Record the distances in kilometers and miles in a table.
6. Write a telegram of 200 to 300 words, dated and numbered, in short sentences without many articles, as Kennan did. Explain what the map shows about where pressure came and what the United States should do. End by saying whether you favor strongpoint or perimeter defense, and why.

Tips

- Kennan's telegram was organized in five parts. Organize yours in three: what is happening, why, and what to do.
- Use only facts from the lesson or the documents. A telegram that exaggerates is a bad telegram.

Check your work

- My map shows the Iron Curtain line, the five pressure points with dates, Berlin and its corridors, and Kennan's five centers.
- My distance table has at least five measurements in both units.
- My telegram states a clear choice between strongpoint and perimeter defense with reasons.

MAP NOTEBOOK

1. Copy the key sentence of the X article exactly and underline the four adjectives that describe containment.
2. Draw a simple ring for the Soviet Union and put five small arrows pushing outward at Berlin, Greece, the Straits, Iran and Korea, each with a date.
3. Make a two-column chart: Strongpoint (Kennan) and Perimeter (NSC-68). Give two features of each.

From history. One of the best-known pilots of the airlift, U.S. Air Force Lieutenant Gail Halvorsen, began dropping candy to the children who watched at the fence at Tempelhof, tied to small handkerchief parachutes. He told them to watch for his plane, which would wiggle its wings. Other crews joined in, Americans at home sent candy and handkerchiefs, and Berliners came to call the transports "raisin bombers."

WORKED EXAMPLES

Example 1. Churchill's Iron Curtain ran "from Stettin in the Baltic to Trieste in the Adriatic." Stettin (Szczecin) is at about 53.43° N, 14.55° E; Trieste at about 45.65° N, 13.77° E. Using 111 km per degree of latitude and $111 \times \cos \phi$ km per degree of longitude, find the straight-line distance.

(Use the map or drawing "Churchill's line from Stettin to Trieste." shown earlier in this lesson.)

1. North and south: $53.43 - 45.65 = 7.78^\circ$; $7.78 \times 111 \approx 864$ km.
2. East and west: $14.55 - 13.77 = 0.78^\circ$. At the middle latitude (about 49.5°), $\cos 49.5^\circ \approx 0.649$, so $0.78 \times 111 \times 0.649 \approx 56$ km.
3. For short distances, treat these as the legs of a right triangle: $\sqrt{(864^2 + 56^2)} = \sqrt{(746,500 + 3,100)} \approx \sqrt{749,600} \approx 866$ km.
4. In miles: $866 \times 0.621 \approx 538$ miles. The line runs almost due north and south.

Answer: About 866 km (about 538 miles), running almost due north to south.

Example 2. Airlift planners estimated that West Berlin needed about 4,500 tons of supplies a day to survive. A C-54 carried about 10 tons. How many C-54 landings a day did that require, and how far apart would they be if the airfields worked around the clock?

1. Landings per day: $4,500 \div 10 = 450$.
2. Landings per hour: $450 \div 24 = 18.75$.
3. Minutes between landings: $60 \div 18.75 = 3.2$ minutes, about one every 3 minutes 12 seconds.
4. Meaning: the city could be supplied only with strict timing, fixed altitudes and routes in the corridors, all-weather landing aids, and more than one airfield. That was why the airlift was as much an achievement of organization as of aircraft.

Answer: 450 landings a day, about one every 3.2 minutes around the clock.

Example 3. The airlift ran from June 26, 1948, to September 30, 1949, and carried about 2.3 million tons. Find the number of days and the average tons per day. Did the average meet the estimated need of 4,500 tons a day?

1. Days in 1948: June 26 through June 30 is 5 days; July through December is $31 + 31 + 30 + 31 + 30 + 31 = 184$ days. Total 189.
2. Days in 1949: January through September is $31 + 28 + 31 + 30 + 31 + 30 + 31 + 31 + 30 = 273$ days.
3. Total: $189 + 273 = 462$ days.
4. Average: $2,300,000 \div 462 \approx 4,980$ tons per day, about 5,000.
5. Compare: $4,980 > 4,500$. The average was above the estimated need, though the first weeks fell well short and the later months ran far above it.

Answer: 462 days; about 4,980 tons per day on average, above the 4,500-ton estimate.

PRACTICE

1. **EASY** Give the date of the Long Telegram and the city from which it was sent.
2. **EASY** Where and when was the X article published, and what was its title?
3. **EASY** Quote the key sentence of the X article on containment.
4. **EASY** According to the Long Telegram, what lay at the bottom of the Kremlin's view of the world, and what geographic fact did Kennan say it came from?
5. **MEDIUM** List the five early Cold War pressure points from this lesson in order of date, and say what they have in common on the map.
(Use the map or drawing "Use the map for Problems 5 and 9." shown earlier in this lesson.)
6. **MEDIUM** Name Kennan's five centers of industrial and military power. Which one was under Soviet control in 1948?
7. **MEDIUM** Each Berlin air corridor was 20 miles wide. Convert to kilometers (1 mile $\approx$ 1.609 km). Why were the corridors so narrow a limit for planners?
8. **MEDIUM** Frankfurt to Berlin is about 425 km (264 miles). Suppose a loaded C-54 averaged about 270 km/h over the whole trip. How long was the flight, and how many round trips could one plane fly in 24 hours if each stop on the ground took 1.5 hours?
9. **MEDIUM** Moscow is at about 55.75° N, 37.62° E; Tehran at about 35.69° N, 51.39° E. Find the north and south distance between them in kilometers and miles.
10. **HARD** Explain the difference between strongpoint and perimeter defense and give one argument for each.
11. **HARD** What was Walter Lippmann's main criticism of the X article?
12. **CHALLENGE** Write a paragraph of 6 to 8 sentences explaining how the Long Telegram combines Mackinder's Heartland, Spykman's rimland and the history of ideas. Was Kennan a geographic determinist?

COMMON MISTAKES

- Thinking Kennan meant containment as mainly military. He stressed political and economic strength first, and later objected to the broad military reading of his words.
- Confusing Churchill's Iron Curtain speech (March 5, 1946) with the Long Telegram (February 22, 1946). They came less than two weeks apart and made similar points from different sides of the Atlantic.
- Forgetting that West Berlin was an enclave far inside the Soviet zone, not on the border between East and West Germany.

Make it a game · Pressure and Counterpressure. Lay a map of Eurasia on the table. One player is Moscow and has ten coins; the other is Washington and has seven. Moscow places a coin on any rim location and names it. Washington may answer by placing a coin there (contained) or let it go. A coin left unanswered on one of Kennan's five centers wins the game for Moscow at once; elsewhere, three unanswered coins win. Washington wins by lasting until Moscow's coins run out. Afterward, discuss: did you play strongpoint or perimeter?

Scripture. "Or what king, going to make war against another king, sitteth not down first, and consulteth whether he be able with ten thousand to meet him that cometh against him with twenty thousand?" (Luke 14:31, KJV)

Jesus used this picture to teach that a disciple must count the cost. It also describes wise statecraft. Kennan and his critics argued about exactly this: how many points a nation could defend, at what cost, and which places truly mattered.

Practice answers

1. February 22, 1946, from the U.S. embassy in Moscow.
2. "The Sources of Soviet Conduct," in *Foreign Affairs*, July 1947.
3. "the main element of any United States policy toward the Soviet Union must be that of a long-term, patient but firm and vigilant containment of Russian expansive tendencies."
4. A traditional and instinctive Russian sense of insecurity, which began with an agricultural people living on a vast exposed plain near fierce nomadic peoples.
5. Iran (March to May 1946), the Turkish Straits (August 1946), Greece (1946-1949), Berlin (June 1948 to May 1949), Korea (June 1950). All lie on or near the rimland around the Soviet Union.
6. The United States, Britain, Germany and the Rhine valley, the Soviet Union, and Japan. Only the Soviet Union itself was under Soviet control.
7. $20 \times 1.609 \approx 32$ km. Aircraft had to stay inside the corridors over the Soviet zone, so hundreds of flights a day had to be stacked at fixed altitudes and timed precisely.
8. One way: $425 \div 270 \approx 1.57$ hours, about 1 hour 34 minutes. Round trip: $2 \times 1.57 + 2 \times 1.5 \approx 6.1$ hours. $24 \div 6.1 \approx 3.9$, so about 3 full round trips (nearly 4) a day.
9. $55.75 - 35.69 = 20.06^\circ$. $20.06 \times 111 \approx 2,227$ km; $20.06 \times 69 \approx 1,384$ miles.
10. Strongpoint defense protects a few vital places (Kennan's industrial centers) and lets lesser places go; it saves strength and avoids endless small wars. Perimeter defense resists

expansion everywhere along the frontier; it prevents the other side from gaining ground and prestige piece by piece and reassures every ally.

11. That containment, as Lippmann read it, would commit the United States to resist Soviet pressure at every point along the vast Eurasian rim, often through weak or unpopular governments, overstretching American power. He urged instead a negotiated settlement in Europe under which both the Soviet and the Western armies would withdraw.
12. Answers vary. A strong answer notes that Kennan rooted Russian insecurity in the geography of the open plain and the nomad frontier (the Heartland seen from inside), that the pressure points of containment lay around the rim of Eurasia (Spykman's rimland), and that Kennan saw communist ideology as a justification that sharpened old fears and excused harsh rule. It concludes that he was not a determinist, because he believed policy, patience and the health of free societies could change the outcome, and he expected the Soviet system to change from within.

4.3 THE MONROE DOCTRINE AS GEOGRAPHY

OBJECTIVES

- Tell the story of President James Monroe's message of December 2, 1823, and the part played by John Quincy Adams, George Canning and the Russian claim on the Pacific coast, quoting the doctrine's two key sentences exactly.
- Explain the Monroe Doctrine as a geographic idea: one hemisphere set apart from Europe by two oceans, and show how sailing times, prevailing winds and the Royal Navy made it workable in 1823.
- Trace how the doctrine was restated and stretched (1845, 1867, 1895, 1904, 1933, 1962), name its real costs plainly, and weigh Spykman's criticism that a hemisphere is a line on a map, not a fortress.

Warm-up. Take an orange or a ball and draw a line around it with a marker from top to bottom. Now you have two "hemispheres." Put a sticker on the spot for Washington, D.C., one on Buenos Aires and one on Lisbon (use a globe or atlas to place them roughly). Stretch a piece of string between the stickers. Is Washington closer to the other city in its own half of the ball, or to the city across the line? Write your guess, then measure.

Watch. *The Monroe Doctrine December 2, 1823* (The Appendix, 8:19).

<https://www.youtube.com/watch?v=AqPAodLnQfs>

After the story: listen to passages from Monroe's December 2, 1823 message and try to pick out the two places where he warns Europe away from the Americas.

Note: Captions were not available to check; preview it first. This is a small channel reading the original 1823 text, so check that the narration is clear and is a real human voice.

Backup video. *Why did Europe obey the Monroe Doctrine? (Short Animated Documentary)* (History Matters, 3:34). <https://www.youtube.com/watch?v=qZYrj2YOmsw>

With the big idea: watch this short animation on why European powers mostly stayed out of the Americas after 1823, even though the young United States could not yet enforce the doctrine. Note: Captions were not available to check; preview it first. The channel uses British spellings and a light, joking tone.

KEY TERMS

Monroe Doctrine

The policy announced in President Monroe's annual message of December 2, 1823: the Americas were closed to new European colonies, and European interference in the hemisphere would be treated as a danger to the United States.

Western Hemisphere

The half of the earth west of the prime meridian and east of the 180th meridian, by the usual convention; in politics, North and South America and the nearby islands. Its edges are a mapmaker's choice, not a wall.

non-colonization

The principle that the American continents were no longer open to new colonies by any European power.

two spheres

The idea in the 1823 message that the Old World and the New World had different political systems and should stay out of each other's affairs.

Roosevelt Corollary

Theodore Roosevelt's addition of 1904: that the United States might act as an international police power in the hemisphere to prevent European intervention, which was later used to justify many interventions.

American Mediterranean

Spykman's name for the Gulf of Mexico, the Caribbean Sea and the lands around them, the part of the hemisphere the United States could most easily dominate.

CORE IDEAS

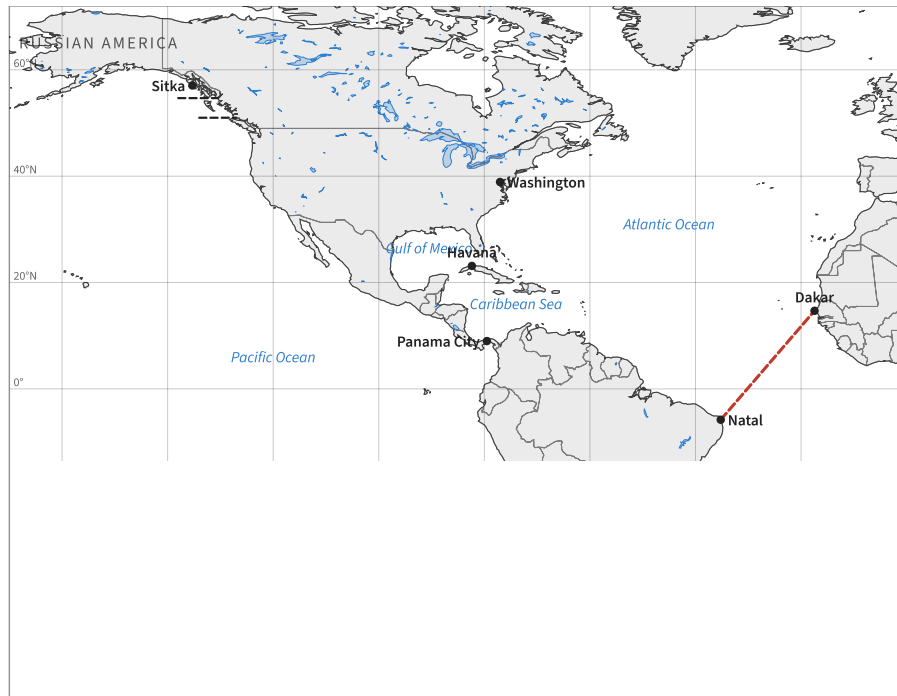
The story. On December 2, 1823, President James Monroe sent his annual message to Congress. Most of it dealt with ordinary business: the budget, the Navy, the post office. Scattered in two places were a few paragraphs that became the most famous statement in American foreign policy. The first answered Russia, which in 1821 had declared the Pacific coast of North America down to 51° N its own and forbidden foreign ships to come near. The message declared that "the American continents, by the free and independent condition which they have assumed and maintain, are henceforth not to be considered as subjects for future colonization by any European powers." The second answered a rumor that the monarchies of the Holy Alliance might help Spain win back its former colonies, which had broken away and become independent republics from Mexico to Chile. Any attempt by the European powers "to extend their system to any portion of this hemisphere," Monroe said, would be considered "as dangerous to our peace and safety." In return, the United States would stay out of Europe's own wars.

How they figured it out. The words were Monroe's, but much of the thinking belonged to his Secretary of State, John Quincy Adams. In August 1823 the British Foreign Secretary, George Canning, had proposed that Britain and the United States declare together against any European attempt on Spanish America. Britain had its own reasons: its merchants now traded freely with the new republics. Former presidents Jefferson and Madison advised Monroe to accept. Adams argued against it in a cabinet meeting on November 7, 1823. "It would be more candid, as well as more dignified," he said, as he recorded in his diary, "to avow our principles explicitly to Russia and France, than to come in as a cock-boat in the wake of the British man-of-war." Adams knew perfectly well that the small American navy could not enforce the doctrine alone. He also knew that the Royal Navy would block any European fleet bound for Spanish America because it suited Britain to do so. The United States could speak alone because Britain would act anyway.

The big idea. The Monroe Doctrine is a piece of geography written as policy. It drew a line down the middle of the world and declared that the half with the United States in it was a separate political system. That line rested on the oceans. In 1823 the fastest packet ships between Liverpool and New York took about three weeks eastbound, helped by the prevailing westerly winds and the Gulf Stream, and about five or six weeks westbound against them. An army sent to the New World would arrive weeks after the news of its sailing, and its supplies would come slower still. The Atlantic, held by a friendly navy, was a moat. The doctrine also made a quiet geographic claim about the coast itself. The next year, in the Russo-American Treaty of 1824, Russia agreed to make no settlements south of 54°40' N, pulling its claim back by more than 400 km (250 miles) of coast.

On the map: the doctrine stretched. Later presidents read the doctrine more and more broadly. In 1845 James K. Polk restated it against British and French interest in Texas, Oregon and California. While the United States fought its Civil War, France placed the Austrian archduke Maximilian on a throne in Mexico; after the war, with American pressure and a strong Mexican resistance under Benito Juárez, the French withdrew, and Maximilian was executed in 1867. In 1895 Secretary of State Richard Olney told Britain that the United States had the right to insist on arbitration of a boundary dispute between Venezuela and British Guiana. In December 1904 Theodore Roosevelt added his corollary, claiming a right to act as a police power in the hemisphere. It was used to justify taking over the customs houses of the Dominican Republic, and later military occupations of Nicaragua (1912–1933), Haiti (1915–1934) and the Dominican Republic (1916–1924). Many Latin Americans came to see the doctrine less as a shield than as a claim of mastery. In 1933 Franklin Roosevelt announced a Good Neighbor Policy, and in 1934 the last Marines left Haiti, and in 1947 the Rio Treaty made the defense of the hemisphere a shared obligation. In October 1962 the doctrine faced its sharpest test, when American reconnaissance photographs showed Soviet missile sites in Cuba, about 145 km (90 miles) from Key West.

Technology overcoming geography. Spykman, writing in 1942, thought the hemisphere had become a dangerous comfort. A hemisphere, he pointed out, is a convention of mapmakers; the oceans divide it from nothing. The United States could dominate what he called the American Mediterranean, the Gulf of Mexico and the Caribbean, but the southern part of South America lay beyond the Amazon forest and far down the sea lanes, closer to Europe in trade and culture than to New York. The bulge of Brazil lies only about 3,000 km (1,900 miles) from Dakar in West Africa, a gap that bombers and transports could cross. In 1823 the oceans were moats because sailing ships were slow. By the 1940s steamships, aircraft and radio had made them highways for whoever held the far shores. Spykman's answer was not to abandon the hemisphere but to defend it in Europe and Asia, by keeping a balance of power there. The Monroe Doctrine had looked inward from the edge of the oceans; Spykman looked outward across them. The series verse reminds us that God "hath determined the times before appointed, and the bounds of their habitation" (Acts 17:26). Oceans and continents are His work; what they mean for nations changes with the times He appoints.



The hemisphere as geography: the Pacific claim of 1821 and the line of 1824, the American Mediterranean, and the narrows of the Atlantic between Brazil and West Africa.

PICTURE STUDY



The Birth of the Monroe Doctrine, Clyde Osmer DeLand, 1912 · Oil painting, widely reproduced as a print (the Commons image is a print after DeLand) · Reproduced as a print in many histories; the location of the original painting is not well documented

Clyde DeLand, an American illustrator of historical scenes, painted this imagined view of President Monroe and his cabinet discussing the doctrine in 1823. From left to right, the

figures are usually identified as John Quincy Adams, William Crawford, William Wirt, President Monroe, John C. Calhoun, Daniel Tompkins and John McLean.

This picture was made eighty-nine years after the event. No artist sketched the real meeting, so DeLand worked from portraits and imagination. That makes it a good lesson in reading pictures: it shows how Americans of 1912, a time of the Roosevelt Corollary and the building of the Panama Canal, liked to imagine the founding moment of hemisphere policy.

Look closely

- Find the figure who seems to be leading the discussion. Who is listening, and who is speaking?
- Look at the papers, books or other objects on the table and around the room. Do you see anything that hints at geography, such as maps or a globe?
- Look at the clothing and furniture. How did the painter show that this was 1823 and not 1912?
- Look at the light. Where does it fall, and what does the painter want you to notice first?

Talk about it

1. Adams did much of the thinking behind the doctrine. Does the painting give him the place you would expect? Why might a painter choose to center the President instead?
2. What can a painting made long after an event teach us, and what should we be careful not to trust in it?
3. If you painted the same scene, what map would you put on the wall, and why?

PROJECT: STRING AND GLOBE: HOW BIG IS A HEMISPHERE?

You will test the hemisphere with string on a globe. If the Western Hemisphere were a true geographic unit, its cities should be closer to each other than to the cities of the Old World. Let the string decide.

You will need

- A globe (a classroom globe or an inexpensive one; a large ball with places marked from an atlas will do)
- Thin string or thread, a ruler, small sticky dots and a pen
- A notebook, and a calculator

Steps

1. Find the globe's scale. Measure the string length along the equator for 10° of longitude; 10° at the equator is about 1,110 km (690 miles). Write your scale, for example 1 cm = 400 km.
2. Place dots on Washington, Havana, Panama City, Natal, Buenos Aires, Lisbon, London, Dakar and Moscow.

3. Stretch the string tight between pairs of cities (a tight string on a globe follows the great circle). Measure and convert: Washington to Buenos Aires, Washington to Lisbon, Washington to London, Natal to Dakar, Buenos Aires to Lisbon.
4. Make a table with the distances in kilometers and miles, and mark each pair as “same hemisphere” or “across the ocean.”
5. Shade the American Mediterranean on a flat map: the Gulf of Mexico, the Caribbean and their shores. Add the lines at 51° N and 54°40' N on the Pacific coast.
6. Write a paragraph: Does the string support the idea of one hemisphere, or Spykman’s doubt? Use at least three of your numbers.

Tips

- Hold the string very tight against the surface; any slack makes the distance too long.
- Compare your results with the figures in this lesson. Within about 10 percent is good work on a classroom globe.

Check your work

- My table has at least five distances in both units.
- My flat map shows the American Mediterranean, the 1821 and 1824 lines, and the Brazil to Africa narrows.
- My paragraph reaches a judgment and uses my measurements as evidence.

MAP NOTEBOOK

1. Copy the two key sentences of the 1823 message (non-colonization and the warning against extending the European system). Underline the geographic words in each.
2. Draw a timeline of the doctrine: 1823, 1824, 1845, 1867, 1895, 1904, 1933, 1947, 1962, with five words for each date.
3. Sketch the Atlantic with two arrows for the packet ships, a short arrow eastbound (about three weeks) and a long arrow westbound (about five or six weeks), and label the westerlies and the Gulf Stream.

From history. The name “Monroe Doctrine” did not come into common use until the 1850s, about thirty years after the message. In 1823 most Europeans paid it little attention, and the Austrian chancellor Metternich dismissed it with scorn. It became a doctrine only as later Americans quoted it, restated it and finally gained the power to enforce it.

WORKED EXAMPLES

Example 1. Russia's decree of 1821 claimed the Pacific coast south to 51° N. The Russo-American Treaty of 1824 set the southern limit of Russian settlement at $54^{\circ}40'$ N. How far north did the limit move, in degrees, kilometers and miles?

(Use the map or drawing "The Russian claim of 1821 and the line of 1824." shown earlier in this lesson.)

1. Convert minutes to degrees: $40' = 40 \div 60 = 0.667^{\circ}$, so $54^{\circ}40' = 54.667^{\circ}$.
2. Difference: $54.667 - 51 = 3.667^{\circ}$.
3. Kilometers: $3.667 \times 111 \approx 407$ km. Miles: $3.667 \times 69 \approx 253$ miles.
4. Meaning: this was a measured north and south distance of coast removed from Russian claims, the first practical success of the non-colonization principle. The same latitude, $54^{\circ}40'$, later became a slogan in the Oregon dispute with Britain.

Answer: 3.667° ($3^{\circ}40'$), about 407 km (about 253 miles).

Example 2. In the 1820s packet ships between Liverpool and New York, about 5,300 km (3,300 miles) apart, averaged roughly 23 days eastbound and 40 days westbound. Find the average speed each way in km/h and explain the difference with physical geography.

1. Eastbound hours: $23 \times 24 = 552$ hours. Speed: $5,300 \div 552 \approx 9.6$ km/h (about 5.2 knots).
2. Westbound hours: $40 \times 24 = 960$ hours. Speed: $5,300 \div 960 \approx 5.5$ km/h (about 3.0 knots).
3. Ratio: $9.6 \div 5.5 \approx 1.7$, so eastbound ships were about 1.7 times as fast.
4. Reason: in the middle latitudes of the North Atlantic the prevailing winds blow from the west, and the Gulf Stream and North Atlantic Current flow toward Europe. Ships sailing to America worked against both. An expedition from Europe to the Americas therefore faced the slow direction.

Answer: About 9.6 km/h eastbound and 5.5 km/h westbound. Westerly winds and the Gulf Stream helped ships toward Europe and slowed ships toward America.

Example 3. In October 1962 a Soviet medium-range missile site was photographed near San Cristóbal, Cuba (about 22.7° N, 83.05° W). Washington, D.C., is at about 38.9° N, 77.04° W. The missiles had a range of about 2,000 km (1,240 miles). Estimate the distance and decide whether Washington lay within range.

1. North and south: $38.9 - 22.7 = 16.2^{\circ}$; $16.2 \times 111 \approx 1,798$ km.
2. East and west: $83.05 - 77.04 = 6.01^{\circ}$. At the middle latitude (about 30.8°), $\cos 30.8^{\circ} \approx 0.859$, so $6.01 \times 111 \times 0.859 \approx 573$ km.
3. Distance: $\sqrt{(1,798^2 + 573^2)} = \sqrt{(3,232,800 + 328,300)} \approx \sqrt{3,561,100} \approx 1,887$ km. In miles: $1,887 \times 0.621 \approx 1,172$ miles.
4. Compare: $1,887 \text{ km} < 2,000 \text{ km}$. Washington lay inside the range, by roughly 110 km. A power across the ocean had placed weapons inside the American Mediterranean, the very thing the 1823 doctrine had warned against.

Answer: About 1,890 km (about 1,170 miles); yes, Washington lay just inside the range of about 2,000 km.

PRACTICE

1. **EASY** Give the date of Monroe's message and the name of the Secretary of State who shaped the doctrine.
2. **EASY** Quote the non-colonization sentence of the Monroe Doctrine.
3. **EASY** Which two European threats was the 1823 message answering?
4. **EASY** What was Adams's "cock-boat" remark about, and what did he want instead?
5. **MEDIUM** Why could the United States announce the doctrine in 1823 even though its navy was small?
6. **MEDIUM** Natal, Brazil, is at about 5.8° S, 35.2° W; Dakar, Senegal, is at about 14.7° N, 17.4° W. Estimate the distance between them. (Near the equator, use 111 km per degree in both directions.)
(Use the map or drawing "Use the map for Problems 6 and 9." shown earlier in this lesson.)
7. **MEDIUM** New York to Buenos Aires is about 8,500 km; New York to Lisbon is about 5,420 km. How many times farther is Buenos Aires? What does this suggest about the "hemisphere" as a unit?
8. **MEDIUM** Key West to Havana is about 145 km. Convert to miles and give the travel time for a ship at 20 knots (about 37 km/h).
9. **MEDIUM** What did Spykman mean by the American Mediterranean, and why did he think it differed from southern South America?
10. **HARD** Name three interventions that followed the Roosevelt Corollary, with dates, and explain why many Latin Americans came to distrust the doctrine.
11. **HARD** A message of 1823 needed about 40 days by sail from Liverpool to New York. Lindbergh flew from New York to Paris, about 5,800 km, in 33.5 hours in 1927. How many times faster was his average speed than the westbound packet's speed of about 5.5 km/h?

12. **CHALLENGE** Write a paragraph of 6 to 8 sentences weighing the Monroe Doctrine as geography. What did it get right about the oceans in 1823, what changed by 1942, and what does the doctrine's later history teach about turning a map into a policy?

COMMON MISTAKES

- Thinking the Monroe Doctrine was a law or a treaty. It was a statement in a presidential message; its force came from later policy and power.
- Forgetting the British side. The Royal Navy, not the small American navy, made the doctrine enforceable in the 1820s.
- Treating the Western Hemisphere as a natural region. Its boundaries are mapmakers' conventions, and its parts are very far apart.

Make it a game · Inside the Line?. A leader calls out an event or place: Russian Alaska, Maximilian in Mexico, the Falklands, Soviet missiles in Cuba, British Guiana, a German air base in Brazil (a 1940s fear), the Panama Canal Zone. Players answer "Doctrine applies," "Doctrine does not apply" or "Disputed," and give one sentence. A good argument scores two points, whatever the answer, if it uses geography and a date. Play to twelve.

Scripture. "And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;" (Acts 17:26, KJV)

Paul spoke these words in Athens. The nations of both hemispheres are of one blood, and their bounds are in God's hands. A doctrine about hemispheres is a human policy; it should be judged by whether it treats neighbors justly as well as whether it keeps a nation safe.

Practice answers

1. December 2, 1823; John Quincy Adams.
2. "the American continents, by the free and independent condition which they have assumed and maintain, are henceforth not to be considered as subjects for future colonization by any European powers."
3. Russia's 1821 claim to the Pacific coast of North America south to 51° N, and the rumored plan of the Holy Alliance to help Spain recover its former colonies in the Americas.
4. Canning's proposal of a joint British and American declaration. Adams said it would be more candid and dignified to state American principles alone than to follow like a small boat behind a British warship.
5. Because the Atlantic was wide and slow to cross by sail, and because Britain, for its own trading interests, would use the Royal Navy to stop any European fleet bound for Spanish America.
6. North and south: $5.8 + 14.7 = 20.5^\circ$. East and west: $35.2 - 17.4 = 17.8^\circ$. $\sqrt{(20.5^2 + 17.8^2)} = \sqrt{420 + 317} \approx \sqrt{737} \approx 27.1^\circ$. $27.1 \times 111 \approx 3,010$ km, about 1,870 miles.
7. $8,500 \div 5,420 \approx 1.57$ times farther. A major city in the United States' own hemisphere is farther away than a European capital, so the hemisphere is a convention of maps more than a

geographic unit.

8. $145 \times 0.621 \approx 90$ miles. $145 \div 37 \approx 3.9$ hours, about 4 hours.
9. The Gulf of Mexico, the Caribbean and the lands around them, which the United States could dominate by sea and air from nearby bases. Southern South America lay beyond the Amazon forest and far down the sea lanes, tied closely to Europe by trade and culture, and was much harder for the United States to defend.
10. The occupation of Nicaragua (1912–1933), of Haiti (1915–1934) and of the Dominican Republic (1916–1924); also the takeover of Dominican customs collection from 1905. Many Latin Americans saw that a doctrine meant to keep Europe out was being used to let the United States in, overriding their own governments.
11. Lindbergh: $5,800 \div 33.5 \approx 173$ km/h. Ratio: $173 \div 5.5 \approx 31$. About 31 times faster.
12. Answers vary. A strong answer explains that in 1823 slow sailing, the westerlies and the Royal Navy made the Atlantic a real moat, so the doctrine was workable and kept new colonies out (the 1824 line). It notes that steamships, aircraft and radio turned the oceans into highways by the 1940s, as Spykman argued, and that hemisphere defense came to depend on Europe and Asia. It notes that the doctrine was stretched into a claim to police the hemisphere, with real costs to neighboring nations, then softened by the Good Neighbor Policy and the Rio Treaty. It concludes that a map line becomes a policy only through power and choices, and that its meaning changes as technology and circumstances change.

4.4 THE AIR AGE: POLAR MAPS AND THE SHRINKING WORLD



OBJECTIVES

- Explain how the airplane changed the geography of power in the 1940s and 1950s, and how Richard Edes Harrison's maps in *Fortune* and *Look at the World* (1944) taught Americans to see the world anew.
- Read a north polar azimuthal equidistant map: measure distance from the Pole, find the shortest route between two high-latitude places, and compare great-circle and rhumb-line distances.
- Connect the polar map to Cold War geography (the Arctic as a frontier, Thule, the DEW Line, NORAD and the first ICBMs), while naming what air power did not overcome.

Warm-up. Take a globe or a ball and a piece of string. Hold one end of the string on Chicago (or any city in the northern United States) and stretch it tight to Moscow. Look at where the string goes: over the Atlantic, or far to the north? Now find the same two cities on a flat wall map and draw the straight line a ruler gives you. The two paths do not match. Which one would a pilot fly?

Watch. *How the World Map Looks Wildly Different Than You Think* (RealLifeLore, 6:19). <https://www.youtube.com/watch?v=IPNrtjboISg>

After the story: watch how the familiar Mercator map stretches lands near the poles, and think about why the families listening to Roosevelt's 1942 fireside chat found their classroom maps misleading.

Note: Captions were not available to check; preview it first. The video covers map distortion and country sizes in general and does not cover polar air routes or World War II maps.

KEY TERMS

great circle

A circle on the globe whose center is the center of the earth, such as the equator or any meridian. The shortest path between two places on a sphere runs along a great circle.

rhumb line

A line of constant compass bearing. On a Mercator map it is straight, but except along the equator or a meridian it is longer than the great-circle route.

azimuthal equidistant projection

A map projection centered on one point, on which distances and directions from that center are true. Centered on the North Pole, it shows the Arctic as the middle of the northern world.

perspective map

A map drawn as if the earth were seen from a point far out in space, so the curve of the globe shows. Harrison made many of these.

air-age globalism

The idea, popular in the 1940s, that airplanes had shrunk the world so that every region now touched every other and no nation could stand apart.

DEW Line

The Distant Early Warning Line, a chain of radar stations across arctic North America, in operation from 1957, built to warn of bombers coming over the Pole.

CORE IDEAS

The story. On February 23, 1942, eleven weeks after Pearl Harbor, President Franklin Roosevelt gave a fireside chat on the radio. Before he spoke, he asked Americans to have a map of the world in front of them, so they could follow him as he explained a war fought on every ocean and continent. Bookstores and map dealers sold out. Many families discovered that their maps did not help much. The common classroom map of the day was the Mercator projection, with the Atlantic and Pacific spread wide and Greenland swollen to the size of Africa. It hid the very facts the war was teaching: that Alaska is near Siberia, that Japan lies close to the Aleutians, that the shortest way from North America to much of Europe and Asia runs north. A young cartographer for *Fortune* magazine, Richard Edes Harrison (1901–1994), had been trained as an architect and had no formal schooling as a mapmaker. That was part of his gift. He drew the world as a draftsman draws a building: from whatever point of view showed it best.

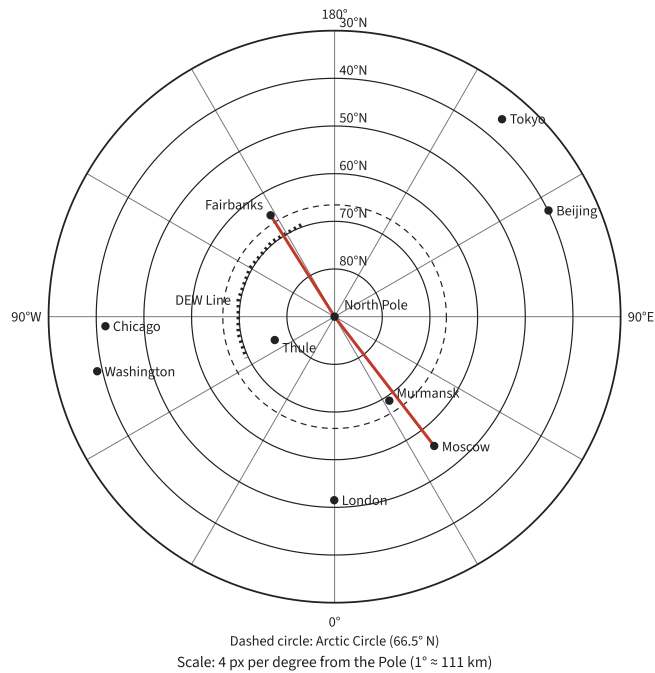
How it worked. Harrison's maps used two main methods. The first was the **perspective map**: the earth drawn as if seen from high above some chosen point, with the curve of the globe showing at the edges and mountains shaded as if lit from one side. A reader could look at Europe from over Russia, or at Japan from over Alaska, and see at once how the land lay toward the enemy. The second was the **azimuthal** projection, especially centered on the North Pole. On a north polar azimuthal equidistant map, every meridian is a straight line running out from the Pole, every parallel is a circle, and the distance from the Pole to any place is shown true. Look at the polar map in this lesson. North America, Europe and Asia ring the Arctic Ocean like the rim of a bowl. The United States and the Soviet Union are not on opposite sides of the world; they are neighbors across the top of it. In 1944 Harrison gathered many of his maps into an atlas, *Look at the World: The Fortune Atlas for World Strategy*, published by Alfred A. Knopf.

The big idea. The airplane changed which distances mattered. Ships must follow coasts and straits; trains must follow rails; airplanes can follow the great circle, the shortest path on the sphere. Between places in the high northern latitudes the great circle often bends far north of the straight line on a Mercator map. In 1942 the businessman and politician Wendell Willkie flew around the world, about 31,000 miles in 49 days, and in 1943 he published a best-selling book called *One World*. Writers of the time spoke of the air age and of one world, an outlook historians now call air-age globalism: the world had shrunk, and every nation was now a neighbor of every other. Spykman shared some of this. He saw that bombers made the

oceans narrower and that the Arctic could become a front. But he warned that aircraft still needed bases, fuel and factories on the ground, and so the old map of land and sea still mattered.

On the map: the Arctic becomes a frontier. After 1945 the polar map moved from magazines into war plans. In 1946 the new United Nations adopted an emblem showing a north polar azimuthal map of the world, encircled by olive branches. The Soviet Union copied the American B-29 bomber as the Tu-4, which first flew in 1947, and the United States built bombers of intercontinental range. The shortest bomber routes between the two powers lay across the Arctic. The United States built Thule Air Base in northwest Greenland from 1951, at about 76.5° N. In 1957 the DEW Line of radar stations went into operation, stretching about 4,800 km (3,000 miles) across arctic Alaska and Canada, and in 1958 the United States and Canada formed the North American Air Defense Command, NORAD. In August 1957 the Soviet Union tested the first intercontinental ballistic missile, and on October 4, 1957, it launched Sputnik, the first artificial satellite. A missile could cross the Pole in about half an hour. Peaceful flight followed the same geography: in November 1954 Scandinavian Airlines began scheduled service over the polar region between Copenhagen and Los Angeles.

Technology overcoming geography. The air age overcame distance more completely than any earlier machine, but it did not abolish geography. Arctic weather, darkness, ice fog and the cold that freezes fuel lines still governed flying. Bases had to be built on permafrost and supplied by sea in the short summer. Every bomber needed a runway, every missile a launch site, every radar station a supply ship. Harrison himself insisted that no projection tells the whole truth; each one is chosen to show some relations and hide others, which is why a wise student learns to use several. Isaiah wrote of the Lord “that sitteth upon the circle of the earth” (Isaiah 40:22). The polar map gives us, for a moment, a view from above the round world. It should make us humble as well as clever: the whole earth, with all its rival powers, is small before its Maker.



The Cold War from the top of the world. Distances from the Pole are true at 4 px per degree; the red line from Fairbanks to Moscow runs almost straight through the Pole.

PICTURE STUDY



Europe from the Southwest, a plate from Look at the World: The Fortune Atlas for World Strategy, Richard Edes Harrison, 1944 · Color atlas maps (perspective and azimuthal projections, with shaded relief) · Published by Alfred A. Knopf, New York; copies in many libraries, and digital copies in the David Rumsey Map Collection

Richard Edes Harrison drew maps for *Fortune* magazine during the Second World War. In 1944 the best of them were gathered into *Look at the World*, an atlas meant to help ordinary

readers understand a global war. Many plates show a region seen from far above some point on or off the map, for example Europe as seen from the east, or Japan as seen from Alaska, so that the curve of the earth shows and the land lies in front of the reader as it would to a pilot or an invader.

Harrison's maps were admired by the public and by military planners, and some professional geographers at first criticized them for setting aside the familiar north-up conventions. Today they are remembered as some of the most influential maps of the twentieth century, because they changed how a generation of Americans pictured their place in the world.

Look closely

- Find the horizon of the globe on the plate. From what point in the sky does the artist seem to be looking?
- Is north at the top of the page? If not, where is it, and why might Harrison have turned the map?
- Look at the shading of the mountains. Which ranges stand out as barriers, and which plains or seas look like highways?
- Look for borders and place names. How few are there? Why might a strategist want a map with fewer lines on it?

Talk about it

1. What does this map make look close that a Mercator map makes look far apart?
2. Why might a newspaper reader in 1944 understand the war better from Harrison's maps than from a schoolroom map?
3. Every projection hides something. What does a perspective map hide or distort?

PROJECT: BUILD A POLAR MAP WITH COMPASS AND PROTRACTOR

You will draw your own north polar azimuthal equidistant map by hand, plot real cities, and test it against a globe. This map will be the base for the unit project, "The Cold War from the Top of the World," in Lesson 4.5.

You will need

- A large sheet of heavy paper (at least 45 × 45 cm, or 18 × 18 inches)
- A drawing compass (or a pushpin, string and pencil), a protractor and a ruler
- An atlas with latitude and longitude of cities, colored pencils, and a globe and string for checking

Steps

1. Choose a scale: 2 mm per degree of latitude works well, so 10° is 2 cm. Mark the North Pole at the center of the page.
2. Draw circles for 80°, 70°, 60°, 50°, 40° and 30° N. With 2 mm per degree, the 30° circle has a radius of $60 \times 2 \text{ mm} = 12 \text{ cm}$. Draw the Arctic Circle (about 66.5° N) as a

dashed circle at a radius of 4.7 cm.

3. Draw the 0° meridian straight down from the Pole. Using the protractor, draw meridians every 30° . Going counterclockwise from 0° are 30° E, 60° E and 90° E (at the right); 180° is straight up; 90° W is at the left.
4. Plot these cities by latitude (distance from the Pole) and longitude (angle): Washington, Chicago, Fairbanks, Thule, London, Murmansk, Moscow, Beijing and Tokyo. Check your work against the figure in this lesson.
5. Sketch the coasts of the Arctic Ocean, Greenland, northern Canada, Scandinavia and Siberia from your atlas, plotting a point every 10° of longitude and joining them.
6. Draw the straight line from Fairbanks through the Pole to Moscow, measure it with the ruler and convert to kilometers ($1^\circ \approx 111$ km). Check it on the globe with the string.

Tips

- Plot points, then draw coasts. Freehand coastlines drawn before the grid are always wrong.
- Only distances from the Pole are true on this map. Distances between two cities on different meridians are true only when the line passes through the Pole.

Check your work

- My grid has six latitude circles, the Arctic Circle and twelve meridians, all labeled.
- I plotted at least nine cities correctly and sketched the Arctic coasts.
- My Fairbanks to Moscow measurement is within 10 percent of 6,600 km.

MAP NOTEBOOK

1. Draw a small Mercator rectangle and a small polar circle side by side, and plot Washington and Moscow on each. Write one sentence on which map shows the shortest air route better.
2. Copy the definitions of great circle and rhumb line and draw a tiny globe showing one of each between two cities on the same parallel.
3. Make a timeline of the polar air age: 1942, 1944, 1946, 1947, 1951, 1954, 1957, 1958, with a few words for each.

From history. The emblem of the United Nations, approved in 1946, shows the world on a north polar azimuthal equidistant projection inside a wreath of olive branches. A map centered on the North Pole puts the Arctic Ocean, rather than any one nation, at the middle of the design. The design shows the inhabited world down to about 60° S, so Antarctica does not appear.

WORKED EXAMPLES

Example 1. On a north polar azimuthal equidistant map, the distance from the Pole is true. Fairbanks, Alaska, is at about 64.84° N, 147.72° W; Moscow is at about 55.75° N, 37.62° E. Find each city's distance from the Pole, and the length of the route from Fairbanks over the Pole to Moscow. Why is this route nearly the shortest possible?

(Use the map or drawing “Measure from the Pole outward: the distances are true.” shown earlier in this lesson.)

1. Distance from the Pole is 90° minus latitude. Fairbanks: $90 - 64.84 = 25.16^\circ$; Moscow: $90 - 55.75 = 34.25^\circ$.
2. Convert: Fairbanks $25.16 \times 111 \approx 2,793$ km; Moscow $34.25 \times 111 \approx 3,802$ km.
3. Route over the Pole: $2,793 + 3,802 \approx 6,595$ km, about 6,600 km ($6,595 \times 0.621 \approx 4,100$ miles).
4. Longitude difference: $147.72 + 37.62 = 185.34^\circ$, which is only about 5° away from 180° . The two cities lie almost on opposite meridians, so the great circle between them passes almost exactly over the Pole. A full great-circle calculation gives about 6,590 km, nearly the same.

Answer: Fairbanks about 2,790 km and Moscow about 3,800 km from the Pole; the polar route is about 6,600 km (4,100 miles), almost exactly the great-circle distance.

Example 2. Anchorage (about 61.2° N, 149.9° W) and Oslo (about 59.9° N, 10.75° E) lie near the same parallel, 160.65° of longitude apart going east from Anchorage across Canada and the Atlantic. Compare the rhumb-line distance along the parallel (use the average latitude, 60.55°) with the great-circle distance, using $\cos d = \sin \varphi_1 \sin \varphi_2 + \cos \varphi_1 \cos \varphi_2 \cos \Delta\lambda$.

1. Rhumb line: one degree of longitude at 60.55° is $111 \times \cos 60.55^\circ \approx 111 \times 0.492 \approx 54.6$ km. Distance $\approx 160.65 \times 54.6 \approx 8,770$ km (about 5,450 miles).
2. Great circle: $\sin 61.2^\circ \times \sin 59.9^\circ \approx 0.876 \times 0.865 \approx 0.758$. $\cos 61.2^\circ \times \cos 59.9^\circ \approx 0.482 \times 0.502 \approx 0.242$. $\cos 160.65^\circ \approx -0.944$, so the second term is $0.242 \times (-0.944) \approx -0.228$.
3. $\cos d \approx 0.758 - 0.228 = 0.530$, so $d \approx 58.0^\circ$. Distance $\approx 58.0 \times 111 \approx 6,440$ km (about 4,000 miles).
4. Savings: $8,770 - 6,440 = 2,330$ km, about 27 percent. The great circle climbs far north, over Arctic Canada and Greenland, instead of following the parallel.

Answer: Rhumb line about 8,770 km (5,450 miles); great circle about 6,440 km (4,000 miles), roughly 27 percent shorter.

Example 3. A 1950s bomber cruising at about 800 km/h flies the 6,600 km polar route from Fairbanks to Moscow. An intercontinental missile covers a similar distance in about 30 minutes. In 1823, a westbound packet ship took about 40 days to cross the Atlantic. Compare the three times in hours.

1. Bomber: $6,600 \div 800 = 8.25$ hours, about 8 hours 15 minutes.
2. Missile: about 0.5 hour.
3. Packet ship: $40 \times 24 = 960$ hours.
4. Ratios: $960 \div 8.25 \approx 116$, so the bomber's trip took less than 1 percent of the packet's time; $8.25 \div 0.5 \approx 16.5$, so the missile was about 16 times faster again. Warning time, not distance, became the measure of safety, which is why radar lines were built across the Arctic.

Answer: Bomber about 8.25 hours; missile about 0.5 hour; packet ship about 960 hours. The bomber is about 116 times faster than the packet, and the missile about 16 times faster than the bomber.

PRACTICE

1. **EASY** What was the title of Harrison's 1944 atlas, and for which magazine did he draw maps?
2. **EASY** On a north polar azimuthal equidistant map, which distances are true?
3. **EASY** Thule Air Base is at about 76.5° N. How far is it from the North Pole in kilometers and miles?
4. **EASY** What did President Roosevelt ask listeners to do before his fireside chat of February 23, 1942, and why did it matter for geography?
5. **MEDIUM** On your polar map at 2 mm per degree, how far from the center should you plot Washington (38.9° N)? Give the answer in centimeters.
6. **MEDIUM** Why is a rhumb line between two cities on the same parallel (other than the equator) longer than the great-circle route?
7. **MEDIUM** Name four things built or done in the Arctic between 1951 and 1958 because of the air age.
8. **MEDIUM** Willkie flew about 31,000 miles in 49 days in 1942. Convert to kilometers and find his average distance per day.
9. **MEDIUM** On the polar map, which city lies almost directly opposite Fairbanks across the Pole: London, Moscow or Tokyo? How can you tell from the longitudes?
(Use the map or drawing "Use the polar map for Problems 9 and 10." shown earlier in this lesson.)
10. **HARD** The DEW Line ran about 4,800 km along roughly 69° to 70° N. At 69.5° N, how many degrees of longitude does 4,800 km span?
11. **HARD** Give three things the air age did not overcome in the Arctic.
12. **CHALLENGE** Write a paragraph of 6 to 8 sentences explaining how a change in map projection can change a nation's sense of its own safety. Use Harrison's maps, the Mercator map and the Cold War Arctic as evidence.

COMMON MISTAKES

- Thinking a straight line on a Mercator map is the shortest route. It is a rhumb line of constant bearing; the shortest route is a great circle.
- Measuring between two cities on a polar map as if all distances were true. Only distances from the center (the Pole) are true, and lines through the center.
- Thinking the airplane made geography irrelevant. Aircraft still depended on bases, fuel, weather and supply lines on the ground.

Make it a game · Shortest Way Home. Give each player a globe or ball with cities marked, and a string. The leader names two cities (Chicago and Beijing, London and Tokyo, Seattle and Moscow, Washington and Murmansk). Players first guess aloud which regions the shortest route crosses, then stretch the string to check. A correct guess scores one point; naming the region of the route's most northern point scores a bonus point. Finish with one round on a flat Mercator map to see how far off the ruler is.

Scripture. "It is he that sitteth upon the circle of the earth, and the inhabitants thereof are as grasshoppers; that stretcheth out the heavens as a curtain, and spreadeth them out as a tent to dwell in:" (Isaiah 40:22, KJV)

Harrison taught his readers to look at the earth from above, and the view made rival nations look like close neighbors. Isaiah's view is higher still: from the throne of God, the mightiest empires are like grasshoppers. That is a reason for both courage and humility.

Practice answers

1. *Look at the World: The Fortune Atlas for World Strategy* (1944); he drew for *Fortune* magazine.
2. Distances (and directions) measured from the North Pole, the center of the map.
3. $90 - 76.5 = 13.5^\circ$. $13.5 \times 111 \approx 1,500$ km; $13.5 \times 69 \approx 930$ miles.
4. He asked them to have a map of the world in front of them. Map sales soared, and many Americans discovered that their Mercator maps hid the real distances of a global war.
5. $90 - 38.9 = 51.1^\circ$. 51.1×2 mm = 102.2 mm, about 10.2 cm from the Pole.
6. Because a parallel other than the equator is a small circle, not a great circle. The shortest path on a sphere follows a great circle, which bends toward the nearer pole between the two cities.
7. Thule Air Base in Greenland (from 1951); the DEW Line radar stations (in operation 1957); NORAD (1958); and scheduled polar passenger flights between Copenhagen and Los Angeles (1954).
8. $31,000 \times 1.609 \approx 49,900$ km. Per day: $31,000 \div 49 \approx 633$ miles (about 1,020 km), including stops.
9. Moscow. Fairbanks is at about 147.7° W and Moscow at about 37.6° E; together they span about 185° , close to 180° , so they lie on nearly opposite meridians.
10. One degree of longitude at $69.5^\circ \approx 111 \times \cos 69.5^\circ \approx 111 \times 0.350 \approx 38.9$ km. $4,800 \div 38.9 \approx 123^\circ$ of longitude.

11. Any three: arctic weather, darkness and ice fog; extreme cold that affected engines and fuel; the need for runways and bases built on permafrost; supply by sea only in the short summer; the dependence of aircraft on fuel, factories and supply lines on the ground.
12. Answers vary. A strong answer explains that the Mercator map spread the oceans wide and pushed the Soviet Union far to the east, encouraging a sense of distance and safety, while Harrison's perspective and polar maps showed North America, Europe and Asia close together around the Arctic. It notes that air routes follow great circles, which on the polar map appear as straight lines across the top of the world. It connects this to the building of Thule, the DEW Line and NORAD, and to the shortened warning times of the missile age. It adds that every projection hides something, so the wise course is to compare several maps rather than trust one.

4.5 WEIGHING SPYKMAN: THE COLD WAR MAP AND ITS CRITICS

OBJECTIVES

- Test Spykman's rimland theory against the evidence of the Cold War (1947–1991): where the wars were fought, where the alliances were built, and how the contest ended.
- State the main criticisms of Spykman and of Cold War geopolitics (determinism, a divided rimland, overstretch, nuclear weapons and the moral cost of balance-of-power policy), and later revisions such as Saul Cohen's shatterbelts (1963).
- Use distances, areas and choke-point traffic (as of 2026) to reason about the rimland, and redraw the Cold War from a polar projection with a fair written judgment.

Warm-up. Write Spykman's dictum on a card. On the back, list three things that would have to happen in the real world if he were right, and three that would prove him wrong. Keep the card. By the end of this lesson you will check each item against the Cold War, the way a scientist checks a prediction.

Watch. *The Sino Soviet Split: Explained* (History Matters, 3:42).

<https://www.youtube.com/watch?v=M24mK3o8Qzw>

After the story: watch this short animated overview to see how the 1950 friendship between Moscow and Beijing fell apart in the years leading up to the 1969 fighting on the Ussuri River.

Note: Captions were not available to check; preview it first. History Matters uses a joking, informal tone (the description says the two powers 'threw a bit of a fit'), so watch for the occasional flippant line. The video covers the whole split in general terms and may not name Zhenbao/Damansky Island or the March 1969 clashes the lesson centers on.

Backup video. *25th June 1950: Korean War begins when North Korean forces cross the 38th parallel* (HistoryPod, 2:42). <https://www.youtube.com/watch?v=legiW8QyxVg>

With On the map: watch to see the 38th parallel and how the Korean peninsula became a Cold War front on the rimland, the kind of edge zone Spykman wrote about. Note:

Captions were not available to check; preview it first. It is a short war narrative that may mention casualties. It covers the start of the Korean War (June 1950), not the Sino-Soviet split, so it is background to the lesson's Cold War map, not the story itself.

KEY TERMS

alliance ring

The chain of American treaties around Eurasia built between 1949 and 1955: NATO, ANZUS, the treaties with Japan, the Philippines and South Korea, SEATO, and the Baghdad Pact (later CENTO), which the United States backed without formally joining.

shatterbelt

Saul Cohen's term (1963) for a large region of many small, divided states caught between the interests of great powers, such as the Middle East and Southeast Asia in his day.

geographic determinism

The belief that geography fixes the course of history. Spykman denied being a determinist; his critics said his theory leaned that way.

overstretch

Taking on more commitments than a nation's power can sustain, a danger Lippmann saw in a policy of defending every point on the Eurasian rim.

nonalignment

The policy of states, such as India under Nehru, that refused to join either Cold War bloc. Leaders of many such states met at Bandung, Indonesia, in 1955.

counterexample

A real case that a theory predicts wrongly or cannot explain. One clear counterexample can show that a theory needs revision.

CORE IDEAS

The story. On March 2, 1969, on a small island in the frozen Ussuri River, the border between the Soviet Union and the People's Republic of China, Chinese and Soviet soldiers fought a sharp battle. The island is called Zhenbao by the Chinese and Damansky by the Russians. Dozens were killed that day and more in a second clash two weeks later. The two largest communist powers, which in 1950 had signed a treaty of friendship, were now close to war along a frontier, much of it formed by rivers, more than 7,000 km long. In Washington, President Richard Nixon and his adviser Henry Kissinger saw an opening. On February 21, 1972, Nixon landed in Beijing and met Mao Zedong. The meeting astonished the world. A Heartland power and the largest power of the Asian rimland had fallen out, and the United States moved to balance one against the other.

The evidence for Spykman. Spykman died in 1943, but much of the Cold War looks as if it had been planned from his map. The United States did not try to invade the Heartland. Instead it built a ring of alliances around it: the North Atlantic Treaty (1949), ANZUS with Australia and New Zealand (1951), security treaties with Japan and the Philippines (1951) and South Korea (1953), the Southeast Asia Treaty Organization (1954) and the Baghdad Pact (1955), later called CENTO, which the United States backed and worked with but never formally joined. Nearly every great crisis and war of the Cold War took place on the rimland or its marginal seas: Greece, Berlin, Korea (1950–1953), the Taiwan Strait (1954–1955 and 1958), Indochina, the Middle East, Afghanistan (1979–1989). The contest also ended much as Kennan had hoped, without a great war between the two powers. The Berlin Wall was opened on November 9, 1989, and the Soviet Union dissolved on December 26, 1991. Defenders of Spykman argue that keeping Western Europe and Japan out of Soviet hands, as he urged, was the decisive achievement.

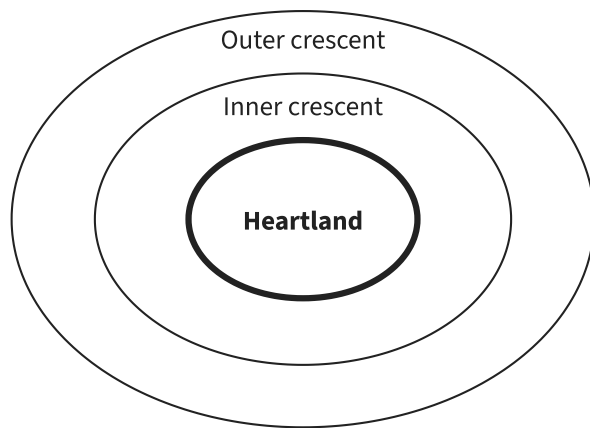
The critics. Weigh the evidence on the other side. First, **the rimland is not one thing.** It is a belt of many peoples, faiths and states with interests of their own. China, the greatest

rimland power in Asia, joined the Soviet side in 1949 and broke with it a decade later; India, under Jawaharlal Nehru, refused to join either bloc, and in 1955 leaders of many nonaligned states met at Bandung. Second, **ideas and internal politics often decided more than geography**. China became communist in 1949 through a civil war among Chinese, not because of its place on a map. Third, **overstretch**. Lippmann had warned that defending every point on the rim would bind America to weak governments far from home. In Vietnam the United States lost more than 58,000 dead, and the Vietnamese suffered far greater losses, in a war that ended with the fall of Saigon on April 30, 1975. Fourth, **nuclear weapons**. Spykman wrote before Hiroshima (August 6, 1945); intercontinental missiles could strike the Heartland or America directly, over the Pole, without crossing the rimland at all. Fifth, a **moral criticism**: balance-of-power reasoning could excuse support for harsh governments if they stood on the right side of the map. Spykman's defenders answer that the balance kept a third world war from happening, and that choosing among imperfect partners is the ordinary condition of statesmen.

Revisions. Later geographers tried to keep what was useful and fix what was not. In 1963 the American geographer Saul B. Cohen, in *Geography and Politics in a World Divided*, divided the world into a trade-dependent maritime realm and a Eurasian continental realm, and he called the Middle East and Southeast Asia **shatterbelts**: regions broken into many states and pulled at by outside powers, where conflict was likely. Others pointed out, as Harrison's maps had shown, that every geopolitical map is drawn from a chosen point of view, and must be read as an argument. As of 2026, analysts of every school still use the language of the rimland when they write about the Indo-Pacific, the sea lanes from the Persian Gulf to East Asia, China's Belt and Road Initiative (announced in 2013) and the security of Europe's eastern borders. They disagree, often sharply, about what the theory implies. That is a sign it is still worth weighing.

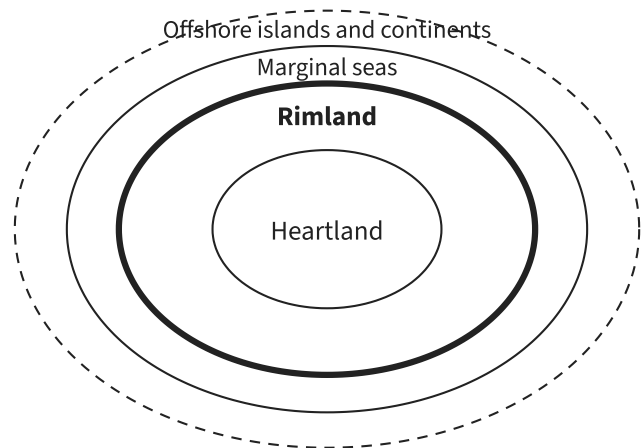
On the map: how to weigh it. Use the method from Lesson 1.5. What did the theory predict? That the struggle would center on the rimland, and that whoever united it would hold the world. The first part was largely borne out. The second was never tested, because no one united the rimland, and the theory cannot tell us whether that was because of American policy, the divisions of the rimland itself, or both. A fair judgment might be that Spykman was a better guide to where to look than to what would happen there. The proverb fits every strategist: "The horse is prepared against the day of battle: but safety is of the LORD" (Proverbs 21:31).

Mackinder (1904, 1919)



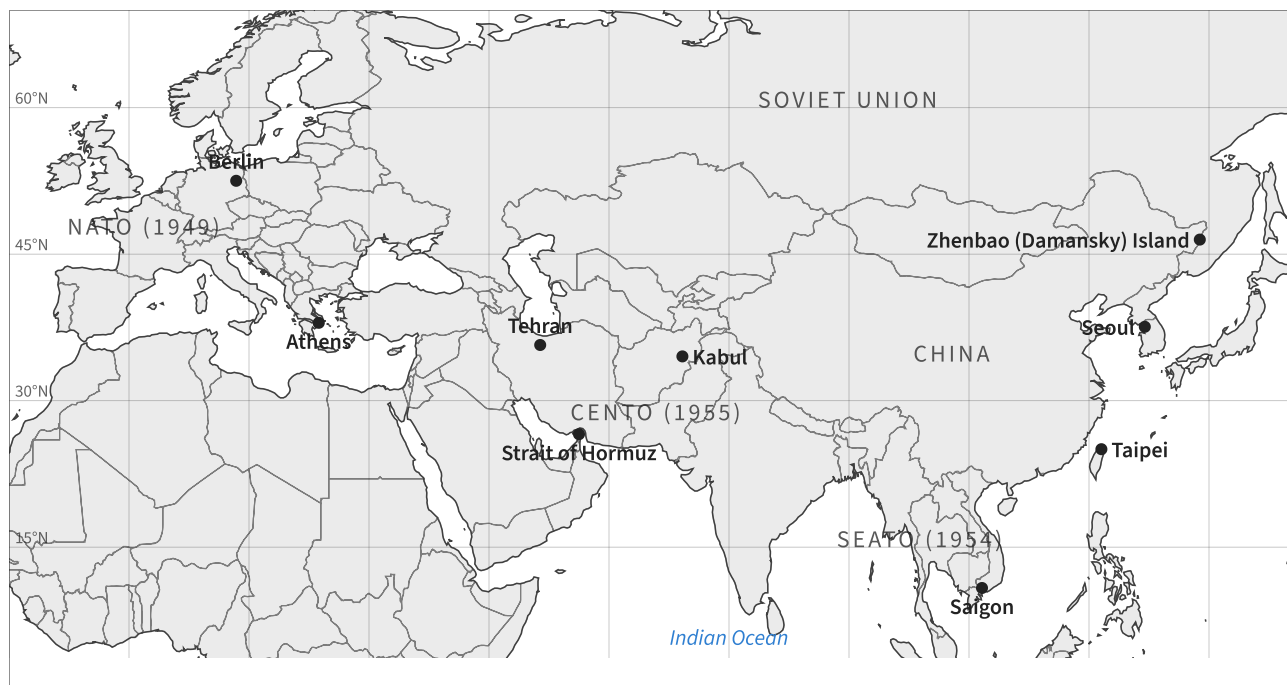
Heartland → World-Island → World
Power gathers in the interior

Spykman (1942, 1944)



Rimland → Eurasia → World
Power gathers on the rim

Two models of the same map: Mackinder puts the weight in the interior; Spykman puts it on the rim.



The Cold War on the rim: alliances and crisis points, 1947-1991.

PICTURE STUDY



President Nixon Meets Mao Zedong in Beijing, White House photographer, February 21, 1972 · Photograph · U.S. National Archives (Nixon White House photographs); Richard Nixon Presidential Library and Museum

On the afternoon of his arrival in Beijing, President Nixon was taken to meet Mao Zedong, the ruler of the People's Republic of China, in Mao's study among shelves of books. The meeting lasted about an hour. It opened the way to normal relations between the two countries, which came in 1979.

This is a photograph of a balance-of-power decision. Mao had ruled China since 1949, and his policies, above all the Great Leap Forward of 1958 to 1962 and the famine that followed, cost the lives of tens of millions of his own people; the Cultural Revolution was still under way. Nixon, who had built his career as a strong anti-communist, shook his hand because he believed that drawing China away from the Soviet Union would make the world safer. Students should see both facts plainly.

Look closely

- Look at the setting. What do the books suggest about how Mao wished to be seen?
- Look at the two men's posture. Who seems to be the host, and who the visitor?
- Find the interpreters and officials. Why were they essential to this meeting?
- Compare this photograph with the Tehran photograph in Lesson 4.1. How had the alignment of powers changed in less than thirty years?

Talk about it

1. Which parts of Spykman's theory does this meeting support, and which does it complicate?

2. When is it wise for a nation to work with a harsh government to balance a more dangerous one? Where should the limits be?
3. What does the Ussuri clash of 1969 teach about whether ideology or geography mattered more between China and the Soviet Union?

PROJECT: THE COLD WAR FROM THE TOP OF THE WORLD

This is the unit project. On the polar map you built in Lesson 4.4, you will redraw the Cold War as the strategists of the 1950s and 1960s saw it: two powers facing each other across the Arctic, ringed by alliances, with the rimland as the contested belt. Then you will write a fair judgment of Spykman's theory.

You will need

- Your polar map from Lesson 4.4 (or a new one drawn the same way, at 2 mm per degree)
- Colored pencils, a fine pen, a ruler, string and a protractor
- An atlas, and the dates and places from Lessons 4.2 and 4.5

Steps

1. Shade the Soviet Union and its Eastern European allies in red and the NATO countries, Japan, South Korea, Australia and the Philippines in blue (some will fall outside the 30° circle; show them with arrows at the edge).
2. Shade the rimland lightly in green where it falls on your map, and mark the crisis points with dates: Berlin, Greece, Korea, the Taiwan Strait, Indochina, Afghanistan, the Ussuri River.
3. Draw the DEW Line, Thule and the main bomber routes across the Arctic as straight lines through or near the Pole. Measure two of them and label the distances.
4. In one corner, draw a small Mercator-style rectangle with the same two powers, and write two sentences on what it hides that the polar map shows.
5. Write a judgment of 400 to 600 words titled "Was Spykman Right?" Give at least three pieces of evidence for his theory, three criticisms, and your own conclusion. State the strongest argument against your conclusion fairly.
6. Mount the map and judgment together with a title, a key, a scale and your name.

Tips

- The polar map shows the missile and bomber war well and the rimland war poorly, because most of the rimland lies south of 40° N. Say so in your judgment; that is part of weighing the map.
- Write as a historian, not a partisan. Name the real costs and the real achievements on both sides of the argument.

Check your work

- My map shows both blocs, the rimland, at least seven dated crisis points, the DEW Line, Thule and two measured routes.
- My judgment gives evidence for and against Spykman and a reasoned conclusion that answers the strongest objection.
- My map has a title, a key and a scale and is neat enough to read across a room.

MAP NOTEBOOK

1. Copy the two-models diagram from memory, then check it against the figure.
2. Make a table with three columns, Prediction, Evidence, Verdict, and fill in three rows for Spykman.
3. List the seven Cold War alliances or treaties in this lesson with their dates, from 1949 to 1955.

From history. Saul B. Cohen kept revising his own map for decades, publishing new editions of his work as the world changed. After the Soviet Union dissolved, he argued that the shatterbelt of Southeast Asia had largely become a region of trade and that new zones of tension had appeared elsewhere. A good geographer, like a good scientist, changes the model when the evidence changes.

WORKED EXAMPLES

Example 1. The Korean Demilitarized Zone, set by the armistice of July 27, 1953, runs about 250 km (155 miles) across the peninsula and is about 4 km (2.5 miles) wide. Find its area in km² and square miles. South Korea's area is about 100,000 km². What fraction of that is the DMZ?

(Use the map or drawing "Find Seoul and the Korean peninsula on the rim of Asia." shown earlier in this lesson.)

1. Area: $250 \text{ km} \times 4 \text{ km} = 1,000 \text{ km}^2$.
2. In square miles: $155 \times 2.5 \approx 388 \text{ sq mi}$ (or $1,000 \times 0.386 \approx 386 \text{ sq mi}$; the small difference comes from rounding).
3. Fraction: $1,000 \div 100,000 = 0.01$, or 1 percent.
4. Meaning: a strip only a few kilometers wide divides the peninsula, but it lies about 50 km (30 miles) from Seoul. On the rimland, short distances can carry very large stakes.

Answer: About 1,000 km² (about 386 square miles), roughly 1 percent of South Korea's area.

Example 2. In the Korean War both sides fought at the end of long supply lines. San Francisco to Busan is about 9,060 km (5,630 miles) by sea; the Trans-Siberian Railway from Moscow to Vladivostok is about 9,290 km (5,770 miles). Find the time for a supply ship at 15 knots (about 27.8 km/h) and for a train averaging 40 km/h including stops.

1. Ship: $9,060 \div 27.8 \approx 326$ hours; $326 \div 24 \approx 13.6$ days.
2. Train: $9,290 \div 40 \approx 232$ hours; $232 \div 24 \approx 9.7$ days.
3. Difference: about $13.6 - 9.7 \approx 3.9$ days, in the train's favor under these assumptions.
4. But a ship carries thousands of tons at once, and the sea route has no single track that can be cut. The interior line was shorter in time, the sea line greater in volume. Mackinder and Mahan would read the same numbers differently.

Answer: About 13.6 days by sea and 9.7 days by rail; the rail line was faster, the sea line could carry far more.

Example 3. The U.S. Energy Information Administration estimated that about 20 million barrels of oil a day passed through the Strait of Hormuz in 2023–2024, about one fifth of world oil consumption. A very large crude carrier (VLCC) holds about 2 million barrels. How many full VLCC loads a day is that, how many barrels a year, and about how much world consumption does that imply?

1. Loads per day: $20,000,000 \div 2,000,000 = 10$ VLCC loads a day (in practice the flow is split among many ships of different sizes).
2. Barrels per year: $20,000,000 \times 365 = 7,300,000,000$, about 7.3 billion barrels.
3. World consumption implied: if 20 million is one fifth, the total is $20 \times 5 = 100$ million barrels a day.
4. Meaning: a strait on the edge of Spykman's rimland, about 39 km (21 nautical miles) wide at its narrowest, carries a share of the world's energy that every great power must consider.

Answer: About 10 VLCC loads a day, about 7.3 billion barrels a year, implying world consumption of roughly 100 million barrels a day.

PRACTICE

1. **EASY** Where and when did Chinese and Soviet forces clash in 1969?
2. **EASY** List the American alliances and security treaties around Eurasia from 1949 to 1955, with dates.
3. **EASY** What is a shatterbelt, who coined the term, and which two regions did he name?
4. **EASY** Give the dates when the Berlin Wall was opened and when the Soviet Union dissolved.

5. **MEDIUM** Name five Cold War wars or crises on the rimland, with dates.
(Use the map or drawing “Use the map for Problems 5 and 9.” shown earlier in this lesson.)
6. **MEDIUM** The Sino-Soviet border was more than 7,000 km long. Convert to miles and say why such a long land border could be a burden for both powers.
7. **MEDIUM** Seoul is about 50 km from the DMZ. A modern army can advance perhaps 25 km a day against light resistance. How many days to Seoul at that rate? What does this tell you about why South Korea’s defense was built so close to the line?
8. **MEDIUM** Why did Spykman’s critics say nuclear missiles weakened his theory?
9. **MEDIUM** Kabul is at about 34.5° N, 69.2° E; the Soviet border at the Amu Darya near Termez is at about 37.2° N, 67.3° E. Estimate the straight-line distance (use 111 km per degree of latitude and $111 \times \cos 36^\circ \approx 89.8$ km per degree of longitude).
10. **HARD** Explain why the Sino-Soviet split is both evidence for and evidence against Spykman.
11. **HARD** State the moral criticism of balance-of-power geopolitics and the best answer its defenders give.
12. **CHALLENGE** Write a paragraph of 8 to 10 sentences answering “Was Spykman right?” Use at least two pieces of evidence for him, two criticisms, and one later revision, and end with your own judgment and the strongest objection to it.

COMMON MISTAKES

- Treating “the Cold War happened on the rimland” as proof of the whole theory. It supports the prediction about where; it does not prove that uniting the rimland would have won the world.
- Forgetting the costs. The rimland strategy included long, bloody wars, and they should be counted as honestly as its successes.
- Assuming that because Spykman’s theory was useful in the Cold War it must apply unchanged today. Technology, trade and the powers themselves have changed.

Make it a game • Prediction Court. One player is the Prosecutor, one the Defender, and the rest are the Jury. The Prosecutor reads a Spykman prediction from the warm-up cards. Each side has one minute to present one piece of evidence (a date, a place, a number). The Jury votes “Supported,” “Refuted” or “Not tested.” A side scores a point when the Jury agrees with it. Rotate roles until every prediction has been heard, then compare the verdicts with your own card.

Scripture. “The horse is prepared against the day of battle: but safety is of the LORD.” (Proverbs 21:31, KJV)

The proverb does not tell the king to leave his horses in the stable. Preparing is right; strategy and maps are part of preparing. But the outcome rests with God, which is why even the best theory should be held with humility.

Practice answers

1. On Zhenbao (Damansky) Island in the Ussuri River, on March 2, 1969, with a second clash two weeks later.
2. NATO (1949); ANZUS (1951); the U.S.-Japan and U.S.-Philippines treaties (1951); the U.S.-South Korea treaty (1953); SEATO (1954); the Baghdad Pact, later CENTO (1955).
3. A region of many small, divided states pulled at by outside great powers. Saul B. Cohen, in 1963. The Middle East and Southeast Asia.
4. November 9, 1989, and December 26, 1991.
5. Any five: Greek Civil War (1946-1949); Berlin Blockade (1948-1949); Korean War (1950-1953); Taiwan Strait crises (1954-1955, 1958); the wars in Indochina (to 1975); the Soviet war in Afghanistan (1979-1989); the Ussuri clashes (1969).
6. $7,000 \times 0.621 \approx 4,350$ miles, so more than 4,300 miles. A long land frontier must be watched and garrisoned along its whole length; in the late 1960s both sides kept large armies along it, forces that could not be used elsewhere.
7. $50 \div 25 = 2$ days. The capital is so close that there is no room to trade space for time, so the defense had to be strong at the line itself.
8. Because intercontinental missiles and bombers could strike the Heartland or North America directly, over the Pole, without needing bases in or control of the rimland. Spykman wrote before Hiroshima and could not account for them.
9. North and south: $2.7^\circ \times 111 \approx 300$ km. East and west: $1.9^\circ \times 89.8 \approx 171$ km. $\sqrt{(300^2 + 171^2)} = \sqrt{(90,000 + 29,200)} \approx \sqrt{119,200} \approx 345$ km (about 214 miles).
10. For: it shows that the alignment of rimland powers decided the balance in Eurasia, and that the United States could improve its position by balancing a rimland power against the Heartland, as Spykman advised. Against: it shows that the rimland and the Heartland were not fixed blocs; China's choices were driven by its own history, leaders and ideology, which the map alone could not predict.
11. Criticism: it can lead a nation to support harsh or unjust governments because of where they sit on the map, and to judge people as pieces in a game. Defense: in a world of armed powers, keeping a balance prevented a third world war and protected free nations, and statesmen must often choose among imperfect partners; the duty is to keep limits and to remember the people affected.
12. Answers vary. A strong answer cites the alliance ring and the location of nearly every Cold War war on the rimland, and the success of keeping Western Europe and Japan free; it cites criticisms such as the divided rimland (the Sino-Soviet split, Indian nonalignment), the role of ideas and civil wars, overstretch in Vietnam and the effect of nuclear missiles; it names Cohen's shatterbelts or the view that maps are arguments. It reaches a balanced judgment, for example that Spykman showed where the struggle would be fought but not how it would turn out, and answers the strongest objection fairly.

UNIT 4 TEST

Answer each question. Show your work for calculations, giving both kilometers and miles where asked, and use complete sentences for explanations. Use 111 km (69 miles) per degree of latitude and $1 \text{ km} \approx 0.621 \text{ mile}$. The test is worth 100 points.

1. (6 pts) Write Spykman's rimland dictum exactly and Mackinder's Heartland dictum in your own words. What did Spykman change?
2. (6 pts) Name Spykman's two books with their dates and explain why the second was published after his death.
3. (6 pts) Name the five main parts of the rimland, the two offshore islands and the two offshore continents.
4. (7 pts) The rimland arc runs from about 9° W (Portugal) to about 121° E (Shanghai). Using an average latitude of 35° N ($\cos 35^\circ \approx 0.819$), find its east and west length in kilometers and miles.
5. (7 pts) Quote the key sentence of Kennan's X article and give the article's title, journal and date.
6. (7 pts) What geographic root did the Long Telegram (February 22, 1946) give for Russian insecurity, and why is containment called a geographic idea?
7. (7 pts) The Berlin Airlift needed about 4,500 tons a day, and a C-54 carried about 10 tons. How many landings a day were needed, and how many minutes apart if spread evenly over 24 hours?
8. (7 pts) Explain strongpoint defense and perimeter defense, and say which Kennan favored and which NSC-68 leaned toward.
9. (7 pts) Quote the non-colonization sentence of the Monroe Doctrine and explain why the United States could make such a claim in 1823 with a small navy.
10. (8 pts) Russia's 1821 claim reached south to 51° N ; the 1824 treaty set its limit at $54^\circ 40' \text{ N}$. Find the north and south difference in degrees, kilometers and miles. Then name the 1904 addition to the doctrine and two interventions that followed it.
11. (8 pts) On a north polar azimuthal equidistant map, find the distance from the Pole to Fairbanks (64.84° N) and to Moscow (55.75° N). Their longitudes differ by about 185° . Find the length of the route over the Pole, and explain why it is nearly the shortest route.
12. (8 pts) Explain the difference between a great circle and a rhumb line, and why air routes between North America and Eurasia often cross the Arctic. Name two Cold War works built because of this.
13. (8 pts) About 20 million barrels of oil a day passed through the Strait of Hormuz in 2023–2024. How many 2-million-barrel tanker loads a day is that, and how many barrels a year? Why does this strait matter in rimland thinking?
14. (8 pts) In a paragraph, weigh Spykman's theory. Give two pieces of evidence for it, two criticisms, and your own judgment.

UNIT PROJECT: HEARTLAND, RIMLAND AND THE TOP OF THE WORLD

Assemble a map portfolio of the unit. Include your Heartland and Rimland overlay map (Lesson 4.1) with populations and the Lisbon to Shanghai measurement; your containment map and telegram (Lesson 4.2); your hemisphere string-and-globe table (Lesson 4.3); and your hand-built polar map with the Cold War redrawn on it (Lessons 4.4 and 4.5).

Finish with your judgment, “Was Spykman Right?” (400 to 600 words), presenting the evidence for and against fairly, naming real costs and real achievements, and answering the strongest objection to your conclusion.

- **Accuracy:** Places, dates, latitudes and longitudes are correct; all distances are measured or computed correctly and given in both kilometers and miles.
- **Map craft:** Each map has a title, key, scale and north arrow or grid; the polar map is plotted by colatitude and longitude, and the overlays are clean and readable.
- **Reasoning:** The judgment uses specific evidence for and against Spykman, distinguishes what the theory predicted from what happened, and reaches a reasoned conclusion.
- **Fairness and care:** Several views are presented honestly, without partisan slogans; work is neat, complete and carefully written.

Answer key

1. “Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world.” Mackinder: whoever rules the Heartland (by way of East Europe) commands the World-Island and so the world. Spykman moved the key region from the interior Heartland to the rimland around it.
2. *America’s Strategy in World Politics* (1942) and *The Geography of the Peace* (1944). Spykman died on June 26, 1943; his colleague Helen R. Nicholl assembled the second book from his lectures, notes and maps.
3. Rimland: coastal Europe, the Middle East, India, Southeast Asia, and China and Korea. Offshore islands: Britain and Japan. Offshore continents: Africa and Australia.
4. Longitude span: $9 + 121 = 130^\circ$. One degree at $35^\circ \approx 111 \times 0.819 \approx 90.9$ km. $130 \times 90.9 \approx 11,800$ km; $11,800 \times 0.621 \approx 7,330$ miles.
5. “the main element of any United States policy toward the Soviet Union must be that of a long-term, patient but firm and vigilant containment of Russian expansive tendencies.” “The Sources of Soviet Conduct,” *Foreign Affairs*, July 1947.
6. Kennan traced it to an agricultural people living on a vast exposed plain near fierce nomadic peoples. Containment is geographic because it pictured Soviet pressure along a long frontier around Eurasia, to be met by counterforce at shifting geographical and political points, mostly on the rimland.
7. $4,500 \div 10 = 450$ landings. $450 \div 24 = 18.75$ an hour; $60 \div 18.75 = 3.2$ minutes apart.
8. Strongpoint defense protects a few vital places, such as Kennan’s five industrial centers (the United States, Britain, the Rhine valley, the Soviet Union and Japan); perimeter defense resists expansion at every point along the frontier. Kennan favored strongpoint defense; NSC-68 (1950) leaned toward perimeter defense and a large military buildup.

9. "the American continents, by the free and independent condition which they have assumed and maintain, are henceforth not to be considered as subjects for future colonization by any European powers." The Atlantic was wide and slow to cross by sail, especially westbound against the westerlies and the Gulf Stream, and Britain's Royal Navy, for Britain's own trading reasons, would block European fleets bound for Spanish America.
10. $54^{\circ}40' = 54.667^{\circ}$; $54.667 - 51 = 3.667^{\circ}$; $3.667 \times 111 \approx 407 \text{ km}$; $3.667 \times 69 \approx 253 \text{ miles}$. The Roosevelt Corollary (1904); interventions included the occupations of Nicaragua (1912-1933), Haiti (1915-1934) and the Dominican Republic (1916-1924), and the takeover of Dominican customs from 1905 (any two).
11. Fairbanks: $25.16^{\circ} \times 111 \approx 2,793 \text{ km}$. Moscow: $34.25^{\circ} \times 111 \approx 3,802 \text{ km}$. Total $\approx 6,595 \text{ km}$ (about 4,100 miles). Because the two cities lie on nearly opposite meridians (185° is close to 180°), the great circle between them passes almost through the Pole.
12. A great circle is the intersection of the globe with a plane through the earth's center and gives the shortest path; a rhumb line keeps a constant compass bearing and is straight on a Mercator map but usually longer. Between high-latitude places the great circle bends toward the Pole, so the shortest routes cross the Arctic. Examples: Thule Air Base (from 1951), the DEW Line (1957), NORAD (1958).
13. $20,000,000 \div 2,000,000 = 10$ loads a day; $20,000,000 \times 365 = 7.3$ billion barrels a year. It is a narrow passage on the edge of the rimland through which a large share of the world's oil moves, so any power that could close or control it would gain great leverage.
14. Answers vary. Evidence for: the alliance ring of 1949-1955; nearly all Cold War wars and crises were on the rimland (Greece, Berlin, Korea, Indochina, Afghanistan); keeping Western Europe and Japan out of Soviet hands proved decisive. Criticisms: the rimland was divided (the Sino-Soviet split, Indian nonalignment); ideas and civil wars mattered more than position in cases like China in 1949; overstretch in Vietnam; nuclear missiles bypassed the rimland; balance-of-power policy could excuse support for harsh governments. A good judgment is balanced, for example that Spykman showed where the struggle would be fought better than how it would end.

CAPSTONE

For four units you have read the great geopolitical thinkers in their own words. Mahan argued for sea power, Mackinder for the Heartland and Spykman for the Rimland. You have seen how their ideas were used, and how the Nazi regime abused geopolitics. Now you will put them to work. In this capstone you choose one region of the world, gather its maps, set out its physical facts, and ask what each thinker would say about it. Then you write a fair, reasoned paper that presents several views and reaches a judgment of your own, and you present it to an audience with a map set you have drawn yourself.

The unit follows one model region all the way through: the **Baltic Sea and its shores**. You will meet the Inquiry's geographers preparing for the peace of 1919 and the Danish toll-collectors at Kronborg. You will watch Peter the Great found St. Petersburg in 1703, and read Eyre Crowe weighing two explanations of German policy in 1907. You will end with Winston Churchill drawing a line "from Stettin in the Baltic to Trieste in the Adriatic" in 1946. Each lesson shows on the Baltic what you will then do for your own region: choosing, measuring, weighing, writing and presenting.

The capstone takes the last four weeks of the semester, and the final exam, a separate document, closes the course. Throughout, remember the course's two verses. God "hath determined the times before appointed, and the bounds of their habitation" (Acts 17:26), so the map is worth studying with care. And "except the LORD keep the city, the watchman waketh but in vain" (Psalm 127:1), so every conclusion about power should be held with humility.

BEFORE YOU BEGIN

- Can state the main ideas of Mahan, Mackinder and Spykman, with their key works and dates, and at least one critic of each
- Can measure distances on a map with a scale and with latitude and longitude, and convert among kilometers, miles and nautical miles
- Can compute travel times from distance and speed and population densities from area and population
- Can explain how geopolitics was abused by Haushofer's school and the Nazi regime

MASTERY CHECKLIST

- I can choose a region of the right size, define its boundary and write a clear, open guiding question about it.
- I can gather and judge maps by asking who made them, when, at what scale and for what purpose.
- I can set out a region's physical facts (rivers, mountains, coasts, resources and routes) with numbers, units and sources.

- I can apply the views of Mahan, Mackinder and Spykman to one region, state each at its strongest, and give its critics a fair hearing.
- I can write a fair, reasoned paper that separates facts from interpretations, dates current events, and states the limits of its argument.
- I can present my analysis with a map set and answer questions honestly.

OPTIONAL BOOKS AND RESOURCES

- **Library of Congress: Maps collection** (<https://www.loc.gov/maps/>): Free. Thousands of scanned historic maps from the Geography and Map Division, searchable by place and date. A good first stop for the historic map in your picture study.
- **David Rumsey Map Collection** (<https://www.davidrumsey.com/>): Free. A very large online collection of historic maps and atlases, including Ortelius and many nineteenth- and twentieth-century atlases, with tools for zooming and comparing.
- **Natural Earth** (<https://www.naturalearthdata.com/>): Free public-domain map data (coastlines, rivers, lakes, borders, physical regions). Useful for printing an accurate base map to trace; a parent or teacher may need to help with the files.

5.1 CHOOSING A REGION

OBJECTIVES

- Define a region, tell a formal region from a functional one, and explain why a geopolitical region is best defined by a guiding question.
- Choose a capstone region, write a clear guiding question for it, and draw its boundary on a base map at a sensible scale.
- Gather and judge the maps for a capstone map set by asking who made each map, when, at what scale and for what purpose.

Warm-up. Empty a junk drawer (or a pencil case) onto the table. Sort everything into groups by what each thing is made of: metal, plastic, paper, wood. Now sweep it together and sort again by what each thing is used for: writing, fixing, opening, holding. The objects did not change, but your groups did, because you asked a different question. Geographers draw regions the same way. Write one sentence on which sorting was more useful, and why it depended on what you wanted to do.

Video. Coming soon. Search the Library of Congress (Geography and Map Division talks and blog) for the Inquiry, Isaiah Bowman and the maps of the Paris Peace Conference of 1919; Hillsdale Studios and The History Guy for the Paris Peace Conference and the Danzig question; Kings and Generals (selected, HS) for the Great Northern War as background on the Baltic. Primary sources and real maps matter more than video in this lesson.

KEY TERMS

region

An area of the earth that a geographer treats as one unit because it shares some feature or is tied together by some connection. Regions are real, but their edges are drawn by people for a purpose.

formal region

A region marked by a shared feature that can be mapped, such as one language, one climate, one river basin or one country.

functional region

A region tied together by movement and connection to a center or a route, such as the area served by a port, a railway or a strait.

guiding question

The one question a capstone paper sets out to answer. It decides the edges of the region, which maps are needed and which facts matter.

map set

A group of maps of the same region at matching scales, each showing one kind of fact (physical, routes, history, views), meant to be read together.

persuasive map

A map drawn to argue for a view, by its choice of colors, symbols, center, scale or what it leaves out. It may be honest or deceptive, but it is never neutral.

CORE IDEAS

The story. In the fall of 1917, with American soldiers crossing the Atlantic to fight in France, President Woodrow Wilson asked his adviser Colonel Edward M. House to begin preparing for the peace that would follow. House gathered a group of historians, economists and geographers known simply as the Inquiry. Much of its work was done in the building of the American Geographical Society in upper Manhattan, and the Society's director, Isaiah Bowman, became the Inquiry's chief organizer. For more than a year these scholars gathered every map they could find of the lands the war had thrown into question: maps of languages and religions, rivers and railways, coal fields and harbors. They soon learned that the old maps disagreed, and that many had been drawn to prove a point. In December 1918 Bowman sailed for France with President Wilson aboard the *George Washington*, carrying the Inquiry's maps and reports to the Paris Peace Conference. One of the hardest problems on their tables lay on the Baltic shore. Wilson's Thirteenth Point had promised a restored Poland "free and secure access to the sea," but along the lower Vistula and in the port of Danzig, Poles and Germans lived side by side. The peacemakers gave Poland a corridor to the sea and made Danzig a Free City under the League of Nations. The arrangement satisfied almost no one, and on September 1, 1939, the Second World War began there.

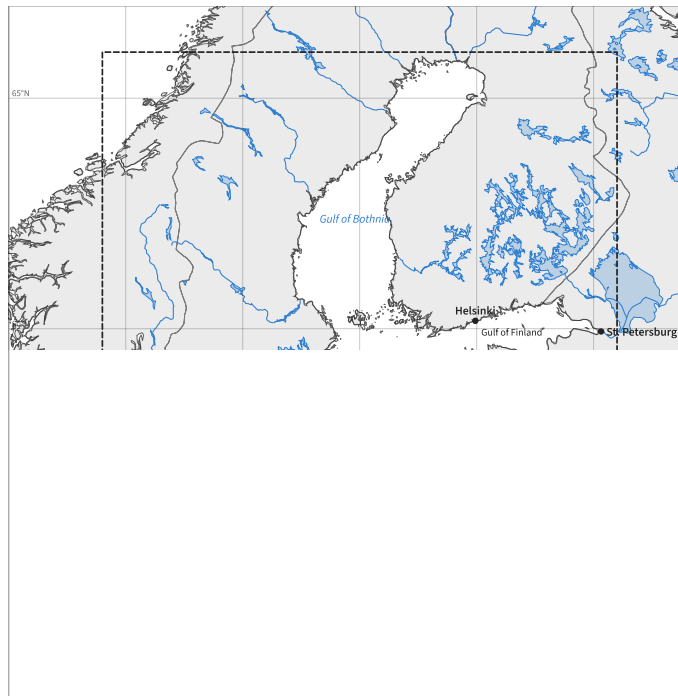
The big idea. A **region** is a part of the earth treated as one unit. Some regions are **formal**: they share a feature you can map, such as a language, a climate or a river basin. Others are **functional**: they are tied together by movement, like the hinterland of a port or the lands along a railway. Geopolitical regions are usually functional, and they are drawn by a question. The Inquiry did not study "Europe"; it studied questions such as "Where can Poland reach the sea?" The question decided which maps were needed and where the edges of each study should fall. Your capstone works the same way. You will choose one region and one **guiding question**, and everything in the next four lessons will serve that question.

How to choose. A good capstone region passes five tests. First, it is the right size: large enough that geography clearly matters, small enough to master in four weeks. "Asia" is too large; "the Strait of Hormuz and the Persian Gulf" is about right. Second, it has a real geographic question, such as who controls a strait, why armies have crossed a plain, or how a landlocked state reaches the sea. Third, all three of our thinkers have something to say about it, so you can test sea power, land power and the Rimland against the same ground. Fourth, good sources exist: historic maps, physical maps, and primary sources in English. Fifth, you can treat it fairly. Some regions are the scene of a war or a sharp dispute as of 2026. You may choose one, but you must report the facts with dates, give each side's view in its strongest form, and leave the verdict to evidence rather than slogans. Good choices include the Black Sea and the Turkish Straits, the Persian Gulf and the Strait of Hormuz, the Red Sea and the Horn of Africa, the Caribbean and the Panama Canal, the Korean Peninsula, the Strait of Malacca, the Caucasus, Central Asia and the Arctic.

On the map. This unit follows one model region all the way through: the **Baltic Sea and its shores**. It is a sea almost closed by Denmark, entered through straits only about 4 km (2.5 miles) wide at the narrowest. To its south lies the North European Plain; to its north and west, Scandinavia; at its eastern tip, St. Petersburg. Our guiding question will be: *Has the Baltic been a highway or a prison for the powers on its shores?* To answer any such question you will build a **map set** of six sheets: (1) a locator and boundary map, (2) a physical map, (3) a resources and routes map, (4) a study of one historic map, (5) three tracing-paper overlays showing the views of Mahan, Mackinder and Spykman, and (6) a neutral map of the region as of 2026. Draw them at the same scale so they can be laid on top of one another.

Judging maps. The Inquiry learned that every map has a maker, a date and a purpose. Before you trust a map, ask who drew it and for whom, when it was drawn, what projection and scale it uses, and what it leaves out. A language map drawn by one side in a border quarrel may stretch its own people's area with bold colors. In the 1920s and 1930s, German geopolitical journals used dramatic arrows and shaded "threats" to make conquest look like self-defense; the Nazi regime later turned such maps into propaganda for a war of conquest and mass murder. That is the plain warning of this course: a **persuasive map** can serve truth or serve a lie. Collect maps from more than one side and more than one century, and let them check one another.

Technology overcoming geography. The Inquiry needed a year, a building full of clerks and a library in New York to gather its maps. You can open scanned historic maps from the Library of Congress or the David Rumsey Map Collection in seconds, measure distances on satellite images, and download free physical data from Natural Earth. That is a real gift. But speed is not judgment. A digital map has a maker and a purpose just as a paper one does, and a satellite photograph shows a coast without telling you who governs it. Gather widely, then think slowly.



The model region for this unit: the Baltic Sea and its shores, with the study box drawn from 9°E to 31°E and 53°N to 66°N.

The capstone map set: six sheets, one region, one scale

1. Locator and boundary where it is; the box	2. Physical rivers, mountains, coasts, ice	3. Resources and routes ports, straits, rails
4. Historic map study one old map, annotated	5. Three views tracing overlays: Mahan, Mackinder, Spykman	6. The region as of 2026 borders, cities, facts

The six sheets of the capstone map set. Draw them at one scale so they can be laid on top of one another.

PICTURE STUDY



Carta Marina (A Marine Map and Description of the Northern Lands), Olaus Magnus, 1539 · Woodcut map printed on nine sheets · Only two complete copies of the 1539 printing are known: one at the Bavarian State Library (Bayerische Staatsbibliothek), Munich, found in 1886, and one at Uppsala University Library, Sweden, acquired in the early 1960s

Olaus Magnus was a Swedish Catholic churchman who left Sweden when the kingdom turned Lutheran in the 1520s and spent the rest of his life in exile in Italy. He never stopped studying his homeland. In 1539 he published in Venice the *Carta Marina*, the most detailed map of the Nordic lands made up to that time. The shapes of the Gulf of Bothnia and the Gulf of Finland are surprisingly good; other parts are stretched and squeezed. Around the coasts he drew fishermen, merchants, battles, reindeer, frozen lakes and the famous sea monsters of the northern ocean.

This lesson's picture study is the first step of your own: choose a historic map of *your* region (before 1950 if possible) from the Library of Congress, the David Rumsey Map Collection or Wikimedia Commons. Study the *Carta Marina* as a model of how to read an old map with both delight and suspicion.

Look closely

- Find the Baltic Sea and its two long northern arms. Which coastlines look nearly right to you, and which look wrong compared with a modern map?
- Look at the North Atlantic west of Norway. What did Olaus Magnus put there, and what does that tell you about what sailors feared?
- Find scenes of work and trade on land and sea. What goods and activities did the mapmaker think worth showing?
- Look at the edges and blank spaces. What did the mapmaker know well, and what did he only hear about?

Talk about it

1. What was the purpose of this map: to guide ships, to describe the North to Europeans in the south, or both? What clues tell you?
2. How might a map made by an exile, far from home, differ from one made by a royal surveyor living in Stockholm?
3. Which three questions from this lesson will you ask of the historic map you choose for your own region?

PROJECT: THE REGION DOSSIER AND BASE MAP

Your capstone begins here. You will choose a region, write a guiding question, gather at least eight maps, and draw the base map on which all the other sheets of your map set will be built. Keep everything in one folder: this is your dossier.

You will need

- A good atlas and internet access to the Library of Congress maps collection, the David Rumsey Map Collection and Natural Earth
- A folder or binder with a log sheet for sources
- Two sheets of heavy drawing paper (about 30 by 40 cm, or 11 by 17 inches), a ruler, fine black pen, pencil and colored pencils
- A piece of string and a calculator

Steps

1. Make a short list of three possible regions. For each, write one sentence on why geography matters there and one possible guiding question.
2. Test each against the five tests: right size, a real geographic question, all three thinkers apply, good sources exist, and you can treat it fairly. Choose one, and have your teacher approve it.
3. Write your guiding question in one sentence that cannot be answered with a simple yes or no without reasons. Example: "Has the Baltic been a highway or a prison for the powers on its shores?"
4. Draw a boundary box for your region in latitude and longitude (for example 9°E to 31°E, 53°N to 66°N). Measure its width and height in kilometers and miles.
5. Choose a scale so that the region fills about 25 cm (10 inches) of your sheet. Write the scale as a ratio and as a scale bar.
6. Draw the base map: coastlines, major rivers, borders as of 2026, the capitals, a graticule (latitude and longitude lines) every 5° or 10°, a north arrow and the scale bar. Trace a copy onto tracing paper to use as the template for every later sheet.
7. Gather at least eight maps in your log: one physical, one political as of 2026, one of routes or trade, one of population, one of resources, and at least two historic maps from different centuries and, where possible, from different sides. For each, log the maker, date, source, scale or projection and purpose.

8. Choose your historic map for picture study and write a short paragraph on it using the questions from this lesson.

Tips

- If your region is mostly sea, let the box include the coasts and the first band of land behind them; the power of a sea lies in its shores.
- Do not pick a region only because it is in the news. Pick one where you can find the rivers, the passes and the history behind the headlines.
- Write the date you viewed every online map in your log. Digital maps are updated and sometimes change.

Check your work

- My region passes the five tests and my teacher has approved it.
- My guiding question is clear, open and geographic.
- My base map has a graticule, scale bar, north arrow, borders as of 2026 and a box I can measure.
- My log lists at least eight maps with maker, date, source and purpose.

MAP NOTEBOOK

1. Draw the Baltic in two minutes from memory, then compare with an atlas and correct it in another color. Note the three biggest errors.
2. Sketch the Danzig Free City and the Polish Corridor of 1920 to 1939 as simple shapes between Germany and East Prussia. Write one sentence on why a corridor is hard to defend and hard to live with.
3. Write your guiding question at the top of a page in large letters. Under it, list five maps you will need to answer it.

From history. Early on the morning of September 1, 1939, the old German battleship *Schleswig-Holstein*, moored in Danzig harbor on what had been announced as a courtesy visit, opened fire on the small Polish garrison at Westerplatte, a strip of land at the harbor mouth. About two hundred Polish soldiers held out for seven days. The Baltic port that the peacemakers of 1919 had tried to share became the place where the Second World War began, a reminder that a line drawn on a map must still be kept by people.

WORKED EXAMPLES

Example 1. Copenhagen (55.68° N, 12.57° E) and St. Petersburg (59.94° N, 30.32° E) are about 1,150 km (715 miles) apart in a straight line. You want this distance to fill about 25 cm of your base map. What scale should you use? Round to a convenient scale and find how long the line will be.

1. Change the distance to centimeters: $1,150 \text{ km} \times 100,000 \text{ cm per km} = 115,000,000 \text{ cm}$.
2. Divide by the space on the paper: $115,000,000 \div 25 = 4,600,000$. So 1 cm on the map would be 4,600,000 cm on the ground, a scale of 1:4,600,000.
3. Round to a convenient scale that still fits: 1:5,000,000. At that scale 1 cm = 50 km.
4. Length on the map: $1,150 \div 50 = 23 \text{ cm}$. In inches: at 1:5,000,000, 1 inch = 5,000,000 inches $\approx 78.9 \text{ miles}$, so $715 \div 78.9 \approx 9.1 \text{ inches}$.

Answer: Use 1:5,000,000 (1 cm = 50 km; 1 inch $\approx$ 79 miles). The Copenhagen to St. Petersburg line will be about 23 cm (9.1 inches) long.

Example 2. The model region's study box runs from 9° E to 31° E and from 53° N to 66° N. One degree of latitude is about 111 km (69 miles). One degree of longitude is about $111.32 \text{ km} \times \cos(\text{latitude})$. Find the box's north-south height and its east-west width along 54° N (just inside its southern edge, near the Baltic's south shore) and along its northern edge (66° N).

(Use the map or drawing "The study box from 9°E to 31°E and 53°N to 66°N." shown earlier in this lesson.)

1. Height: $66 - 53 = 13^\circ$ of latitude. $13 \times 111 \approx 1,443 \text{ km}$; $13 \times 69 = 897 \text{ miles}$.
2. The box spans $31 - 9 = 22^\circ$ of longitude.
3. At 54° N: $\cos 54^\circ \approx 0.588$, so one degree $\approx 111.32 \times 0.588 \approx 65.4 \text{ km}$. Width $\approx 22 \times 65.4 \approx 1,440 \text{ km}$ (about 895 miles).
4. At 66° N: $\cos 66^\circ \approx 0.407$, so one degree $\approx 45.3 \text{ km}$. Width $\approx 22 \times 45.3 \approx 996 \text{ km}$ (about 619 miles).
5. The box is not a true rectangle on the globe: it is about 30% narrower at the top. A Mercator map draws it as a rectangle, which is why northern lands look too large there.

Answer: About 1,443 km (897 miles) tall; about 1,440 km (895 miles) wide at 54° N but only about 996 km (619 miles) wide at 66° N.

Example 3. As of 2026, Sweden has about 10.6 million people on about 450,000 km² (174,000 sq mi), and Denmark has about 6.0 million people on about 43,000 km² (16,600 sq mi). Find each country's population density in both units and compare them. What does this suggest about where a Baltic map of population should put its emphasis?

1. Sweden: $10,600,000 \div 450,000 \approx 23.6$ people per km²; $10,600,000 \div 174,000 \approx 61$ per sq mi.
2. Denmark: $6,000,000 \div 43,000 \approx 140$ people per km²; $6,000,000 \div 16,600 \approx 361$ per sq mi.
3. Ratio: $140 \div 23.6 \approx 5.9$, so Denmark is about six times as densely settled.
4. Meaning: most Swedes live in the south and along the coasts, while the far north is thinly peopled. A population map of the region should show the crowded southern shores and the straits, not just color whole countries.

Answer: Sweden ≈ 23.6 per km² (61 per sq mi); Denmark ≈ 140 per km² (361 per sq mi), about six times as dense. A good population map shows where people actually cluster, which in this region is along the southern coasts and the straits.

PRACTICE

1. **EASY** What was the Inquiry, when was it formed, and who organized its map work?
2. **EASY** Label each as a formal or a functional region: (a) the lands where Finnish is the main language; (b) the area whose trade passes through the port of Gdańsk; (c) the drainage basin of the Vistula; (d) the towns linked by the Trans-Siberian Railway.
3. **EASY** On a map at 1:5,000,000, how many kilometers does 1 cm represent? How many centimeters would a 300 km strait-to-capital distance be?
4. **EASY** Name the six sheets of the capstone map set.
(Use the map or drawing "The capstone map set." shown earlier in this lesson.)
5. **MEDIUM** On a map at 1:2,000,000, Helsinki and Tallinn are 4.1 cm apart. How far apart are they in kilometers and miles?
6. **MEDIUM** Lübeck and Gdańsk are about 520 km (325 miles) apart in a straight line. A medieval Hanseatic cog averaging 3 knots (about 5.6 km/h) and sailing day and night would take how long? Why would a real voyage usually take longer?
7. **MEDIUM** How wide is one degree of longitude at 60° N (the latitude of Helsinki and St. Petersburg)? ($\cos 60^\circ = 0.5$)
8. **MEDIUM** List four questions you should ask about any map before you use it as evidence.
9. **MEDIUM** A student proposes the region "Africa" for the capstone. Using the five tests, explain the problem and suggest a better choice.
10. **HARD** Rewrite this weak guiding question into a strong one: "Is the Black Sea important?"
11. **HARD** Explain, using the map, why the Polish Corridor and the Free City of Danzig (1920 to 1939) were hard to make work.

12. **CHALLENGE** Write a region proposal of 150 to 200 words: name your region, give its boundary box, state your guiding question, and explain how it passes each of the five tests.

COMMON MISTAKES

- Choosing a region that is too big. A capstone on “the Middle East” becomes a list of facts; a capstone on “the Strait of Hormuz and the Gulf” can become an argument.
- Trusting one map, especially one found first in a search. Gather maps from different makers, sides and centuries, and let them check one another.
- Writing a guiding question that already contains the answer (“Why is Russia trapped by the Baltic?”). A fair question leaves room for more than one answer.

Make it a game · Three Clues. One player secretly picks a region and gives three clues, one at a time: a river or mountain range, then a strait, port or pass, then a city. The others try to name the region after each clue (3 points after the first clue, 2 after the second, 1 after the third). Whoever names it must then propose a good guiding question for that region in one sentence for a bonus point. Example: the Neva, the Øresund, Gdańsk (the Baltic).

Scripture. “And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed, and the bounds of their habitation;” (Acts 17:26, KJV)

Paul spoke these words in Athens, a city whose power had risen and fallen with the sea. Every region you might choose is a place where God has set nations to live for a time. Studying it carefully is a way of taking His world seriously; studying it humbly is a way of remembering that the times and the bounds are finally His.

Practice answers

1. A group of American scholars gathered in 1917, at President Wilson’s request through Colonel House, to prepare for the peace conference after the First World War. Isaiah Bowman, director of the American Geographical Society, organized its work, much of it done in the Society’s building in New York.
2. (a) formal; (b) functional; (c) formal (a shared physical feature: water draining to one river); (d) functional.
3. $1 \text{ cm} = 50 \text{ km}$. $300 \div 50 = 6 \text{ cm}$.
4. (1) Locator and boundary map; (2) physical map; (3) resources and routes map; (4) historic map study; (5) three views overlays (Mahan, Mackinder, Spykman); (6) the region as of 2026.
5. At 1:2,000,000, $1 \text{ cm} = 20 \text{ km}$. $4.1 \times 20 = 82 \text{ km}$. $82 \times 0.621 \approx 51 \text{ miles}$.
6. $520 \div 5.6 \approx 93 \text{ hours} \approx 3.9 \text{ days}$. Real voyages took longer because ships waited for fair winds, followed the coasts rather than a straight line, anchored at night in dangerous waters and stopped in ports to trade.
7. $111.32 \times 0.5 \approx 55.7 \text{ km}$ (about 34.6 miles), half its width at the equator.

8. Who made it and for whom? When was it made? What projection and scale does it use? What was its purpose, and what does it leave out? (Also acceptable: what are its sources, and how do its colors and symbols steer the reader?)
9. Africa is far too large to master in four weeks and holds dozens of different geographic questions, so it fails the size test and probably the clear-question test. A better choice is a focused region such as the Red Sea and the Horn of Africa (Bab-el-Mandeb), the Nile basin, or the Strait of Gibraltar and North Africa, each with one guiding question.
10. Answers vary. A strong rewrite is open, geographic and answerable with evidence, for example: "How have the Turkish Straits shaped the power of the states around the Black Sea since 1774?" or "Has control of the Bosphorus mattered more than control of the steppe for the powers of the Black Sea?"
11. The corridor gave Poland its promised access to the sea along the lower Vistula, but it cut East Prussia off from the rest of Germany, so German traffic had to cross Polish land. Danzig, the natural port at the Vistula's mouth, had a mostly German population but was placed under the League of Nations rather than in either state. Each side felt its vital interest was in the other's hands, so the arrangement bred resentment and became a pretext for Germany's attack in 1939.
12. Answers vary. A strong proposal gives a boundary in degrees, a single open guiding question, a clear reason geography matters there, a sentence on how each of Mahan, Mackinder and Spykman might apply, names at least three real sources, and says how it will treat any current dispute neutrally with dated facts.

5.2 THE PHYSICAL FACTS

OBJECTIVES

- Gather the physical facts of a region (rivers, mountains, coasts, ice, resources and routes) and record each with a number, a unit and a source.
- Use distances, depths, speeds and traffic counts to reason about straits, canals and plains, using the Danish straits, the Kiel Canal and the North European Plain as models.
- Separate a physical fact from an interpretation or a prediction, and explain why the facts must be settled before the views begin.

Warm-up. Lay a towel flat on a table and put a heavy book under one end. Roll a marble from the high end and watch where it goes. Now fold a ridge into the middle of the towel and roll again. Then pinch the towel into a narrow neck between two cereal boxes and roll five marbles at once. Write three sentences: where the marbles ran freely, where they were blocked, and where they crowded. You have just modeled a plain, a mountain range and a strait.

Video. Coming soon. Search Practical Engineering and The History Guy for the Kiel Canal and canal locks; The Henry Ford or Smithsonian for icebreakers and ship design; Library of Congress for historic sea charts of the Baltic and the Sound; Wendover Productions (candidate, needs vetting) for modern shipping through the Danish straits, previewed by a parent first.

KEY TERMS

physical fact

A measurable feature of the land, water or climate: a river's length, a strait's width, a sea's depth, a pass's height, a harbor's ice season. Physical facts can be checked by anyone with the right tools.

choke point

A narrow passage, such as a strait, canal or mountain pass, through which much traffic must go and which a small force can watch or close.

draft

The depth of water a loaded ship needs to float, measured from the waterline to the bottom of the keel. A strait shallower than a ship's draft is closed to that ship.

hinterland

The land behind a port or coast that sends goods to it and receives goods from it, often along a river or railway.

brackish water

Water saltier than a lake but much less salty than the open ocean, as in the Baltic, where many rivers pour fresh water into a sea with a narrow outlet.

elevation profile

A side view of the land along a line, showing how high the ground is at each point. It shows at a glance whether a route climbs or runs level.

CORE IDEAS

The story. At Helsingør, on the northeast tip of the Danish island of Zealand, the Sound (Øresund) between Denmark and Sweden narrows to about 4 km (2.5 miles). Here, from 1429, the Danish crown required every foreign merchant ship entering or leaving the Baltic to strike its sails, drop anchor and pay a toll, the Sound Dues. Between 1574 and 1585 King Frederick II built the great castle of Kronborg on the point, with guns that could reach well out into the channel. From 1567 the toll was charged on the value of the cargo, and the Danes found a clever way to keep captains honest: each captain declared the value of his own cargo, and the crown kept the right to buy the cargo at the price he declared. Declare too low, and you might lose your cargo cheaply; declare too high, and you paid a heavy toll. The Danish customs ledgers survive for most years from 1497 to 1857, recording ship after ship, cargo after cargo: grain, timber, tar, hemp and iron going west, salt, wine and cloth going east. The Sound Dues ended only in 1857, when the trading nations agreed by treaty to pay Denmark a lump sum to abolish them. For more than four centuries, a narrow strait, a castle and a ledger made a small kingdom rich.

The big idea. Before you can weigh Mahan against Mackinder, you must know the ground they are arguing about. The physical facts come first, because they are the evidence every view must explain. Gather five kinds: **rivers** (which way they flow, where they can be navigated, where they freeze), **mountains and plains** (the barriers and the corridors), **coasts** (harbors, straits, depths and ice), **resources** (what the land and sea yield, and where) and **routes** (the roads, rails, canals, sea lanes, pipelines and cables that tie the region together). Record each fact with a number, a unit and a source. “The Sound is narrow” is a feeling. “The Sound is about 4 km wide at Helsingør” is a fact you can check. Keep facts apart from interpretations (“Denmark held the key to the Baltic”) and from predictions (“traffic will double”), which belong to the next two lessons.

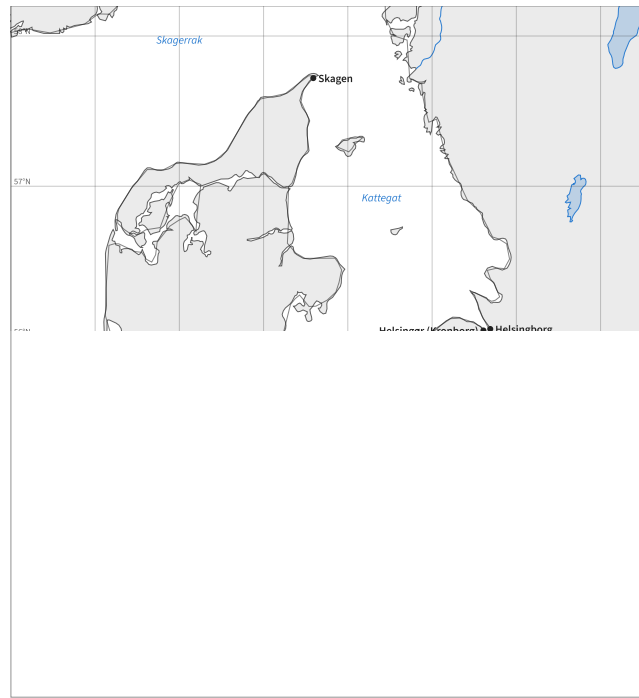
On the map: water. The Baltic is a shallow, brackish sea. Its average depth is only about 55 m (180 ft), and its deepest point, the Landsort Deep south of Stockholm, is about 459 m (1,506 ft). Many rivers pour into it: the Neva, only about 74 km (46 miles) long but draining Lake Ladoga, the largest lake in Europe; the Daugava; the Neman; the Vistula, about 1,050 km (650 miles); and the Oder, about 840 km (520 miles). The sea’s only outlets are the three Danish straits: the Sound, the Great Belt and the Little Belt. The Sound is the shortest route but is limited by a shallow sill to ships of about 8 m (26 ft) draft, so the largest tankers and bulk carriers use the deep-water route through the Great Belt, which allows a draft of about 15 m (49 ft). In winter the northern Gulf of Bothnia freezes every year and the Gulf of Finland usually does, so ports such as Luleå and St. Petersburg depend on icebreakers.

On the map: land, resources and routes. To the west and north rise the Scandinavian Mountains. To the south lies the North European Plain, which runs from the Netherlands across Germany and Poland into Russia with no mountain wall at all; between Berlin and

Warsaw the ground rises only about 65 m (213 ft) in some 520 km (325 miles). The plain's rivers mostly run north to the Baltic, so they cross the path of any army marching east or west. For centuries the region traded timber, tar, hemp, flax and grain, much of it shipped from Danzig, and amber from the southern shore. Sweden mined copper at Falun and iron in the north. In the twentieth century the iron ore of Kiruna, in Swedish Lapland, was shipped from Luleå in summer but, when the Gulf of Bothnia froze, it went by rail to the ice-free Norwegian port of Narvik. That single physical fact helps explain why both Britain and Germany sent forces to Narvik in 1940.

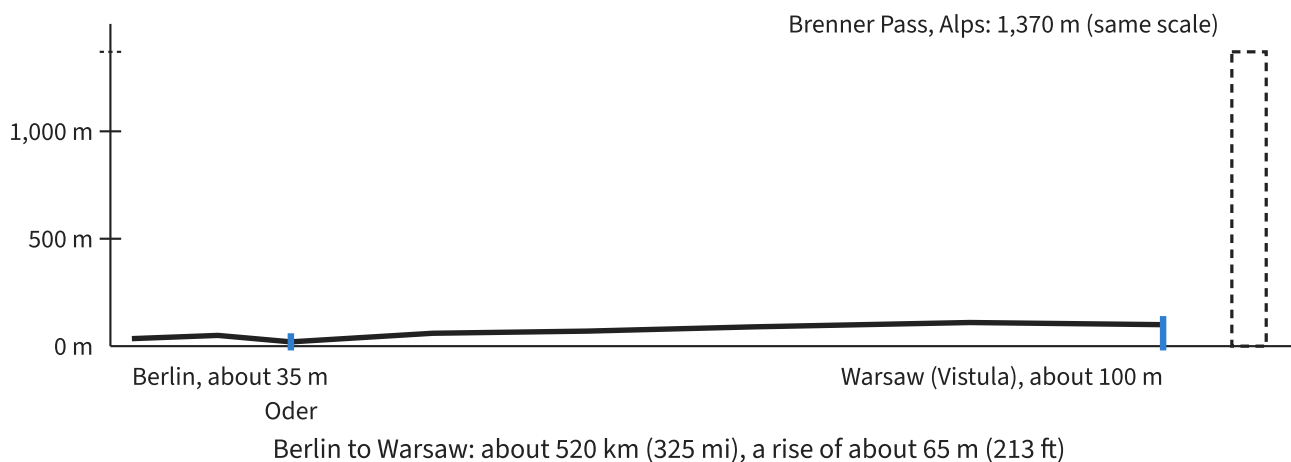
Technology overcoming geography. Engineers have spent two centuries working around the Danish straits. In June 1895 Germany opened the Kaiser Wilhelm Canal (today the Kiel Canal), about 98 km (61 miles) long, from Brunsbüttel on the Elbe estuary to Kiel on the Baltic. It let German ships pass between the North Sea and the Baltic without going around Denmark, saving about 460 km (250 nautical miles) on an average voyage. When the German navy began building larger battleships, the canal was widened and deepened between 1907 and 1914. Icebreakers have stretched the shipping season in the frozen gulfs. In 1997 and 1998 the Great Belt Fixed Link joined the Danish islands by rail and road, and in 2000 the Øresund Bridge and tunnel joined Copenhagen to Malmö in Sweden. Yet the water is still where God made it: the straits are still narrow, the gulfs still freeze, and every ship that leaves the Baltic still passes Denmark or the canal.

A fact that moves. One of the strangest physical facts of the region is that the land itself is rising. Around the northern Gulf of Bothnia, tide gauges and GPS stations measure the land rising up to about 8 to 9 mm (about a third of an inch) a year. Geologists explain this as the land rebounding after the weight of thick ice was removed at the end of what museum signs call the Ice Age. Over a lifetime the change is real: harbors grow shallower, islands join the mainland, and old shorelines stand above the sea. A good capstone records facts like this, because geography, though slow, is not frozen.



The Baltic's three outlets (the Sound, the Great Belt and the Little Belt) and the Kiel Canal, which bypasses them all.

The North European Plain, Berlin to Warsaw (heights to scale)



The North European Plain from Berlin to Warsaw: about 520 km with a rise of about 65 m. The Brenner Pass bar uses the same vertical scale.

Thinking About Time

What the sign says. Textbooks give the ice sheets that once covered Scandinavia long ages, and say the land is still rising after their weight was removed.

What we observe. Tide gauges and GPS stations show the land around the northern Gulf of Bothnia rising today, up to about 8 to 9 mm a year. The long ages come from projecting assumed rates far into the past, not from direct measurement.

How Christians read it. Christians who read Genesis as history understand a single Ice Age as following the Flood (Genesis 6–9), with the land still rebounding today on a younger earth. Either way, the rise you can measure is the fact that matters for harbors and coasts.

PICTURE STUDY



Spiegel der Zeevaerdt (The Mariner's Mirror): Sea Chart of the Sound, Lucas Janszoon Waghenaer, 1584–1585 (the chart of the Sound is in Part II, 1585) · Engraved sea chart (engraved by the van Doetecum brothers) in a printed pilot's atlas published in Leiden · This copy: Bibliothèque nationale de France, Paris; other copies survive in several major research libraries in Europe and America

Lucas Janszoon Waghenaer was a Dutch pilot from Enkhuizen who spent years at sea before he became a chartmaker. In 1584 and 1585 he published the two parts of the *Spiegel der Zeevaerdt*, the first printed atlas of sea charts made for working sailors. The first part covered the coasts of western Europe; the second carried the sailor north and east into the Baltic, beginning with this chart of the Sound between Denmark and Sweden. His charts gave depths in the water, landmarks such as church towers, and views of the coastline as it looked from the deck. An English edition, *The Mariners Mirror*, followed in 1588, and English sailors began calling any book of sea charts a “waggoner.”

This is a map made for physical facts. It was not made to argue about who should rule the Baltic, but to keep a ship off the shoals. As you build your own physical map, study how Waghenaer chose the few facts a sailor needed most.

Look closely

- Find the small numbers in the water. What do they measure, and why would they matter most near a strait?

- Look at the coastal views along the edge. How would a sailor use them to know where he was?
- Find the towns, castles or churches drawn on shore. Which ones seem to be placed as landmarks rather than as decoration?
- Compare the coastline with a modern map. Is the scale the same in every direction?

Talk about it

1. Which physical facts did Waghenaeer think a sailor needed, and which did he leave out?
2. How is a pilot's chart different in purpose from a king's map of his realm or a strategist's map of power?
3. What would a "waggoner" of your own region need to show?

PROJECT: MAP SHEETS 2 AND 3: THE PHYSICAL MAP AND THE RESOURCES AND ROUTES MAP

Using the base-map template from Lesson 5.1, you will draw the second and third sheets of your capstone map set and a fact sheet that supports them. You will also make a cardboard elevation profile across the most important corridor or barrier in your region.

You will need

- Your base-map tracing and two sheets of drawing paper the same size
- Colored pencils (blue for water, brown and green for relief, red for routes, black for labels), a fine pen and a ruler
- A sheet of corrugated cardboard, scissors, glue and a strip of graph paper for the profile
- Atlas, physical map sources and your source log

Steps

1. Trace the coasts, borders and graticule from your template onto Sheet 2.
2. Add the physical facts: major rivers with arrows for direction of flow, mountain ranges and passes with heights, plains, lakes, and coastal features (straits with widths, major harbors, shoals, ice-bound waters in winter). Use shading or hachures for high ground.
3. Trace the template again onto Sheet 3. Add resources with simple symbols in a key (for example: grain, timber, iron, oil, gas, fish) and routes: sea lanes, canals, railways, major roads, pipelines and undersea cables you can document.
4. Mark every choke point on Sheet 3 with a small red bracket and write its width or length beside it.
5. Choose one line across your region that matters most (a plain between two capitals, a pass through mountains, a strait). On graph paper draw its elevation profile, with distance across and height up. Write the vertical exaggeration (for example, "vertical scale 100 times horizontal").
6. Glue the profile to cardboard and cut along the line of the land so it stands on edge. Place it on your physical map along its line.

7. Write a fact sheet of at least twenty numbered physical facts, each with a number, a unit (metric and U.S.) and a source from your log.

Tips

- If a source gives a different number from another, record both and note it. Lengths of rivers and coastlines often differ by source because they are measured differently.
- Keep each sheet uncluttered. If a symbol does not help answer your guiding question, leave it off.
- Mark seasons: a pass closed by snow or a port closed by ice is a physical fact with a calendar.

Check your work

- Sheet 2 shows rivers, high ground, plains, coasts and choke points with numbers.
- Sheet 3 shows resources and routes with a clear key.
- My elevation profile has a correct scale and a stated vertical exaggeration.
- My fact sheet has at least twenty facts, each with units and a source.

MAP NOTEBOOK

1. Draw Kronborg on its point with the Sound beside it. Write the width of the Sound and the years of the Sound Dues, 1429 to 1857.
2. Sketch the route of Swedish iron ore from Kiruna to Luleå (summer) and Kiruna to Narvik (winter). Write one sentence on what physical fact decided the choice.
3. Make two columns headed "Fact" and "Interpretation." Write three entries in each about your own region.

From history. On April 2, 1801, a British fleet under Admiral Sir Hyde Parker, with Vice-Admiral Horatio Nelson leading the attack, fought the Danish fleet and harbor defenses at Copenhagen. Britain wanted to break up the League of Armed Neutrality, through which Russia, Denmark, Sweden and Prussia sought to protect their Baltic shipping. Nelson's ships attacked the line of Danish ships and floating batteries anchored before the city, and after hard fighting a truce was agreed. The battle showed that whoever could pass the Danish straits in force could reach the heart of the Baltic.

WORKED EXAMPLES

Example 1. The Kiel Canal saves about 250 nautical miles (about 460 km) compared with sailing around Denmark. A ship cruises at 14 knots at sea but must slow to about 8 knots for the canal's 98 km (about 53 nautical miles). Ignoring waiting time at the locks, how many hours does the canal save?

(Use the map or drawing "The Kiel Canal cuts across the base of the Jutland peninsula." shown earlier in this lesson.)

1. Around Denmark the extra 250 nautical miles at 14 knots takes $250 \div 14 \approx 17.9$ hours.
2. Through the canal, the ship goes slower for 53 nautical miles. At 8 knots that stretch takes $53 \div 8 \approx 6.6$ hours; at sea speed it would have taken $53 \div 14 \approx 3.8$ hours. The slowdown costs $6.6 - 3.8 = 2.8$ hours.
3. Time saved = $17.9 - 2.8 \approx 15.1$ hours.

Answer: About 15 hours saved on the voyage, before allowing for waiting at the locks at each end. That is why the canal mattered to German shipping and to the German navy.

Example 2. In the 2010s, roughly 30,000 ships a year passed through the Kiel Canal. On average, how many ships is that per day and per hour? If one ship blocked the canal for 12 hours, about how many ships would be delayed?

1. Per day: $30,000 \div 365 \approx 82$ ships.
2. Per hour: $82 \div 24 \approx 3.4$ ships.
3. In 12 hours: $3.4 \times 12 \approx 41$ ships would arrive and have to wait (or turn to go around Denmark).

Answer: About 82 ships a day, about 3.4 an hour; a 12-hour blockage would hold up about 40 ships. A choke point turns a small accident into a large delay.

Example 3. Berlin stands about 35 m (115 ft) above sea level and Warsaw about 100 m (328 ft). They are about 520 km (325 miles) apart. Find the average rise per kilometer and per mile. The Brenner Pass in the Alps is about 1,370 m (4,495 ft) high. How many times higher is it than the total rise from Berlin to Warsaw?

(Use the map or drawing “The plain is nearly flat; the Alps are not.” shown earlier in this lesson.)

1. Total rise: $100 - 35 = 65$ m ($328 - 115 = 213$ ft).
2. Per kilometer: $65 \div 520 \approx 0.125$ m per km, or 12.5 cm (about 5 inches) per km.
3. Per mile: $213 \div 325 \approx 0.66$ ft per mile, about 8 inches per mile.
4. Brenner Pass compared: $1,370 \div 65 \approx 21$ times the whole Berlin to Warsaw rise.

Answer: About 0.125 m per km (8 inches per mile), almost perfectly level. The Brenner Pass is about 21 times higher than the whole rise. No mountain wall stands between Germany and Poland, a fact Mackinder will build on.

PRACTICE

1. **EASY** The Sound is about 4 km wide at Helsingør. How wide is that in miles ($1 \text{ km} \approx 0.621 \text{ mi}$)?
2. **EASY** Who collected the Sound Dues, from where, and between what years?
3. **EASY** The Baltic’s average depth is about 55 m and its deepest point about 459 m. Convert both to feet ($1 \text{ m} \approx 3.28 \text{ ft}$).
4. **EASY** Name the five kinds of physical facts a capstone should gather.
5. **MEDIUM** The Vistula is about 1,050 km long and the Oder about 840 km. Convert both to miles and find how much longer the Vistula is, in both units.
6. **MEDIUM** A ship transits the 98 km Kiel Canal at 15 km/h. How long does the transit take in hours and minutes?
7. **MEDIUM** From 1567, Denmark taxed cargo at the value the captain declared but kept the right to buy the cargo at that price. Explain why this rule discouraged cheating.
8. **MEDIUM** Why was Swedish iron ore from Kiruna shipped through Luleå in summer but through Narvik in winter?
9. **MEDIUM** Label each as fact, interpretation or prediction: (a) “The Kiel Canal is about 98 km long.” (b) “Denmark held the key to the Baltic.” (c) “Traffic through the Danish straits will double within twenty years.” (d) “The northern Gulf of Bothnia freezes every winter.”
10. **HARD** A loaded tanker has a draft of 14 m. The Sound is limited to ships of about 8 m draft; the Great Belt deep-water route allows about 15 m. Which route must the tanker use? Give both limits and the tanker’s draft in feet.
(Use the map or drawing “Find the Sound and the Great Belt.” shown earlier in this lesson.)
11. **HARD** Warsaw stands about 100 m above sea level and Minsk about 220 m; they are about 476 km apart. Find the average rise per kilometer and compare it with the Berlin to Warsaw stretch (about 0.125 m per km). What does this tell you about the plain?

12. **CHALLENGE** Write a paragraph of 6 to 8 sentences summarizing the physical facts of your own capstone region. Use at least five numbers with units, name at least one choke point and one corridor, and keep every sentence a fact, not an interpretation.

COMMON MISTAKES

- Mixing facts with views in the physical section. “The strait is 4 km wide” belongs here; “the strait is the key to the region” belongs in the views.
- Using one number without checking a second source. River lengths and coastline lengths differ by source, so note the source and, when they disagree, give both.
- Forgetting the seasons. Ice, snow, monsoon winds and floods open and close routes, and the calendar is part of the geography.

Make it a game · Fact, View or Forecast?. One player reads a sentence about any region from this course (for example, “The Bosphorus is under 1 km wide at its narrowest,” “Russia needs a warm-water port,” “Arctic shipping will grow”). The others call out “Fact,” “View” or “Forecast.” A correct call scores 1 point; turning a view or forecast into a checkable fact (“St. Petersburg’s harbor needs icebreakers in winter”) scores 2. Play to ten.

Scripture. “The earth is the LORD’s, and the fulness thereof; the world, and they that dwell therein.” (Psalm 24:1, KJV)

The straits, plains, rivers and ores you map in this lesson are facts no ruler created. Kings have taxed the Sound and armies have crossed the plain, but the earth itself is the Lord’s. A geographer begins with humble attention to what is actually there.

Practice answers

1. $4 \times 0.621 \approx 2.5$ miles.
2. The Danish crown, at Helsingør (guarded from the 1580s by Kronborg Castle), from 1429 until they were abolished by treaty in 1857.
3. $55 \times 3.28 \approx 180$ ft; $459 \times 3.28 \approx 1,506$ ft.
4. Rivers; mountains and plains; coasts (harbors, straits, depths, ice); resources; routes.
5. Vistula: $1,050 \times 0.621 \approx 652$ miles. Oder: $840 \times 0.621 \approx 522$ miles. Difference: 210 km, about 130 miles.
6. $98 \div 15 \approx 6.53$ hours ≈ 6 hours 32 minutes.
7. If a captain declared a value lower than the true value to pay less toll, the crown could buy his cargo at that low price and he would lose money. If he declared too high, he paid more toll. So the safest choice was to declare an honest value.
8. Luleå, on the Gulf of Bothnia, is closer by sea to Germany through the Baltic, but the northern Gulf of Bothnia freezes every winter. Narvik, on the Norwegian coast, is kept ice-free by the warm North Atlantic waters, so in winter the ore went by rail across the mountains to Narvik and then by sea along the Norwegian coast.
9. (a) fact; (b) interpretation; (c) prediction; (d) fact.

10. The Great Belt. In feet: tanker $14 \times 3.28 \approx 46$ ft; Sound limit $8 \times 3.28 \approx 26$ ft; Great Belt limit $15 \times 3.28 \approx 49$ ft. The tanker is far too deep for the Sound but fits the Great Belt with about 1 m (3 ft) to spare.
11. Rise = 120 m; $120 \div 476 \approx 0.25$ m per km, about twice the Berlin to Warsaw gradient but still almost level (a quarter of a meter per kilometer). The plain stays open and gentle well into Belarus, with no mountain barrier.
12. Answers vary. A strong paragraph gives specific, sourced numbers (widths, depths, lengths, heights, ice seasons), names a choke point and a corridor, mentions resources and at least one route, uses both metric and U.S. units, and avoids words that judge or predict ("key," "vital," "doomed," "will").

5.3 THREE VIEWS

OBJECTIVES

- Apply the ideas of Mahan, Mackinder and Spykman to one region, stating what each would emphasize, what evidence supports him there, and what his critics would answer.
- Use distances, travel times and dates to test each view against the history of the Baltic, from the founding of St. Petersburg (1703) to the region as of 2026.
- Add the voices the three thinkers leave out (the region's own peoples, economics, faith and human choice) and explain why a fair analysis needs them.

Warm-up. Put an ordinary object (a mug, a shoe, a stapler) in the middle of the table. Look at it through three “lenses” for one minute each and write one sentence for each: as an engineer (how is it built?), as a shopkeeper (what is it worth, and who would buy it?), and as a historian (who made it, when, and why does it look this way?). Then write one thing about the object that none of the three lenses noticed.

Watch. *Ten Minute History - Peter the Great and the Russian Empire (Short Documentary)* (History Matters, 9:59). <https://www.youtube.com/watch?v=3tBNr2gjAA0>
After the story: watch how Peter rebuilt his army after Narva, won the war with Sweden, and founded St. Petersburg to give Russia its window on the Baltic.

Note: Captions were not available to check; preview it first. History Matters is light and joking in tone, and a video on Peter's reign may briefly mention harsh episodes such as the forced labor used to build St. Petersburg or the death of his son Alexei.

KEY TERMS

lens

A way of looking that brings some facts into sharp focus and leaves others blurred. Each geopolitical theory is a lens, not a verdict.

closed sea

A sea whose only exits are narrow straits held or watched by other powers, such as the Baltic or the Black Sea.

East Europe (Mackinder)

In Mackinder's 1919 book, the lands between Germany and Russia from the Baltic to the Black Sea, which he believed held the key to the Heartland.

Rimland

Spykman's name for the coastal band of Eurasia between the Heartland and the surrounding seas, where he believed the contest for world power would be decided.

steelman

To state a view in its strongest, fairest form, as its best defender would, before you criticize it. The opposite of attacking a weak “straw man.”

counterexample

A real case that does not fit a general claim. One good counterexample shows that a claim needs limits.

CORE IDEAS

The story. In 1700 Russia was one of the largest countries on earth, yet its only seaport on the open ocean was Archangel, on the White Sea, far to the north and frozen for much of the year. Sweden held the eastern shores of the Baltic. That year Tsar Peter I, allied with Denmark and Saxony, went to war with Sweden. In November 1700 the young Swedish king Charles XII routed Peter's army at Narva. Peter rebuilt his army and kept fighting. In May 1703, on a small island at the mouth of the Neva, he founded the Peter and Paul Fortress, and around it a new city, St. Petersburg. It was built on marshland by tens of thousands of conscripted peasants, soldiers and Swedish prisoners; many thousands died of cold, disease and hunger, though no one knows the exact number. In 1704 Peter fortified Kotlin Island, later Kronstadt, to guard the sea approach. After his great victory at Poltava in 1709 he moved his capital to the new city, and in 1721 the Treaty of Nystad gave Russia Estonia, Livonia, Ingria and part of Karelia. Russia had reached the Baltic at last. A century later the poet Alexander Pushkin, in *The Bronze Horseman* (1833), pictured Peter resolving to cut a "window" into Europe here. The question for us is: what kind of window was it?

The big idea. In this lesson you will look at your region through three lenses. Each thinker asks a different question. Mahan asks: who commands the sea, and where are the bases and the narrow passages? Mackinder asks: who controls the great plains and the railways of the interior? Spykman asks: who holds the coastlands where land power and sea power meet, and with whom are they allied? To use a lens fairly, first **steelman** it: state it as its best defender would. Then test it against the facts of your region, and finally let its critics speak. You are not choosing a team. You are seeing what each lens shows and what each one hides.

Mahan's view. Mahan called the sea "a great highway; or better, perhaps, of a wide common." But the Baltic is a **closed sea**. Its exits run past Denmark, and in 1801 and again in 1854, during the Crimean War, British fleets entered it in force. Mahan would say St. Petersburg gave Russia a coast but not command of the sea. He would point to Russia's divided fleets in the Baltic, the Black Sea and the Pacific. In October 1904, during the war with Japan, Russia sent its Baltic ships around Africa to the Far East. After seven months and some 18,000 nautical miles, they were destroyed at Tsushima on May 27-28, 1905. Critics answer that Mahan's big-battleship navy was the wrong tool for narrow seas: in both world wars the Baltic was thick with mines and submarines, and in the First World War the British battle fleet never entered it.

Mackinder's view. For Mackinder the Baltic shore is the northern flank of **East Europe**, the open plain between Germany and Russia. In 1919 he wrote: "Who rules East Europe commands the Heartland; who rules the Heartland commands the World-Island; who rules the World-Island commands the World." He urged the peacemakers to set up a middle tier of independent states between Germany and Russia, and Poland, Lithuania, Latvia and Estonia appeared on the map. He would point to the railways, such as the St. Petersburg to Moscow

line opened in 1851, that let land power move faster than ever. Critics answer that the Heartland never did command the World-Island. The middle states were overrun in 1939 and 1940, but by a pact signed between two dictatorships in August 1939, not by the plain alone. Ideas, choices and crimes decided what geography only made possible.

Spykman’s view. Spykman wrote in 1944: “Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world.” To him the Baltic coasts are **Rimland**, and what matters is the alliances of the states that hold them. In the Cold War, Denmark and Norway joined NATO in 1949 and West Germany in 1955, while Poland, East Germany and the Baltic republics lay inside the Soviet bloc, and Sweden and Finland stayed outside both alliances. As of 2026, after Finland joined NATO in April 2023 and Sweden in March 2024, every state on the Baltic shore except Russia is a NATO member; Russia holds St. Petersburg and the exclave of Kaliningrad. Critics answer that the Rimland is not one thing: its states have their own histories, interests and quarrels, and they choose their alliances rather than being moved like pieces.

The voices the lenses leave out. None of the three thinkers was a Finn, an Estonian or a Pole. In the winter of 1939–40 the Soviet Union invaded Finland, and the Finns, far outnumbered, fought so hard that Finland kept its independence, though it lost land. No map predicted that. A fair analysis therefore adds a fourth chair at the table: the peoples of the region, their faith, their memories, their economies and their choices. The Bible calls this wisdom: “in the multitude of counsellors there is safety” (Proverbs 11:14).

Technology overcoming geography. Each lens changed with the machines of its age: Mahan’s steamships, Mackinder’s railways, Spykman’s airplanes. Across the Gulf of Finland, Helsinki and Tallinn lie about 82 km (51 miles) apart, a ferry ride of about two hours or a few minutes by jet. Distance shrinks; the straits, the plain and the ice remain.

	Mahan sea power, 1890	Mackinder land power, 1904, 1919	Spykman the Rimland, 1942, 1944
Looks at	sea lanes, bases, straits, fleets	plains, railways, East Europe	coastlands, alliances, air and sea bases
The Baltic is	a closed sea whose exits others hold	the northern flank of East Europe	a rimland sea where land and sea power meet
Critics say	mines, subs and planes close narrow seas	the Heartland never ruled the World-Island	rimland states make their own choices

Three lenses on one sea. Fill in the same table for your own region, and add a fourth column for the region’s own peoples.



Peter's "window": St. Petersburg and Kronstadt at the head of the Gulf of Finland, about 82 km wide between Helsinki and Tallinn.

PICTURE STUDY



Peter I, Valentin Serov, 1907 · Tempera on cardboard · State Tretyakov Gallery, Moscow

Valentin Serov was one of the finest Russian painters of the years around 1900. In 1907, almost two centuries after Peter founded St. Petersburg, he painted the tsar striding along the shore of the Neva while the new city rises behind him. Peter was very tall, about two meters, and Serov makes him seem a giant marching into the wind, while his courtiers bend and hurry to keep pace.

This is not a map, but it is a geopolitical picture: a land power reaching for the sea. As you look, ask what each of our three thinkers would see in it, and what the people who built the city with their hands might have seen.

Look closely

- Find Peter. How does Serov show his size, speed and will?
- Look at the courtiers behind him. What does their posture tell you about life near such a ruler?
- Look at the background: the water, the sky, the masts and buildings. What season and weather do you think this is?
- Where is the sea in this painting? How much of the picture is water and sky?

Talk about it

1. What would Mahan, Mackinder and Spykman each say Peter was doing on this riverbank?
2. The city was built at a terrible cost in human life. Should a painting of Peter's greatness also show that cost? Why or why not?
3. Is there a painting or photograph of a founder, a fortress or a port in your own region that could serve as a picture study for your capstone?

PROJECT: MAP SHEET 5: THE THREE VIEWS OVERLAYS

You will draw three tracing-paper overlays for your region, one for each thinker, and a table that states each view at its strongest, with its evidence and its critics. Laid over your physical map, the overlays will show where the three lenses agree and where they clash.

You will need

- Three sheets of tracing paper cut to the size of your base map, plus your base-map template
- Three colors of fine marker (for example blue for Mahan, brown for Mackinder, green for Spykman) and a black pen
- Your physical map (Sheet 2) and routes map (Sheet 3)
- Excerpts of Mahan (1890), Mackinder (1904 and 1919) and Spykman (1942 and 1944) from earlier units

Steps

1. Mahan overlay (blue): mark the sea lanes, naval bases and harbors, straits and choke points, and coaling or fueling points. Shade any sea that freezes. Write in one corner: "Who commands this sea?"
2. Mackinder overlay (brown): mark the plains and corridors, the main railways and roads, mountain barriers, and the edge of the interior the region opens toward. Write: "Who controls the land corridors?"

3. Spykman overlay (green): mark the coastal band, the states that hold it, their alliances as of 2026 (stated neutrally, with dates), and major air and sea bases you can document. Write: "Who holds the coastlands, and with whom?"
4. Lay each overlay on your physical map in turn and photograph or sketch the combination.
5. Make a four-column table: Mahan, Mackinder, Spykman, and "The region's own peoples." For each, write (a) the view in its strongest form in two sentences, (b) two pieces of evidence from your region with dates and numbers, (c) one critic's answer or counterexample.
6. Below the table, write three sentences: where the three lenses agree about your region, where they disagree, and which facts none of them explains.

Tips

- Use the thinkers' own words where you can, quoted exactly and cited; otherwise paraphrase without quotation marks.
- Do not let a lens choose your facts. If an important fact fits none of the three views, write it down; it may become the most interesting part of your paper.
- For current affairs, give dates and plain facts, and describe each side's stated view without adopting it.

Check your work

- I drew three clear overlays that fit my base map exactly.
- My table states each view fairly, with real evidence and a real critic.
- I added the voice of the region's own peoples.
- My three closing sentences name agreement, disagreement and what is left out.

MAP NOTEBOOK

1. Draw Peter's "window": the Gulf of Finland with St. Petersburg, Kronstadt, Narva and Tallinn. Mark the years 1700, 1703, 1709 and 1721 beside the right places.
2. Write each thinker's famous sentence (Mahan's "great highway," Mackinder's 1919 dictum, Spykman's 1944 dictum) in your notebook, each with its date and source.
3. Draw a small table with three columns and write one critic's objection to each thinker in your own words.

From history. In 1782 Catherine the Great unveiled in St. Petersburg a great bronze statue of Peter on a rearing horse, made by the French sculptor Étienne Maurice Falconet. It stands on an enormous granite boulder, the "Thunder Stone," dragged from the marshes outside the city. The inscription reads, in Latin and Russian, "To Peter the First from Catherine the Second." Pushkin's poem about the statue, *The Bronze Horseman* (1833), gave it its popular name, and its story of a poor clerk ruined by a Neva flood asks whether the city's grandeur was worth its cost to ordinary people.

WORKED EXAMPLES

Example 1. By the usual sea route, St. Petersburg is about 1,300 km (about 700 nautical miles) from the Sound at Helsingør, and the Neva is usually frozen in winter. In the 1890s Russia built a new naval base at Libau (Liepāja, in today's Latvia), whose harbor is usually ice-free and which lies about 600 km (about 325 nautical miles) from the Sound. How long does each voyage take for a warship at 15 knots? What would Mahan conclude?

(Use the map or drawing "St. Petersburg lies at the far eastern end of the gulf." shown earlier in this lesson.)

1. Convert the speed: 15 knots = 15 nautical miles per hour.
2. From St. Petersburg: $700 \div 15 \approx 46.7$ hours, almost two days.
3. From Libau: $325 \div 15 \approx 21.7$ hours, under one day.
4. Ratio: $600 \div 1,300 \approx 0.46$, so Libau is less than half as far from the exit, and usable in winter.

Answer: About 47 hours from St. Petersburg and about 22 hours from Libau. Mahan would say that position matters: a base nearer the exit and free of ice is worth more to sea power than a grand capital at the far end of a frozen gulf. But both still lie inside a closed sea whose exit passes Denmark.

Example 2. Moscow and Berlin are about 1,610 km (1,000 miles) apart in a straight line across the North European Plain. Compare an army marching 25 km a day with troops carried by train at an average of 40 km/h (including stops). How many times faster is the railway? What would Mackinder conclude?

1. Marching: $1,610 \div 25 \approx 64$ days.
2. By rail: $1,610 \div 40 \approx 40$ hours ≈ 1.7 days.
3. Ratio: $64 \div 1.7 \approx 38$ times faster. (Real rail routes are longer than the straight line, and trains need track, coal and crews, but the advantage remains enormous.)

Answer: About 64 days on foot against about 1.7 days by rail, roughly 38 times faster. Mackinder concluded that railways let land powers move across open plains as quickly as sea powers could move by ship, so the plain of East Europe became the key to the Heartland.

Example 3. Helsinki and Tallinn are about 82 km (51 miles) apart across the Gulf of Finland. How long does the crossing take by a fast ferry at 27 knots (about 50 km/h) and by a jet at 900 km/h? How many times faster is the jet? What would Spykman, writing in the air age, conclude?

(Use the map or drawing “The Helsinki to Tallinn crossing.” shown earlier in this lesson.)

1. Ferry: $82 \div 50 \approx 1.64$ hours ≈ 1 hour 38 minutes.
2. Jet: $82 \div 900 \approx 0.091$ hours; $0.091 \times 60 \approx 5.5$ minutes.
3. Ratio: $1.64 \div 0.091 \approx 18$ times faster.

Answer: About 1 hour 38 minutes by ferry and about 5.5 minutes by jet, roughly 18 times faster. Spykman would conclude that in the air age a narrow gulf no longer separates its two shores; what matters is who holds both coasts and with whom they are allied.

PRACTICE

1. **EASY** Complete Mahan’s description of the sea from *The Influence of Sea Power upon History* (1890): the sea is “a great highway; or better, perhaps, of a wide _____.”
2. **EASY** Write Mackinder’s 1919 dictum from *Democratic Ideals and Reality*.
3. **EASY** Write Spykman’s dictum from *The Geography of the Peace* (1944).
4. **EASY** When and where did Peter I found St. Petersburg, and what was Russia’s only seaport on the open ocean before then?
5. **MEDIUM** The Russian squadron left Libau on October 15, 1904, and was destroyed at Tsushima on May 27, 1905. How many days was it at sea or in harbor along the way? It sailed about 18,000 nautical miles. What average distance per day is that?
6. **MEDIUM** What lesson would Mahan draw from that voyage about a country whose fleets are divided among closed seas?
7. **MEDIUM** The St. Petersburg to Moscow railway (opened 1851) is about 650 km long. How long would the trip take by an early train averaging 30 km/h, and by a horse-drawn coach covering 10 km/h for 12 hours a day?
8. **MEDIUM** Give one critic’s objection to each of the three thinkers, as applied to the Baltic.
9. **MEDIUM** Narva is about 135 km from St. Petersburg. How many days would an army need to cover it at 25 km a day? Why did Peter need Narva (taken in 1704) to make his new city safe?
(Use the map or drawing “Find Narva and St. Petersburg.” shown earlier in this lesson.)
10. **HARD** Mackinder urged a middle tier of independent states between Germany and Russia in 1919. Those states were overrun in 1939–40. Give the strongest argument that this proves Mackinder right, and the strongest argument that it does not.
11. **HARD** A classmate writes: “As of 2026 every Baltic shore state except Russia is in NATO, so Spykman was proved right.” Evaluate the reasoning fairly.
12. **CHALLENGE** For your own capstone region, write one paragraph for each thinker (steelmanned, with two pieces of evidence) and one paragraph giving the voice of the

region's own peoples. End with one sentence on which lens shows the most about your guiding question, and why.

COMMON MISTAKES

- Treating a theory as a verdict. The three views are lenses; each shows some things clearly and hides others.
- Attacking a straw man. Before criticizing Mackinder or Spykman, state the view so well that its defender would agree with your summary.
- Forgetting the people who live there. Nations are not pieces on a board, and their choices have often surprised the strategists.

Make it a game · Three Chairs. Set three chairs in a row labeled Mahan, Mackinder and Spykman, and a fourth labeled "The People Who Live There." A leader names a fact about any region (for example, "The Bosphorus is under 1 km wide at its narrowest," "The Trans-Siberian Railway reached the Pacific," "Japan is an island nation"). Players race to sit in the chair whose thinker would care most about that fact and explain why in one sentence. Anyone who can explain why a second thinker would also care earns a bonus point.

Scripture. "Where no counsel is, the people fall: but in the multitude of counsellors there is safety." (Proverbs 11:14, KJV)

One thinker, however brilliant, sees only part of the truth. Hearing several counselors, and letting them correct one another, is the path of wisdom in a capstone paper as well as in a nation's councils.

Practice answers

1. "common." Mahan meant a space open to all, over which ships may pass in any direction, though some routes are used far more than others.
2. "Who rules East Europe commands the Heartland; who rules the Heartland commands the World-Island; who rules the World-Island commands the World."
3. "Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world."
4. In May 1703, on an island at the mouth of the Neva, at the head of the Gulf of Finland. Before then Russia's only seaport on the open ocean was Archangel on the White Sea, frozen much of the year.
5. October 15 to 31: 16 days; November 30; December 31; January 31; February 28; March 31; April 30; May 27. Total 224 days. $18,000 \div 224 \approx 80$ nautical miles per day (about 150 km), only about 3.3 knots on average, because of long stops for coal and for orders.
6. A country with fleets in separate seas (the Baltic, the Black Sea, the Pacific) cannot easily unite them; reinforcements must travel enormous distances through waters and coaling stations controlled by others, and they arrive late and worn. Position, bases and command of the sea routes matter as much as the number of ships.
7. Train: $650 \div 30 \approx 21.7$ hours, under one day. Coach: 120 km a day, so $650 \div 120 \approx 5.4$ days. The railway was about six times faster.

8. Mahan: mines, submarines and aircraft made narrow seas deadly for big surface fleets; the British battle fleet never entered the Baltic in the First World War. Mackinder: the Heartland never commanded the World-Island, and the fate of East Europe in 1939-40 turned on political choices such as the August 1939 pact, not the plain alone. Spykman: the Rimland is not a unit; its states have their own interests and choose their own alliances.
9. $135 \div 25 = 5.4$ days, under a week's march. A Swedish fortress less than a week from the new city was a constant threat to it; taking Narva pushed the danger back and secured the land approach along the southern shore of the gulf.
10. For: Mackinder warned that East Europe was the hinge of power and that small states on the open plain would be hard to protect; when two great land powers agreed to divide it, they swallowed the middle states quickly, just as the geography suggested. Against: the plain had been open for centuries without that result; what decided 1939-40 was a deliberate pact between two dictatorships and the failure of other powers to act. Geography made the conquest easier, but human choices and ideologies made it happen.
11. The fact is accurate and fits Spykman's emphasis on alliances among rimland states with sea powers. But fitting is not proving. Finland and Sweden stayed outside alliances for decades and joined only in 2023 and 2024, after Russia's full-scale invasion of Ukraine in February 2022 changed their governments' and peoples' judgment. Their choices came from history, fear and politics as much as from geography. A fair conclusion: the case is consistent with Spykman's lens, but other explanations must also be weighed.
12. Answers vary. A strong answer states each view as its best defender would, uses dated evidence and numbers from the student's physical facts, includes a fair critic for each, gives the region's peoples a real voice (history, faith, economy, choices), and ends with a reasoned judgment that admits limits.

5.4 WRITING THE ANALYSIS

OBJECTIVES

- Plan and write a capstone paper of 2,500 to 3,500 words that asks one geographic question, sets out the facts, presents several views in their strongest form, and reaches a reasoned judgment that admits its limits.
- Check a draft for accuracy: units, distances, dates, quotations and the difference between facts, interpretations and predictions.
- Explain how geopolitics was abused when conclusions came before evidence, and write about current affairs in a neutral, dated way.

Warm-up. Take two minutes to write the strongest argument you can for something you disagree with (for example, a rule in your house, a sports team you dislike, or a food you will not eat). Then read it to someone who actually holds that view and ask, “Did I state your case fairly?” Write down what they said you missed. That gap is what this lesson is about.

Watch. *14th June 1900: Anglo-German naval arms race triggered by the Second German Naval Law* (HistoryPod, 2:35). <https://www.youtube.com/watch?v=yryey5NVODs>
As review: watch to see how Germany's 1900 Naval Law and Tirpitz's 'risk theory' challenged British sea power, the threat Crowe weighed in 1907.

Note: Captions were not available to check; preview it first. It focuses on the Second German Naval Law of June 1900, seven years before Crowe's memorandum, and probably does not mention Crowe.

KEY TERMS

thesis

The paper's answer to its guiding question, stated in one or two sentences and defended with evidence. A good thesis can be wrong, which is what makes it worth testing.

competing hypotheses

Two or more explanations of the same facts, weighed side by side. A strong conclusion says what follows under each one.

citation

A note telling the reader exactly where a fact, number, quotation or map came from, so it can be checked.

loaded word

A word that judges while pretending only to describe (“aggressive,” “paranoid,” “heroic,” “doomed”). A fair analysis describes actions and stated aims, then weighs them openly.

determinism

The claim that geography decides history by itself. The course treats geography as setting costs and opportunities, while people still choose.

limits of the argument

An honest statement of what the paper cannot prove, what evidence is missing, and what could change the conclusion.

CORE IDEAS

The story. On January 1, 1907, a senior official of the British Foreign Office named Eyre Crowe finished a long paper titled “Memorandum on the Present State of British Relations with France and Germany.” Crowe had been born in Leipzig and educated partly in Germany, and he knew the country well. He began with geography. Britain, he argued, was an island state lying on the ocean flank of Europe with a vast empire overseas, so its safety depended on command of the sea, and it had always opposed any single power that sought to dominate the Continent. Then he faced the hard question: what was Germany aiming at? He set out two explanations. Either Germany was deliberately seeking hegemony on land and ascendancy at sea, or its policy was the confused drift of statesmen who did not fully know where they were heading. Crowe argued that Britain should respond in the same way under either explanation, by keeping its fleet strong and its friendships firm. Foreign Secretary Sir Edward Grey circulated the memorandum to senior ministers. Then Lord Sanderson, who had recently retired as the Foreign Office’s permanent head, wrote a long reply arguing that Crowe judged Germany too harshly and read dark design into clumsy diplomacy. Historians still study the two papers side by side. Seven years later Britain and Germany were at war.

The big idea. Crowe’s memorandum is a model, not because he was right about everything, but because of how he argued. He began from geographic facts, he named his assumptions, he weighed **competing hypotheses**, and he asked what followed under each. Sanderson’s reply shows that even a strong paper must meet its critics. Your capstone should do the same. It is not a report that lists facts, and it is not a speech for one side. It is a fair, reasoned analysis: one guiding question, the facts that bear on it, several views stated at their strongest, the critics and the voices of the region, and then your own judgment, with its reasons and its **limits**.

How it is built. A paper of about 2,500 words has eight parts. (1) Introduction: the guiding question, why it matters, and your thesis (about 250 words). (2) The region on the map: the physical facts, with your maps as numbered figures (about 450). (3–5) The three views: Mahan, Mackinder and Spykman applied to your region, each steelmanned, with evidence (about 350 each). (6) Critics and other voices: counterexamples, economics, faith and history, and the region’s own peoples (about 300). (7) Weighing: which view explains the most, where each fails, and your judgment (about 350). (8) Conclusion: what you have shown and what remains uncertain (about 100). Write the weighing section last, after you have let every view speak.

Rules for fairness. Give every number a unit and a source, and use both metric and U.S. units. Quote the thinkers exactly or paraphrase without quotation marks. Separate facts (“the strait is 4 km wide”), interpretations (“the strait is the key to the region”) and predictions (“traffic will grow”), and label the last two as yours or someone else’s. Date every current fact: not “recently,” but “in March 2024” or “as of 2026.” Describe each

government's actions and its own stated reasons, and leave out **loaded words**. Hunt for **counterexamples** to your own thesis before a reader does. If one appears, do not hide it: narrow your claim.

A warning. Geopolitics has been abused before, and the abuse began with bad writing habits: the conclusion came first and the evidence was gathered to fit it. In the 1920s and 1930s, German geopolitical writers, led by Karl Haushofer and his journal *Zeitschrift für Geopolitik*, used maps and the language of “living space” to present expansion as a law of nature. The Nazi regime took up that language to justify a war of conquest in the East, the enslavement and starvation of millions, and the murder of the Jews of Europe. No honest analysis can treat such deeds as the outworking of geography. Geography helps explain choices; it never excuses them. Write so that your paper could not be used to dress up a wrong as a necessity, and so that every claim can be checked.

On the map. In a capstone paper, maps are evidence, not decoration. Number each map as a figure (“Figure 3: Routes and choke points of the Baltic”), give it a caption that says what it shows and where its data came from, and refer to it in the text (“as Figure 3 shows, all sea traffic leaving the Baltic passes through Danish waters or the Kiel Canal”). If you measure a distance with an online tool or a string, say how you measured it and check it a second way. Digital tools let you measure great-circle distances, trace routes and compare maps in minutes, a power the Inquiry of 1917 would have envied. But a tool can only measure. The judgment, and the honesty, are yours.

The capstone paper: eight parts, about 2,500 words

1. Introduction: question and thesis	250 words
2. The region on the map (facts, figures)	450 words
3. View one: sea power (Mahan)	350 words
4. View two: land power (Mackinder)	350 words
5. View three: the Rimland (Spykman)	350 words
6. Critics and the region's own voices	300 words
7. Weighing: judgment and limits (write last)	350 words
8. Conclusion	100 words

The plan of a 2,500-word capstone paper. Scale each part up in proportion for a longer paper.

PICTURE STUDY



Septentrionalium Regionum Descrip. (A Description of the Northern Regions), from *Theatrum Orbis Terrarum*, Abraham Ortelius, 1570 (this impression from a 1572 edition of the *Theatrum*) · Hand-colored copperplate engraving, printed in a bound atlas published in Antwerp · This copy: Harvard University; copies of the *Theatrum* survive in many libraries and map collections

Abraham Ortelius was a map dealer and scholar in Antwerp. In 1570 he published the *Theatrum Orbis Terrarum* ("Theater of the World"), often called the first modern atlas: a bound book of maps, all printed at a uniform size and style. Ortelius did not survey these lands himself. He gathered the best maps of his day, redrew them, and, unusually for his time, printed a list of the mapmakers whose work he had used. His map of the northern regions draws on earlier maps such as Olaus Magnus's *Carta Marina*, which you studied in Lesson 5.1.

That makes Ortelius a good model for a capstone writer. He combined many sources into one clear work, and he told his readers where his material came from so they could judge it for themselves.

Look closely

- Find the Baltic Sea and Scandinavia. Compare them with the *Carta Marina* and with a modern map. What did Ortelius keep, and what did he change?
- Look at the far North Atlantic. Which lands and islands look right, and which look doubtful?
- Find the title cartouche and any decorations. What do they tell you about who was expected to buy this atlas?
- Look at the edges of the map. Where does the mapmaker's knowledge seem to run out?

Talk about it

1. Why does it matter that Ortelius listed the mapmakers he drew on? How is that like the citations in your paper?
2. When Ortelius copied an older map's mistake, whose fault was it? What does that teach you about relying on one source?
3. How will you show your reader where each of your maps and facts came from?

PROJECT: THE CAPSTONE PAPER

This week you write the paper. You will build an evidence table, write a full draft from your outline, test it against a reader who takes a different view, and revise it into a finished analysis of 2,500 to 3,500 words with your map set as numbered figures.

You will need

- Your dossier: source log, fact sheet, map sheets 1 to 5 and your three views table
- A notebook or word processor; index cards if you like to outline by hand
- A chosen citation style (your teacher may assign Chicago footnotes or MLA)
- A willing reader: a parent, sibling, classmate or teacher

Steps

1. Write your thesis: one or two sentences that answer your guiding question and could be shown wrong by evidence.
2. Make an evidence table with three columns: claim, evidence (with number, unit, date), and source. Include at least fifteen rows, and at least two rows that cut against your thesis.
3. Outline the eight parts of the paper using the plan in this lesson. Under each heading list the evidence rows and figures you will use.
4. Write the draft straight through without stopping to polish. Leave the weighing section until last.
5. Steelman test: give your three view sections to your reader. Ask, "If you were Mahan (or Mackinder, or Spykman), would you say I stated your case fairly?" Revise anything they say is weak.
6. Accuracy pass: check every number, unit, date, name and quotation against your sources. Convert every distance into both metric and U.S. units.
7. Fairness pass: underline every adjective that judges. Keep it only if your evidence supports it, and replace loaded words with descriptions of actions. Date every current fact ("as of 2026").
8. Write the limits paragraph: what your paper cannot prove, what evidence is missing, and what future event would change your conclusion.
9. Prepare the final copy with a title page, numbered figures with captions, citations and a list of sources.

Tips

- Like Crowe, ask what follows if your main explanation is wrong. If your conclusion still holds under a different explanation, it is strong; if not, say so.
- A paragraph should make one point. Begin it with that point, prove it, and connect it to your question.
- Read your paper aloud. Sentences that are hard to say are usually hard to read.

Check your work

- My thesis answers my guiding question and could be shown wrong.
- Each of the three views is stated so fairly that its defender would accept my summary.
- Every number has a unit (metric and U.S.) and a source; every current fact has a date.
- My paper includes counterexamples, the voices of the region, and an honest limits paragraph.
- My maps appear as numbered figures with captions and are referred to in the text.

MAP NOTEBOOK

1. Copy the eight-part paper plan into your notebook and write, beside each part, the one sentence you most want that section to prove.
2. Write Crowe's two hypotheses about Germany in your own words. Then write two competing hypotheses about the main power in your own region.
3. List ten loaded words you will not use in your paper, and next to each write a neutral description of an action that could replace it.

From history. In January and February 1658, during a war between Sweden and Denmark, a winter so cold froze the Danish straits that King Charles X Gustav of Sweden marched his army across the ice of the Little Belt and then the Great Belt toward Zealand. Some men and horses were lost when the ice broke, but the army reached the island and threatened Copenhagen. Denmark made peace at Roskilde in February 1658 and gave Sweden its provinces east of the Sound, including Scania. Ever since, the Sound has had Sweden on one shore and Denmark on the other, a change no map of "natural barriers" would have predicted.

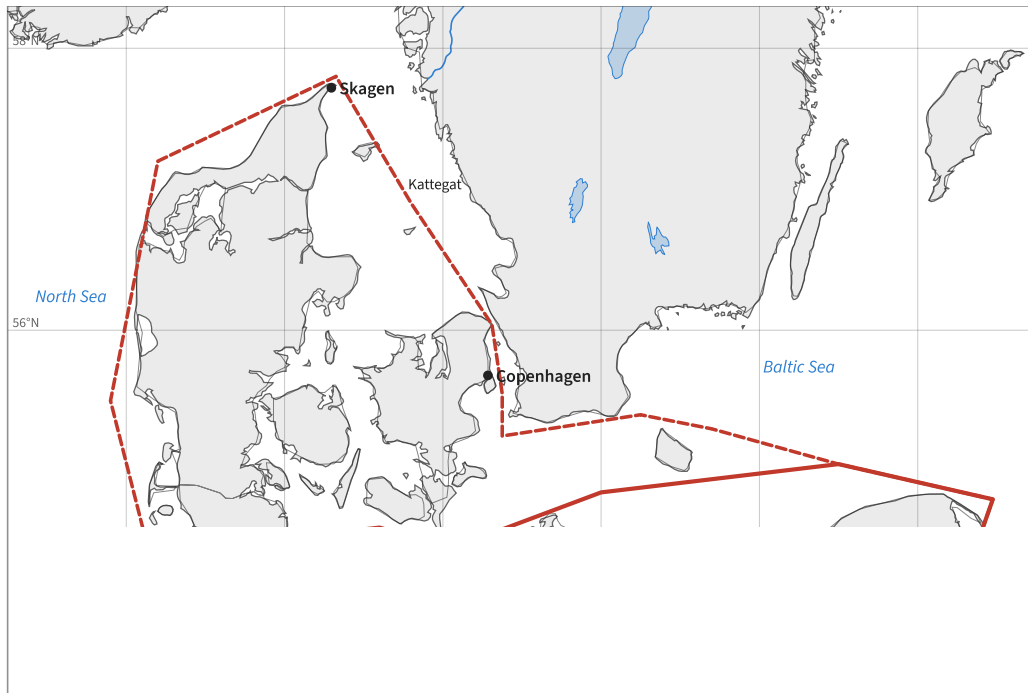
WORKED EXAMPLES

Example 1. A draft says: “Copenhagen lies 1,150 miles from St. Petersburg, so a ship at 15 knots needs about 3 days to cover the distance.” The source actually gives 1,150 km in a straight line. Find and fix the errors.

1. Units: 1,150 km is not 1,150 miles. $1,150 \times 0.621 \approx 715$ miles. The draft overstated the distance by a factor of about 1.6.
2. Kind of distance: 1,150 km is a straight line across land and water. A ship must follow the sea route, which is longer (about 1,300 km from St. Petersburg to the Sound, and Copenhagen is just south of it).
3. Time: $1,300 \text{ km} \div 1.852 \approx 700$ nautical miles. $700 \div 15 \approx 47$ hours, about 2 days, not 3.
4. Corrected sentence: “Copenhagen lies about 1,150 km (715 miles) from St. Petersburg in a straight line; by sea the voyage is about 1,300 km (700 nautical miles), about two days at 15 knots.”

Answer: Two errors: kilometers were written as miles, and a straight-line distance was used for a sea voyage. Corrected: about 1,150 km (715 miles) straight-line; about 1,300 km (700 nautical miles) by sea, about 47 hours at 15 knots.

Example 2. A draft claims: “The Kiel Canal saves every ship 460 km.” Measured along the routes in the figure, a voyage from Brunsbüttel to Gdańsk is about 1,300 km (700 nautical miles) around Denmark and about 740 km (400 nautical miles) through the canal. Find the saving for this voyage in both units and as a percentage, and correct the claim.



Two routes from Brunsbüttel to Gdańsk: around Skagen and through the Kiel Canal.

1. Saving: $1,300 - 740 = 560$ km. In nautical miles: $700 - 400 = 300$ nautical miles. In statute miles: $560 \times 0.621 \approx 348$ miles.
2. Percentage: $560 \div 1,300 \approx 0.43$, so the canal route is about 43% shorter.
3. The 460 km (250 nautical miles) figure is an average over many voyages. Ships starting farther north (for example from Norway) save less; ships starting from the Elbe and bound for the southern Baltic save more.
4. Corrected claim: “The Kiel Canal saves an average of about 460 km (250 nautical miles); for a voyage from the Elbe to Gdańsk the saving is about 560 km, more than two-fifths of the distance.”

Answer: About 560 km (300 nautical miles, 348 miles), about 43% of the distance. The draft confused an average with every case; the corrected claim gives the average and the specific case.

Example 3. A draft claims: “No invading army has ever crossed the Baltic.” Test it. In 1630 King Gustavus Adolphus of Sweden carried an army from the Stockholm area to Peenemünde on the island of Usedom, on the German coast, to enter the Thirty Years’ War. Stockholm (59.33° N, 18.07° E) and Peenemünde (54.14° N, 13.77° E) are how far apart? How long would a fleet averaging 3 knots (5.6 km/h) need, sailing day and night? How should the claim be revised?

1. North-south: $59.33 - 54.14 = 5.19^\circ \times 111 \text{ km} \approx 576 \text{ km}$.
2. East-west: $18.07 - 13.77 = 4.30^\circ$. At the middle latitude (about 56.7° N), $\cos 56.7^\circ \approx 0.549$, so one degree $\approx 61.1 \text{ km}$. $4.30 \times 61.1 \approx 263 \text{ km}$.
3. Distance $\approx \sqrt{(576^2 + 263^2)} \approx \sqrt{(331,776 + 69,169)} \approx \sqrt{400,945} \approx 633 \text{ km}$ (about 393 miles).
4. Time at 5.6 km/h: $633 \div 5.6 \approx 113 \text{ hours} \approx 4.7 \text{ days}$, though sailing fleets often waited days or weeks for a fair wind.
5. The landing is a counterexample: a sea power crossed the Baltic with an army and changed the course of a war in Germany.

Answer: About 633 km (393 miles), about 4.7 days of continuous sailing. The claim is false; a fair revision is: “Crossing the Baltic with an army has required command of the sea, as Sweden had in 1630.”

PRACTICE

1. **EASY** In your own words, what geographic fact did Eyre Crowe place at the start of his 1907 memorandum?
2. **EASY** Name the eight parts of the capstone paper in order.
(Use the map or drawing “The capstone paper plan.” shown earlier in this lesson.)
3. **EASY** Convert: (a) 82 km to miles; (b) 1,300 km to nautical miles (1 nautical mile = 1.852 km).
4. **EASY** What were Crowe’s two hypotheses about German policy, and what did he conclude?
5. **MEDIUM** Rewrite this sentence fairly: “Paranoid Russian rulers have always been obsessed with grabbing warm-water ports.”
6. **MEDIUM** Rewrite with a date: “Sweden recently joined NATO.”
7. **MEDIUM** Label each sentence F (fact), I (interpretation) or P (prediction): (a) “The northern Gulf of Bothnia freezes every winter.” (b) “Kaliningrad is Russia’s most exposed territory.” (c) “Shipping in the Baltic will grow over the next decade.” (d) “Finland joined NATO in April 2023.”
8. **MEDIUM** Scale the 2,500-word paper plan (250, 450, 350, 350, 350, 300, 350, 100) up to a 3,000-word paper. How many words go to each part?
9. **MEDIUM** Why is it a strength, not a weakness, for a paper to include evidence that cuts against its own thesis?

10. **HARD** A draft says: “Because the Danish straits are narrow, Denmark has always been safe from invasion.” Give a counterexample from Danish history and revise the claim.
11. **HARD** Find the determinism in this sentence and rewrite it with proper limits: “The flat North European Plain made the wars between Germany and Russia inevitable.”
12. **CHALLENGE** Write the “weighing” section (300 to 400 words) for your own region. Say which view explains the most, where each view fails, what the region’s own peoples add, and what your judgment is. End with one sentence on the limits of your argument.

COMMON MISTAKES

- Writing a report instead of an argument. Facts are the foundation, but the paper must answer its question and weigh the views.
- Stating the views you disagree with weakly. If a defender of Mackinder would not recognize your summary, rewrite it.
- Letting current events pull the paper off balance. Give dates, describe actions and stated reasons, and let the evidence carry the weight.

Make it a game • Steelman Relay. Write several claims on slips of paper (for example, “Sea power matters more than land power,” “Railways made the Heartland the key to the world,” “Alliances matter more than geography”). Each player draws a slip and has one minute to make the strongest case for it, even if they disagree. The next player must restate the case so well that the first says, “Yes, that is my argument,” and only then give one fair counterexample. Score a point for each accepted restatement and each fair counterexample.

Scripture. “He that is first in his own cause seemeth just; but his neighbour cometh and searcheth him.” (Proverbs 18:17, KJV)

Crowe’s paper seemed convincing until Sanderson searched it, and both papers are wiser read together. Let your own paper be searched by a neighbor before you hand it in, and write it so that it can bear the search.

Practice answers

1. That Britain is an island state on the ocean edge of Europe with a large empire overseas, so its safety and its trade depend on command of the sea, and it has reason to oppose any single power that tries to dominate the Continent.
2. (1) Introduction with question and thesis; (2) the region on the map; (3) Mahan’s view; (4) Mackinder’s view; (5) Spykman’s view; (6) critics and other voices; (7) weighing and judgment; (8) conclusion.
3. (a) $82 \times 0.621 \approx 51$ miles. (b) $1,300 \div 1.852 \approx 702$ nautical miles.
4. Either Germany was deliberately seeking dominance on land and at sea, or its policy was the confused drift of statesmen without a clear aim. He concluded that Britain should respond the same way in either case: keep its navy strong and its friendships firm.
5. Possible answer: “Russian rulers from Peter I onward repeatedly sought ports that were open year-round, such as Libau and Sevastopol, and they gave security and trade as their reasons.”

(Loaded words removed; actions and stated aims described; “always” replaced with specific cases.)

6. “Sweden joined NATO on March 7, 2024.” (Or: “As of 2026, Sweden is a NATO member; it joined in March 2024.”)
7. (a) F; (b) I; (c) P; (d) F.
8. Multiply each by $3,000 \div 2,500 = 1.2$: introduction 300; region 540; Mahan 420; Mackinder 420; Spykman 420; critics and voices 360; weighing 420; conclusion 120. Total 3,000.
9. It shows the writer has looked for the truth rather than only for support, it lets the writer narrow or defend the thesis before a critic attacks it, and it earns the reader’s trust. A thesis that survives honest counterevidence is stronger than one that never faced it.
10. In the winter of 1658 the Swedish king Charles X Gustav marched his army across the frozen Little Belt and Great Belt and threatened Copenhagen, forcing Denmark to make peace at Roskilde and give up its provinces east of the Sound (also acceptable: the British attacks on Copenhagen in 1801 and 1807, or the German occupation of 1940). Revision: “The Danish straits have made Denmark hard to reach, but ice, sea power and air power have each overcome them at times.”
11. The word “inevitable” makes geography the sole cause. Rewrite: “The open North European Plain, with no mountain barrier between Germany and Russia, made invasion in either direction easier and fear on both sides stronger; but each war began with particular decisions by particular governments.”
12. Answers vary. A strong section compares the views directly on the same evidence, gives at least one counterexample to each, uses dated facts and numbers, does not use loaded words, reaches a clear judgment with reasons, and ends with an honest statement of what could change the conclusion.

5.5 PRESENTATION AND FINAL EXAM

OBJECTIVES

- Present the capstone in a 10- to 12-minute talk built around the map set, stating several views fairly and ending with a reasoned judgment and its limits.
- Answer questions from an audience honestly and courteously, conceding what the evidence does not show.
- Review the great ideas of the whole course (Thucydides, Mahan, Mackinder, Spykman, Kennan, the Monroe Doctrine and the air age) with their strengths, critics and abuses, in preparation for the separate final exam.

Warm-up. Pick up any map in the house (an atlas page, a road map, the map in the front of a novel). Set a timer for 60 seconds and explain to someone what the map shows and why it matters, using only one sentence that names two places. Then ask your listener to repeat your sentence back. If they can, you are ready to learn how Churchill did it.

Watch. *Charlotte Mason Picture Study Demonstration* (Simply Charlotte Mason, 8:37). <https://www.youtube.com/watch?v=NNcl4E2ifC8>

Before the project: watch this demonstration of Charlotte Mason picture study to see how to look closely and then narrate, and use the same method for the picture study on the final exam.

Note: Captions were not available to check; preview it first. It is a seminar excerpt about the picture-study method and does not cover Churchill, the Iron Curtain or the Congress of Berlin.

KEY TERMS

map sentence

A single sentence that fixes a geographic idea in the listener's mind by naming real places, as in Churchill's "From Stettin in the Baltic to Trieste in the Adriatic."

signposting

Telling the audience where the talk is going ("First the ground, then three views, then my judgment"), so they can follow without notes.

concession

Openly granting a point to a questioner or a critic when the evidence supports it. A fair concession strengthens the rest of an argument.

Iron Curtain

Churchill's 1946 image for the line dividing the Soviet-controlled states of Central and Eastern Europe from the West, which lasted until 1989–1991.

synthesis

Bringing several ideas together into one judgment that keeps what is true in each and drops what fails.

CORE IDEAS

The story. On March 5, 1946, Winston Churchill, no longer prime minister, stood on the platform of the gymnasium at Westminster College, a small college in Fulton, Missouri. President Harry Truman, from Missouri himself, had traveled with him by train and introduced him. Churchill called his speech “The Sinews of Peace,” and most of it was about cooperation between the English-speaking peoples and the new United Nations. But the sentence the world remembered was a sentence of geography: “From Stettin in the Baltic to Trieste in the Adriatic an iron curtain has descended across the Continent.” He went on to name the capitals behind that line: Warsaw, Berlin, Prague, Vienna, Budapest, Belgrade, Bucharest and Sofia. Many listeners thought him too harsh, and some newspapers said so. But with two port cities and two seas, he had drawn a line on every listener’s mental map, and it stayed there for more than four decades.

The big idea. Your presentation is your paper made visible. It should do three things that Churchill’s sentence did. First, it should be **anchored in places**: name real cities, rivers and straits, and point to them on your maps. Second, it should have **one clear question and one clear judgment**, so that a listener can repeat them afterward. Third, it should be **fair**: state each of the three views as its defender would, give the critics their due, and say plainly where your evidence runs out. A good talk does not try to say everything that is in the paper. It chooses the few facts and figures that carry the argument.

How to present. Plan a talk of 10 to 12 minutes followed by about 5 minutes of questions. At about 130 words a minute, 12 minutes is roughly 1,500 words, so you will speak from notes, not read your paper. Open with your own map sentence and your guiding question. Spend two minutes on the ground (Sheets 1 to 3), about a minute and a half on each of the three views with their overlays laid on your physical map, a minute and a half on the critics and the voices of the region, and two minutes on your judgment and its limits. Close by repeating your question and your answer in one sentence. Round your numbers for the ear: say “about 870 kilometers, some 540 miles,” not “866.3.” When questions come, listen to the whole question, restate it, answer briefly, and make a **concession** where the questioner is right. “I don’t know, but here is how I would find out” is an honest and respectable answer.

On the map. Display your complete map set: (1) locator and boundary, (2) physical, (3) resources and routes, (4) your historic map study, (5) the three overlays, and (6) the region as of 2026. Present the historic map you chose in Lesson 5.1 as your own picture study: who made it, when, for whom, what it got right, what it got wrong, and what it shows about how people of that time saw your region. Lay each overlay on the physical map as you speak about its thinker, so your audience sees the lens change while the ground stays the same.

Preparing for the final exam. The final exam is a separate document. It covers the whole course. Review it unit by unit. Unit 1: geography sets costs and opportunities while people choose; Thucydides on Athens and Sparta; determinism and its critics; how projections and centers shape maps; and how to weigh an idea by evidence, prediction and counterexample. Unit 2: Mahan’s six elements of sea power, his influence on Theodore Roosevelt and the Great White Fleet, and the coaling stations and canals of his argument. Unit 3: Mackinder’s

pivot area of 1904, his 1919 dictum and its revision in 1943, the Trans-Siberian Railway, and the abuse of geopolitics by Haushofer's school and the Nazi regime. Unit 4: Spykman's Rimland, Kennan's containment, the Monroe Doctrine as geography, and the polar maps of the air age. For each thinker, be ready to state the idea, give its evidence, name its critics, and apply it to a map.

Technology overcoming geography. For most of its length Churchill's line followed no great mountain range or river. Much of it crossed the open North European Plain and the hills of Central Europe, held in place by armies, barbed wire, ideology and fear. It fell with almost no war at all: the Berlin Wall opened on November 9, 1989, Germany was reunited on October 3, 1990, and Estonia, Latvia and Lithuania restored their independence in 1990 and 1991. Machines from the railway to the satellite changed what distance meant to every thinker in this course, yet in the end it was human choices that drew and erased the line. Daniel saw kingdoms rise and fall in a single vision, and he gave the reason: God "removeth kings, and setteth up kings" (Daniel 2:21). So study the ground carefully, and hold your conclusions humbly.



Churchill's map sentence of March 5, 1946: "From Stettin in the Baltic to Trieste in the Adriatic." The straight line is a simplification; the real dividing line wandered across the map.

A 12-minute talk and 5 minutes of questions

0:00–1:00	Opening: map sentence and guiding question
1:00–3:00	The ground: Sheets 1 to 3 and the historic map
3:00–7:30	Three views: Mahan, Mackinder, Spykman (overlays)
7:30–9:00	Critics and the region's own voices
9:00–11:00	Judgment and its limits
11:00–12:00	Close: question and answer in one sentence
12:00–17:00	Questions: restate, answer briefly, concede fairly

A plan for a 12-minute capstone talk and 5 minutes of questions.

PICTURE STUDY



The Congress of Berlin, Anton von Werner, 1881 · Oil on canvas · Berlin City Hall (Rotes Rathaus), Berlin

In June and July 1878 the great powers of Europe met in Berlin to redraw the map of the Balkans after a war between Russia and the Ottoman Empire. Russia had won large gains near the Black Sea and the Turkish Straits, and Britain and Austria-Hungary feared them. The German chancellor, Otto von Bismarck, played host and called himself an “honest broker.” The court painter Anton von Werner recorded the closing session of July 13, 1878, in this large canvas, finished in 1881.

This is a picture of geography being argued in a room, with maps on the table and every delegate presenting his country's view. The main picture study for this lesson, though, is your own: present the historic map of your region that you chose in Lesson 5.1. Use this painting as a reminder that maps have always been argued over by people who see the same ground differently.

Look closely

- Find the host, Otto von Bismarck, at the center. How has the painter made him the focus of the picture?
- Look at how the other delegates stand and sit. Who seems to be speaking, and who is listening?
- Find the papers on the table. What kinds of documents would be needed to redraw borders?
- Look at the room itself. What does its grandeur say about how the powers saw their own work?

Talk about it

1. Which countries most affected by the decisions in this room were not given a full voice at the table? What does that teach a capstone writer about “the voices the lenses leave out”?
2. Compare this painting with the 1877 cartoon map of Russia as an octopus from Lesson 1.1. How do the two pictures present the same crisis differently?
3. When you present your historic map, what four facts about it will you tell your audience first?

PROJECT: THE CAPSTONE PRESENTATION AND THE FINISHED MAP SET

This is the last project of the course. You will finish the map set, prepare and rehearse a 10- to 12-minute presentation, deliver it to an audience, answer their questions, and hand in the paper and map set together.

You will need

- Your paper and Sheets 1 to 5 of the map set
- Paper for Sheet 6 and for Sheet 4 (a printed or traced copy of your chosen historic map), colored pencils and a fine pen
- Note cards, a timer, and a pointer (a ruler or a dowel will do)
- An audience of at least three people: family, classmates, a teacher, or friends invited for the evening

Steps

1. Finish Sheet 4: mount a printed or traced copy of your historic map and label it with maker, date, source and four short notes on what it got right, what it got wrong, and what it reveals.

2. Finish Sheet 6, the region as of 2026: borders, capitals, major cities, and alliance or treaty memberships stated with dates. Keep it neutral: no arrows of threat, no loaded labels.
3. Write your map sentence: one sentence that names two or more real places and states your region's central geographic fact.
4. Plan the talk using the timeline in this lesson. Put each section on one note card with no more than five words per line.
5. Rehearse twice with a timer. Cut anything that pushes you past 12 minutes. Round your numbers for the ear.
6. Prepare for questions: write the three hardest questions a fair critic could ask, and a short honest answer to each.
7. Deliver the presentation. Point to the map as you name each place. Lay each overlay on the physical map as you speak about its thinker.
8. Take questions for about 5 minutes. Restate each question, answer briefly, and concede where the questioner is right.
9. Afterward, write a short reflection (150 to 200 words): what question surprised you, what you would change in your paper, and which of the three thinkers you now find most useful for your region and why.

Tips

- Face the audience, not the map. Glance at the map to point, then turn back to your listeners.
- Say your guiding question at the beginning and again at the end, in the same words.
- If you finish early, stop. A clear 10-minute talk is better than a padded 12-minute one.

Check your work

- My map set has all six sheets, at one scale, labeled and dated.
- My talk opened with a map sentence and my guiding question and ended with my judgment and its limits.
- I stated all three views fairly and gave the critics and the region's peoples a voice.
- I stayed within 12 minutes and answered questions honestly, making at least one fair concession if it was deserved.
- I handed in my paper, map set and reflection together.

MAP NOTEBOOK

1. Write Churchill's Iron Curtain sentence from memory, then draw the line from Stettin to Trieste on a quick sketch map and mark the eight capitals he named.
2. Write your own map sentence for your region three different ways, and circle the best one.
3. Make a one-page review chart for the final exam with five columns (Thucydides, Mahan, Mackinder, Spykman, Kennan) and four rows (main idea, key date and work, evidence, critics).

From history. In 1990, as the Iron Curtain he had named was coming down, eight sections of the Berlin Wall were set up on the campus of Westminster College in Fulton, Missouri, as a sculpture called *Breakthrough*, made by the artist Edwina Sandys, Churchill's granddaughter. Figures of a man and a woman were cut through the concrete as if people were passing through the wall. Former President Ronald Reagan spoke at its dedication on November 9, 1990, one year to the day after the wall was opened. The college that heard the speech now keeps a piece of the wall it described.

WORKED EXAMPLES

Example 1. How far apart are Stettin (Szczecin, 53.43° N, 14.55° E) and Trieste (45.65° N, 13.78° E)? Round the answer for a spoken presentation.

(Use the map or drawing "Stettin to Trieste." shown earlier in this lesson.)

1. North-south: $53.43 - 45.65 = 7.78^\circ$. $7.78 \times 111 \approx 864$ km.
2. East-west: $14.55 - 13.78 = 0.77^\circ$. At the middle latitude (about 49.5° N), $\cos 49.5^\circ \approx 0.649$, so one degree $\approx 111.32 \times 0.649 \approx 72.3$ km. $0.77 \times 72.3 \approx 56$ km.
3. Distance $\approx \sqrt{(864^2 + 56^2)} \approx \sqrt{(746,496 + 3,136)} \approx \sqrt{749,632} \approx 866$ km.
4. In miles: $866 \times 0.621 \approx 538$ miles.
5. For the ear: "about 870 kilometers, some 540 miles," nearly due north to south.

Answer: About 866 km (538 miles), almost due north-south. In a talk, say "about 870 kilometers, some 540 miles."

Example 2. Review of Unit 2. Honolulu lies about 2,090 nautical miles (about 3,870 km) from San Francisco. How long would a steam warship of 1900 take at 10 knots? Use your answer to explain in two sentences why Mahan wanted Hawaii in American hands.

1. Time = $2,090 \div 10 = 209$ hours.
2. $209 \div 24 \approx 8.7$ days.
3. Conversion check: $2,090 \times 1.852 \approx 3,871$ km; in statute miles, $2,090 \times 1.151 \approx 2,405$ miles.

Answer: About 209 hours, or 8.7 days. A coal-burning fleet could not cross the Pacific without refueling, and Hawaii was the only group of islands in the whole stretch of ocean west of California; whoever held it held the coaling station that either protected or threatened the American coast.

Example 3. Review of Units 2 and 3. In 1904–1905 Russia sent its Baltic ships to the Far East by sea: they left Libau on October 15, 1904, and were destroyed at Tsushima on May 27, 1905, 224 days later. The Trans-Siberian Railway from Moscow to Vladivostok is about 9,289 km (5,772 miles) long. How long would a troop train averaging 25 km/h (including stops) need? Compare the two, and say what Mahan and Mackinder would each draw from the comparison.

1. Train: $9,289 \div 25 \approx 372$ hours. $372 \div 24 \approx 15.5$ days.
2. Fleet: 224 days.
3. Ratio: $224 \div 15.5 \approx 14$. The railway moved men about fourteen times faster than the fleet's voyage. (In 1904 the line was single-track and not yet complete around Lake Baikal, so real trains were slower and could carry only limited numbers.)
4. Mahan: a fleet divided among closed seas, far from its own bases, arrives late and worn; command of the sea routes decides. Mackinder: the railway lets land power cross a continent in days, so the interior can move men faster than sea power can sail around it.

Answer: About 15.5 days by rail against 224 days by sea, about 14 times faster. Mahan would stress the weakness of a divided navy far from bases; Mackinder would stress the new speed of land power across Eurasia. Both lenses show something true; neither alone explains Russia's defeat.

PRACTICE

1. **EASY** Complete Churchill's sentence of March 5, 1946: "From _____ in the Baltic to _____ in the Adriatic an iron curtain has descended across the Continent." Where was the speech given?
2. **EASY** Name at least six of the eight capitals Churchill said lay behind the Iron Curtain. (*Use the map or drawing "The capitals named at Fulton." shown earlier in this lesson.*)
3. **EASY** A speaker talks at about 130 words a minute. How many words fit in a 12-minute talk? In a 10-minute talk?
4. **EASY** Match each thinker to his work and year: Mahan, Mackinder (two), Spykman (two), Kennan.
5. **MEDIUM** Kennan sent the Long Telegram from Moscow on February 22, 1946. How many days later did Churchill speak at Fulton (March 5, 1946)? Why is it fair to say both men were reading the same map?
6. **MEDIUM** Your base map is at 1:5,000,000. You enlarge it 2 times for a presentation poster. What is the new scale, and how long does a 23 cm line become?
7. **MEDIUM** Review of Unit 4. Washington and Moscow are about 7,820 km (4,860 miles) apart along a great circle that passes far to the north. How long would a jet at 900 km/h need? Why did polar maps of the 1940s change how Americans saw this distance?
8. **MEDIUM** Review of Unit 4. In what sense was the Monroe Doctrine (1823) a geographic idea, and what made it workable in its early decades?

9. **MEDIUM** Review of Unit 3. In two or three sentences, explain how geopolitics was abused under the Nazi regime and what warning a capstone writer should take from it.
10. **HARD** During your question time, someone asks: “Isn’t your whole region really just about oil (or trade, or religion), not geography?” Write a fair 3- to 4-sentence answer.
11. **HARD** Review of Unit 1. Explain how the war between Athens and Sparta, as Thucydides described it, foreshadows the debate between Mahan and Mackinder.
12. **CHALLENGE** Final-exam practice essay (45 minutes): “Geography is destiny.” Weigh this claim using your capstone region, at least two of the course’s thinkers, at least one critic, and at least three numbers with units.

COMMON MISTAKES

- Reading the paper aloud. A talk should be spoken from short notes, with the maps carrying much of the weight.
- Arguing with a questioner. Restate the question, answer it honestly, and concede what the evidence supports; your credibility grows when you do.
- Cramming for the final by memorizing quotations without being able to apply them. For each thinker, practice using his idea on a map you have not seen before.

Make it a game · Sixty-Second Map Talk. Each player draws a card naming a place from the course (the Sound, the Bosphorus, the Panama Canal, the Trans-Siberian Railway, Hawaii, the North European Plain, the Strait of Malacca, the Arctic). Using an atlas, the player has 60 seconds to give a map sentence about it, name which thinker would care most and why, and give one critic’s answer. Listeners award up to 3 points: one for an accurate map sentence, one for the right thinker, one for a fair critic. The final round is played with each player’s own capstone region.

Scripture. “And he changeth the times and the seasons: he removeth kings, and setteth up kings: he giveth wisdom unto the wise, and knowledge to them that know understanding:” (Daniel 2:21, KJV)

This semester you have studied empires of the sea and empires of the land, curtains that fell and straits that still stand. Daniel reminds us who governs the rise and fall of kingdoms, and who gives the wisdom to understand them. Present your work with confidence in the evidence and with humility before the Lord of history.

Practice answers

1. Stettin; Trieste. At Westminster College in Fulton, Missouri.
2. Warsaw, Berlin, Prague, Vienna, Budapest, Belgrade, Bucharest and Sofia.
3. $12 \times 130 = 1,560$ words; $10 \times 130 = 1,300$ words.
4. Mahan: *The Influence of Sea Power upon History, 1660–1783* (1890). Mackinder: “The Geographical Pivot of History” (1904) and *Democratic Ideals and Reality* (1919). Spykman: *America’s Strategy in World Politics* (1942) and *The Geography of the Peace* (1944). Kennan: the “Long Telegram” (1946).

5. February 1946 had 28 days: 6 days to February 28, plus 5 to March 5 = 11 days. Both saw the Soviet Union consolidating control over the lands its armies held in Central and Eastern Europe and argued that the West should respond to that geographic fact, Kennan by patient containment and Churchill by Anglo-American unity.
6. $1:2,500,000$ (1 cm = 25 km). The 23 cm line becomes 46 cm.
7. $7,820 \div 900 \approx 8.7$ hours. On a Mercator map centered on the Atlantic, the two capitals look far apart across an ocean; on a polar map the shortest route runs toward the Arctic, and the two powers appear as neighbors across the top of the world, which made air power and defense of the north feel urgent.
8. It treated the Western Hemisphere as a separate sphere, set apart from Europe by the Atlantic and Pacific oceans, in which European powers should not found new colonies or interfere. In its early decades the United States had a small navy, so it worked largely because of the oceans' width and because Britain, whose navy commanded the Atlantic, also wished to keep other European powers out of the Americas.
9. Karl Haushofer's school and Nazi propaganda used maps and the idea of "living space" to present conquest as a natural necessity, and the regime used that language to justify a war of conquest in the East, the enslavement and starvation of millions, and the murder of the Jews of Europe. The warning: geography can help explain choices but never excuses them, and an analysis whose conclusion comes before its evidence can be bent to serve great evil.
10. Answers vary. A strong answer concedes what is true ("Oil is a major reason outside powers care about this region"), then shows how geography shapes even that factor (where the oil lies, which straits it must pass, how far it is from markets), adds that history, faith and the choices of governments also matter, and closes by restating the paper's judgment without overclaiming.
11. Athens was a sea power with a great fleet, a walled port and an empire of islands and coastal cities; Sparta was a land power with the strongest army in Greece. Each struggled to strike the other's strength: Sparta ravaged Attica while Athens lived by its fleet and imports. The same question, whether command of the sea or mastery of the land decides a long war, runs from Thucydides through Mahan and Mackinder to Spykman, who argued that the coastal lands where the two meet are the real prize.
12. Answers vary. A strong essay defines the claim, grants what geography truly decides in the region (barriers, corridors, distances, seasons, resources), applies two thinkers fairly with evidence, brings at least one counterexample where human choice, ideas or technology changed the outcome, uses dated facts and numbers in both unit systems, avoids determinism and loaded words, and ends with a balanced judgment such as: geography sets the stage and the costs, but nations and their leaders still choose, and answer for their choices.

UNIT 5 TEST

Answer each question. Show your work for every calculation, give distances in both metric and U.S. units where asked, and use complete sentences for explanations. Current facts must be stated with dates. The test is worth 100 points.

1. (5 pts) Define a formal region and a functional region, and give one example of each from the Baltic.
2. (5 pts) On a map at 1:5,000,000, two ports are 9.2 cm apart. How far apart are they in kilometers and miles?
3. (5 pts) What was the Inquiry, and what did its geographers learn about the maps they gathered?
4. (5 pts) The Sound is about 4 km wide at Helsingør. Give its width in miles, name the castle that guards it, and give the years during which Denmark collected the Sound Dues.
5. (6 pts) Roughly 30,000 ships a year passed through the Kiel Canal in the 2010s. Find the average number per day and per hour, and explain why this makes the canal a choke point.
6. (6 pts) Berlin stands about 35 m above sea level and Warsaw about 100 m, about 520 km apart. Find the average rise in meters per kilometer and explain what it shows about the North European Plain.
7. (6 pts) Explain why Swedish iron ore from Kiruna was shipped through Luleå in summer and through Narvik in winter, and why this mattered in 1940.
8. (6 pts) State how Mahan would view the Baltic, and support his view with the voyage of the Russian squadron of 1904–1905.
9. (6 pts) Write Mackinder's 1919 dictum and explain how the Baltic shore fits it. Give one critic's answer.
10. (6 pts) Write Spykman's dictum and state, neutrally and with dates, the alliance facts of the Baltic shore as of 2026.
11. (6 pts) Helsinki and Tallinn are about 82 km apart. Find the crossing time by ferry at 50 km/h and by jet at 900 km/h, and say what this suggests about narrow seas in the air age.
12. (6 pts) Label each sentence fact, interpretation or prediction, and rewrite the loaded one fairly: (a) "The Kiel Canal opened in 1895." (b) "Peter the Great's reckless obsession with the sea ruined Russia." (c) "Baltic shipping will double by 2040."
13. (8 pts) A voyage from Brunsbüttel to Gdańsk is about 1,300 km around Denmark and about 740 km through the Kiel Canal. Find the saving in kilometers, statute miles and nautical miles, and as a percentage. Then explain why a draft that says "the canal saves every ship 460 km" must be corrected.
14. (8 pts) Describe how Eyre Crowe's memorandum of January 1, 1907, and Lord Sanderson's reply model good analytical writing. Name two habits your paper should copy.

15. (8 pts) Stettin (53.43° N, 14.55° E) and Trieste (45.65° N, 13.78° E). Find the distance between them in kilometers and miles (use 111 km per degree of latitude and $\cos 49.5^\circ \approx 0.649$), and write a sentence suitable for a spoken presentation.
16. (8 pts) In one well-organized paragraph (8 to 10 sentences), weigh the claim “Geography is destiny” using the Baltic. Use at least two thinkers, one counterexample and two numbers with units.

UNIT PROJECT: THE CAPSTONE: A GEOGRAPHIC ANALYSIS OF ONE REGION, WITH MAP SET

Hand in your finished capstone: a paper of 2,500 to 3,500 words that asks one geographic question about your chosen region, sets out its physical facts, presents the views of Mahan, Mackinder and Spykman in their strongest form, gives the critics and the region’s own peoples a fair hearing, and reaches a reasoned judgment with its limits stated. Attach the six-sheet map set, drawn at one scale: (1) locator and boundary, (2) physical, (3) resources and routes, (4) historic map study, (5) three tracing-paper overlays, and (6) the region as of 2026.

Include your source log, your evidence table, the notes for your 10- to 12-minute presentation, and your short written reflection on the questions you were asked.

- **Accuracy:** Places, distances, dates, quotations and numbers are correct, given in metric and U.S. units, sourced, and shown accurately on maps drawn at one scale with scale bar, north arrow and graticule.
- **Fairness:** Each of the three views is stated at its strongest, critics and the region’s own peoples are heard, current affairs are dated and neutral, and loaded words are avoided.
- **Reasoning:** The paper answers its guiding question with a clear thesis, separates facts from interpretations and predictions, uses counterexamples and calculations, and reaches a judgment that admits its limits.
- **Craft and presentation:** The paper is well organized with numbered figures and citations; the map set is neat and readable; the talk keeps to time, opens with a map sentence, and answers questions honestly.

Answer key

1. A formal region shares a mappable feature (for example the Vistula drainage basin, or the lands where Finnish is spoken). A functional region is tied together by movement to a center or route (for example the hinterland of the port of Gdańsk, or the lands served by the St. Petersburg to Moscow railway).
2. $1 \text{ cm} = 50 \text{ km}$, so $9.2 \times 50 = 460 \text{ km}$. $460 \times 0.621 \approx 286 \text{ miles}$.
3. A group of American scholars formed in 1917, with Isaiah Bowman of the American Geographical Society organizing its work, to prepare for the peace after the First World War. They learned that maps of the same lands disagreed and that many had been drawn to prove a point, so every map had to be judged by its maker, date and purpose.
4. About 2.5 miles. Kronborg Castle (built 1574–1585). The Sound Dues were collected from 1429 to 1857.

5. $30,000 \div 365 \approx 82$ a day; $82 \div 24 \approx 3.4$ an hour. So much traffic depends on one narrow passage that a single accident, closure or attack would delay dozens of ships within hours and force others on a longer route around Denmark.
6. Rise = 65 m; $65 \div 520 \approx 0.125$ m per km (about 8 inches per mile). The plain is almost perfectly level, with no mountain barrier between Germany and Poland, so armies, railways and trade can cross it easily in either direction.
7. Luleå lies on the Gulf of Bothnia, which freezes every winter, so in winter the ore went by rail to Narvik on the ice-free Norwegian coast. Because German industry depended on this ore, Narvik and the Norwegian coastal route became objectives for both Germany and Britain in 1940.
8. Mahan would see the Baltic as a closed sea whose exits pass Denmark, so a Baltic fleet has a coast but not command of the sea. In 1904–1905 Russia's Baltic ships needed 224 days and about 18,000 nautical miles, with long stops for coal, to reach the Far East, and were destroyed at Tsushima on May 27–28, 1905. A navy divided among closed seas, far from its bases, arrives late and worn.
9. "Who rules East Europe commands the Heartland; who rules the Heartland commands the World-Island; who rules the World-Island commands the World." The Baltic shore is the northern flank of the East European plain between Germany and Russia, the corridor Mackinder thought decisive. Critics answer that the Heartland never commanded the World-Island, and that the fate of East Europe in 1939–40 was decided by political choices such as the August 1939 pact between two dictatorships, not by the plain alone.
10. "Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world." As of 2026, every state on the Baltic shore except Russia is a member of NATO; Finland joined in April 2023 and Sweden in March 2024. Russia holds St. Petersburg and the exclave of Kaliningrad.
11. Ferry: $82 \div 50 \approx 1.64$ h ≈ 1 h 38 min. Jet: $82 \div 900 \approx 0.091$ h ≈ 5.5 minutes, about 18 times faster. In the air age a narrow gulf no longer separates its shores; what matters more is who holds both coasts and with whom they are allied.
12. (a) fact; (b) interpretation, loaded; (c) prediction. Fair rewrite of (b): "Peter I spent great sums and many thousands of lives to build St. Petersburg and a Baltic fleet; historians disagree whether the gains in trade and power were worth the cost."
13. Saving = 560 km $\approx$ 348 miles $\approx$ 302 nautical miles ($560 \div 1.852$). $560 \div 1,300 \approx 43\%$. The 460 km (250 nautical miles) figure is an average over many voyages; the actual saving depends on where a ship starts and ends, so the draft should give the average as an average and the specific case separately.
14. Crowe began from geographic facts (Britain as an island state on the ocean flank of Europe, dependent on command of the sea), set out two competing explanations of German policy, and showed that his recommended response held under either one. Sanderson's reply tested Crowe's judgment and argued that he read too much design into German actions. Habits to copy: state assumptions and begin from facts; weigh competing hypotheses and ask what follows under each; expose the paper to a fair critic before finishing; admit the limits of the argument.
15. North-south: $7.78^\circ \times 111 \approx 864$ km. East-west: $0.77^\circ \times 111.32 \times 0.649 \approx 56$ km. Distance $\approx \sqrt{864^2 + 56^2} \approx 866$ km $\approx$ 538 miles. Spoken: "Churchill's line ran about 870 kilometers, some 540 miles, almost due south from the Baltic to the Adriatic."
16. Answers vary. A strong paragraph grants what geography decides in the Baltic (straits about 4 km wide at the Sound, ice in the northern gulfs, the open plain rising only about 65 m from Berlin to Warsaw), applies at least two thinkers fairly, and offers a counterexample where choices, ideas or technology changed the outcome (for example the 1658 march across the

frozen Belts, the August 1939 pact, Finland's resistance in 1939-40, the Kiel Canal of 1895, or the peaceful fall of the Iron Curtain in 1989-91). It ends with a balanced judgment: geography sets the stage and the costs, but people choose.

MIDTERM EXAM

Units 1-3 · 100 minutes

You have 100 minutes. A calculator is allowed; no notes, books or maps. There are no figures: every map question is answered in words. For every calculation, write the setup, substitute with units, and give the answer with its unit; when a distance or area is asked for, give it in both metric and U.S. units (km and miles, km² and sq mi) unless the problem says otherwise. Use 1 km = 0.621 mile, 1 nautical mile (nm) = 1.852 km = 1.151 miles, 1 knot = 1 nm per hour, and 1° of latitude ≈ 111 km (69 miles). Points are earned for each part as shown; correct reasoning earns partial credit even if a final number slips, and a bare answer without work may not earn full credit. Short answers need only a sentence or two. The two essays (Problems 24 and 25) are graded on a fair statement of each view, accurate evidence, honest treatment of counterexamples and a reasoned judgment. The exam has 25 problems worth a total of 100 points.

1. (4 pts) (a) Who coined the word *geopolitics*, in what year, and from what Greek roots? (1 pt)
(b) Label each item as a **geographic fact** (F) or a **human choice** (C): (i) the Strait of Dover is about 33 km (21 miles) wide; (ii) in 1812 the Russian commanders fell back to trade space for time; (iii) Tsar Alexander I refused to negotiate with Napoleon in Moscow; (iv) Moscow lies about 870 km (540 miles) in a straight line from the Niemen; (v) in September 1066 the English fleet and levies were sent home when their supplies ran out. (2 pts)
(c) Why did the picture of the state as a living organism later prove dangerous? (1 pt)
2. (3 pts) Napoleon entered Moscow on September 14, 1812, and left on October 19. (a) How many days did he stay? (b) Suppose the retreating army covered the 870 km (540 miles) back to the Niemen at an average of 15 km a day in a straight line. How many days would that take, and what is 15 km a day in miles? (c) Name two human choices that, together with distance and winter, destroyed his army.
3. (4 pts) Short identification (1 pt each).
(a) Complete Thucydides' explanation of the war's cause (1.23, Crawley's translation): "The growth of the power of Athens ..."
(b) What did the Long Walls join, about how far apart were the two ends, and why did it matter in a siege?
(c) Who was Archidamus, and what did he warn the Spartans in 431 BC?
(d) According to Thucydides (2.65), could Pericles' plan have won, and what above all lost the war for Athens?
4. (4 pts) Pericles counted 300 triremes, each rowed by about 170 oarsmen.
(a) How many rowers would the whole fleet need? (1 pt)
(b) For illustration, suppose each rower is paid 1 drachma a day, and a squadron of 100 triremes stays at sea for 120 days. What is the cost in drachmas and in talents (1 talent = 6,000 drachmas)? What does this show about sea power? (1 pt)
(c) The Hellespont is about 61 km (38 miles) long and about 1.2 km (three-quarters of a

- mile) wide at its narrowest. Explain why it was the weak point of Athenian power, and how Lysander used the trireme's own weakness to win in 405 BC. (2 pts)
5. (4 pts) (a) For each thinker, give the work or phrase the course connected with him or her, and label the position D (determinist), P (possibilist) or M (middle view): Montesquieu; Ellen Churchill Semple; Ellsworth Huntington; Paul Vidal de la Blache; Lucien Febvre; Griffith Taylor. (3 pts)
(b) Hippocrates' school, Aristotle and Ibn Khaldun each praised a "best" climate. What pattern in their choices should make a careful reader suspicious? (1 pt)
6. (4 pts) Pyongyang is at 39.03° N, 125.75° E; Seoul at 37.57° N, 126.98° E.
(a) Estimate the straight-line distance, using 111.2 km per degree of latitude and $111.3 \times \cos(38.3^\circ)$ km per degree of longitude (38.3° is the middle latitude). Give km and miles. (2 pts)
(b) Explain why the two Koreas are a counterexample to strict climatic determinism, and restate the determinist claim in a *probabilist* form that survives. (2 pts)
7. (4 pts) On a Mercator map, lengths at latitude ϕ are enlarged by $1 \div \cos \phi$ and areas by the square of that.
(a) Find the length and area factors at 30° and at 60°. (2 pts)
(b) Two regions each truly cover 500,000 km² (193,000 sq mi); one is centered at 30° N and one at 60° N. How large does each appear on a Mercator map, and how many times larger does the northern one look? (1 pt)
(c) What does Mercator's projection keep, and for whom was it made in 1569? (1 pt)
8. (3 pts) (a) What did each of these maps put at its center or heart: the Hereford Mappa Mundi (about 1300), the Peutinger Table, and Matteo Ricci's world map of 1602? (1½ pts)
(b) The Peutinger Table squeezes the world from north to south so that the Mediterranean becomes a thin ribbon. Explain why this is not a mistake. (1½ pts)
9. (4 pts) (a) Name, in order, the five tests this course uses to weigh any geopolitical idea, with a phrase explaining each. (2 pts)
(b) In 1940 French planners judged the Ardennes too difficult for a fast armored attack. Give two pieces of real evidence behind that judgment and two hidden assumptions that failed. (2 pts)
10. (3 pts) Polybius reports that Hannibal had about 38,000 infantry and 8,000 cavalry at the Rhône in 218 BC, and about 20,000 infantry and 6,000 cavalry when he came down into Italy. (a) Find the percentage lost by the infantry, by the cavalry and by the whole army. (2 pts) (b) What does this do to the claim "mountains stop armies," and what revised claim survives? (1 pt)
11. (4 pts) (a) Who invited Mahan to lecture, at what institution, in what year, and what book grew from the lectures (title and year)? (1 pt)
(b) Reading Mommsen in Lima, Mahan wondered what would have happened if Hannibal had come to Italy by sea. The sea route from Cartagena to central Italy is roughly 700 nm. At 4 knots, how long would it take? Give the distance in km and miles, and compare the voyage with Hannibal's march of about five months (150 days). Why did he not go by sea? (2 pts)
(c) What did Mahan judge about commerce raiding (*guerre de course*), and why? (1 pt)

12. (4 pts) (a) List Mahan's six elements of sea power in his order, and mark each G (largely given by geography) or H (a matter of people and their choices). (3 pts)
(b) Mahan used "extent of territory" and "number of population" in special senses. What did he mean by each? (1 pt)
13. (4 pts) (a) France's Atlantic fleet lay at Brest and its Mediterranean fleet at Toulon, about 1,000 km (620 miles) apart overland but about 1,650 nm apart by sea around Spain. Give the sea route in km and miles. How many days would a fleet averaging 6 knots need? (2 pts)
(b) Distance to the horizon from a height h meters is about $3.57\sqrt{h}$ km. How far can a lookout see from a cliff 100 m (328 ft) high, in km and miles, and could he see across the Strait of Gibraltar, about 14 km (8.7 miles) wide? (1 pt)
(c) Which of Mahan's elements do (a) and (b) illustrate, and what was his point? (1 pt)
14. (4 pts) The Great White Fleet steamed about 43,000 nm between December 16, 1907, and February 22, 1909.
(a) Convert 43,000 nm to km and miles. About how many times the earth's equator (about 40,075 km, or 24,900 miles) is that? (1 pt)
(b) For illustration, suppose the whole fleet burned 1,200 tons of coal per day under way and cruised at 10 knots. How many days was it under way, and how much coal did it burn? How many loads is that for colliers carrying 5,000 tons each? (2 pts)
(c) Why was coal the fleet's greatest weakness? (1 pt)
15. (3 pts) Map reasoning in words. Tirpitz built the concentrated battle fleet Mahan recommended, yet the German High Seas Fleet spent most of the First World War in harbor. Using Mahan's own first element, explain why. Then explain how Japan's use of Mahan at Tsushima in 1905 differed.
16. (4 pts) (a) In 1898 USS *Oregon* steamed about 22,500 km (14,000 miles) around South America in 66 days. Find her average distance per day in km and miles and her average speed in knots. (1 pt)
(b) The Panama Canal's locks lift ships about 26 m (85 ft) to Gatún Lake and lower them again on the far side. What is the total vertical change for one transit, in meters and feet? (1 pt)
(c) The lock chambers are 33.5 m (110 ft) wide; the *Iowa*-class battleships were 33.0 m (108 ft 2 in) wide. If centered, how much room was there on each side, in meters and inches? (1 pt)
(d) How did the canal apply Mahan's principle of concentration? (1 pt)
17. (4 pts) A coal-burning cruiser of 1900 has a range of 3,500 nm, and its captain will never plan a leg longer than 80 percent of that range. It must go from San Francisco to Manila. Legs available: San Francisco-Honolulu 2,080 nm; Honolulu-Guam direct 3,310 nm, or by Midway and Wake 1,140, 1,030 and 1,310 nm; Guam-Manila 1,380 nm.
(a) What is the longest leg allowed? Which route must the ship take, and why? (2 pts)
(b) Find the total length of that route in nm, km and miles. (1 pt)
(c) What warning did Mahan add about such bases, and how did December 1941 bear it out? (1 pt)
18. (3 pts) St. John's, Newfoundland, is about 1,730 nm from Londonderry, Northern Ireland. Suppose (for illustration) patrol aircraft could cover 700 nm out from each

- end. (a) How wide was the mid-ocean gap without air cover, in nm, km and miles, and how long did a 9-knot convoy take to cross it? (2 pts) (b) What closed the gap in 1943, and which of Mahan's judgments does the Battle of the Atlantic call into question? (1 pt)
19. (4 pts) (a) Place each in Mackinder's 1904 zones (pivot area, inner or marginal crescent, outer or insular crescent): Britain; Germany; the basin of the Ob and Yenisei; India; Japan; China; the United States; Turkey. (2 pts)
 (b) Give two physical facts Mackinder used to explain why sea power could not reach the pivot area. (1 pt)
 (c) What was the "Columbian epoch," how long did it last by his dating, and what kind of world did he say followed it? (1 pt)
20. (4 pts) (a) Write Mackinder's 1919 dictum exactly. (2 pts)
 (b) What treaty, signed on what date, gave Mackinder his example of the first link, and what undid it? (1 pt)
 (c) Define the World-Island and give Mackinder's estimates of its share of the globe and of the human race. (1 pt)
21. (4 pts) A teaching model (assumed numbers): a single-track railway runs 12 troop trains a day eastbound, each with 900 soldiers.
 (a) How many days to move an army of 180,000? If double track allows 30 trains a day, how many days? (2 pts)
 (b) The Trans-Siberian from Moscow to Vladivostok is about 9,289 km (5,772 miles). How long does one train take at 30 km/h (about 18.6 mph)? Compare with the 224 days the Russian Baltic Fleet spent going to Tsushima in 1904-1905. (1 pt)
 (c) The railway let Russia fight in Manchuria at all. Give two reasons Russia still lost the war. (1 pt)
22. (3 pts) (a) Identify Friedrich Ratzel and the term he borrowed that was later abused, and Karl Haushofer and the journal he helped launch in 1924. (1 pt)
 (b) How did Haushofer read Mackinder "in reverse"? (1 pt)
 (c) Name three warning signs of geography abused. (1 pt)
23. (4 pts) (a) The Russian Empire's 1897 census counted about 126 million in a world of about 1.6 billion; Russia as of 2026 has about 146 million in a world of about 8.3 billion. Find each share and how many times smaller the 2026 share is. (1 pt)
 (b) Moscow to Vladivostok is about 6,430 km (4,000 miles) in a straight line. How long does a 1940s transport plane at 400 km/h (250 mph) take? How many times faster is it than a 7-day train journey? (1 pt)
 (c) What did Leo Amery argue in the discussion after Mackinder's 1904 lecture? (1 pt)
 (d) In 1943 Mackinder described the Midland Ocean. What three parts did he name around it? (1 pt)
24. (7 pts) **Essay.** Mahan held that command of the sea is won chiefly by concentrated battle fleets, and that commerce raiding cannot by itself defeat a nation that holds command of the sea. Weigh this claim against the evidence of the two world wars. Use at least one prediction or judgment he got right, at least one strong counterexample, and the reply of his defenders. End with a revised claim that survives the evidence.

25. (7 pts) **Essay.** Who better explains the great wars of the twentieth century, Mahan or Mackinder? Write a short essay (or a short dialogue followed by your judgment) in which each man makes his strongest case with evidence and answers the other. Bring in at least one critic or counterexample, and end with a judgment that states its limits.

Answer key

1. (a) Rudolf Kjellén, a Swedish political scientist, in 1899, from Greek *gē* (earth) and *politikos* (of the city or state).
(b) (i) F; (ii) C; (iii) C; (iv) F; (v) C. ($-\frac{1}{2}$ point per error.)
(c) If a state is an organism that must grow or die, seizing a neighbor's land looks natural. German writers turned the idea into a doctrine of "living space," and the Nazi regime used it to dress up conquest and mass murder as a law of nature.
2. (a) September 14 to 30 is 16 days, plus 19 days in October = **35 days**.
(b) $870 \div 15 = \mathbf{58 \text{ days}}$; $15 \text{ km} \times 0.621 \approx \mathbf{9.3 \text{ miles a day}}$ (check: $540 \div 58 \approx 9.3$).
(c) Any two: the Russian commanders chose to fall back and trade space for time; Tsar Alexander I chose not to make peace; Napoleon chose to invade and then to linger five weeks in an emptied Moscow before retreating into winter. (1 pt each part.)
3. (a) "... and the alarm which this inspired in Lacedaemon, made war inevitable."
(b) Athens and its harbor at Piraeus, about 7 km (4 miles) apart (built about 461–456 BC); grain and timber landed at Piraeus could reach the city without passing an enemy, so Athens could live by the sea while a land army held Attica.
(c) A Spartan king who led the first invasion of Attica; he warned that Sparta had neither the ships nor the money for a long war against a sea power.
(d) Thucydides judged the plan could have won; Athens lost through its own later choices, above all the Sicilian expedition (415–413 BC). (Some modern historians doubt the plan could have forced Sparta to make peace.)
4. (a) $300 \times 170 = \mathbf{51,000 \text{ rowers}}$.
(b) $100 \times 170 = 17,000 \text{ rowers}$; $17,000 \times 120 = \mathbf{2,040,000 \text{ drachmas}}$; $2,040,000 \div 6,000 = \mathbf{340 \text{ talents}}$. Sea power runs on money: Athens paid with tribute from its empire, and Sparta could build a fleet only with Persian gold.
(c) Much of Athens's grain came from the Black Sea through the Hellespont, a single narrow strait an enemy fleet could close. Triremes were fast but light, with little room for food or water, so crews beached them most nights. Lysander caught the Athenian fleet drawn up on the beach at Aegospotami on the Hellespont and took almost all of it; with the grain route closed, Athens starved and surrendered in 404 BC.
5. (a) ($\frac{1}{2}$ pt each)
Montesquieu: *The Spirit of the Laws* (1748), climate the first of all powers; the sheep's-tongue experiment. **D**.
Semple: *Influences of Geographic Environment* (1911), "Man is a product of the earth's surface." **D**.
Huntington: *Civilization and Climate* (1915), energy greatest in cool, changeable climates. **D**.
Vidal de la Blache: *Tableau de la géographie de la France* (1903), *genres de vie*. **P**.
Febvre: *La Terre et l'évolution humaine* (1922), named possibilism: no necessities, but everywhere possibilities. **P**.
Griffith Taylor: stop-and-go determinism (neo-determinism). **M**.
(b) Each writer found that the best climate on earth was his own; a theory that always crowns its author's homeland may be measuring pride as much as climate.

6. (a) Latitude: $39.03 - 37.57 = 1.46^\circ \times 111.2 \approx 162$ km. Longitude: $126.98 - 125.75 = 1.23^\circ$; $\cos 38.3^\circ \approx 0.785$, so $1^\circ \approx 111.3 \times 0.785 \approx 87.4$ km, and $1.23 \times 87.4 \approx 107$ km. Distance $\approx \sqrt{(162^2 + 107^2)} \approx \sqrt{(26,400 + 11,500)} \approx \sqrt{37,900} \approx \mathbf{195 \text{ km (about 121 miles)}}$.
 (b) The capitals share one climate, one peninsula and one people, yet since 1945 the two halves have taken very different paths; the same climate did not produce the same result, so climate does not fix history. Probabilist form (any fair version): "Climate and terrain make some ways of life easier or harder and some outcomes more likely, but people's choices and institutions decide which possibilities are used."
7. (a) 30° : $\cos 30^\circ \approx 0.866$; length factor $\approx \mathbf{1.155}$, area factor $\approx \mathbf{1.33}$. 60° : $\cos 60^\circ = 0.5$; length factor $\mathbf{2}$, area factor $\mathbf{4}$.
 (b) 30° N: $500,000 \times 1.33 \approx \mathbf{667,000 \text{ km}^2 \text{ (about 257,000 sq mi)}}$. 60° N: $500,000 \times 4 = \mathbf{2,000,000 \text{ km}^2 \text{ (about 772,000 sq mi)}}$. The northern region looks $4 \div 1.33 = \mathbf{3 \text{ times}}$ as large, though the two are equal.
 (c) It is conformal: it keeps angles and the shapes of small areas, and every rhumb line (course of constant compass bearing) is a straight line. Mercator made it for the use of navigators.
8. (a) Hereford: Jerusalem at the center, with east at the top. Peutinger: Rome at the heart of the road network (with Rome, Constantinople and Antioch as enthroned figures). Ricci: China near the middle, with Europe and Africa on the left and the Americas across the Pacific on the right.
 (b) It was made as a roll, about 6.75 m long and 34 cm tall, for travelers on Roman roads. Like a subway diagram, it keeps what its users needed (which road, where to stop, and the distance between stops, written in Roman numerals) and gives up what they did not (true shapes). Every map gives something up; the question is whether it fits its purpose.
9. (a) **Claim**: state it exactly, including its strength (always, usually, more likely). **Evidence**: how many cases, how chosen, were misfits left out? **Prediction**: did it risk a forecast that could have proved wrong? **Counterexample**: one solid case defeats an "always" or "never."
Revision: does it survive in a narrower, stronger form?
 (b) Evidence (any two): few good roads, narrow and winding; the Meuse a wide river with steep banks; in 1914 the Germans had come through central Belgium; the Maginot Line made a direct attack costly. Hidden assumptions (any two): that engines would move through forest as slowly as horses and boots; that the enemy would choose the obvious route; that defenders would have time to bring up reserves. Tanks, trucks, radios and dive-bombers, and Manstein's bold plan, overturned them: the Germans crossed at Sedan on May 13 and reached the Channel on May 20.
10. (a) Infantry: $18,000 \div 38,000 \approx \mathbf{47\%}$. Cavalry: $2,000 \div 8,000 = \mathbf{25\%}$. Whole army: $46,000 \rightarrow 26,000$, a loss of 20,000; $20,000 \div 46,000 \approx \mathbf{43\%}$. (Some losses came between the Rhône and the Alps, so these are upper figures for the mountains themselves.)
 (b) The claim fails: Hannibal arrived and went on to win great victories in Italy. A revised claim, "mountains impose very heavy costs on armies that cross them," is strongly supported.
11. (a) Commodore Stephen B. Luce, at the Naval War College in Newport, Rhode Island, in 1884; *The Influence of Sea Power upon History, 1660-1783* (1890).
 (b) $700 \div 4 = 175$ hours $\div 24 \approx \mathbf{7.3 \text{ days}}$. $700 \times 1.852 \approx \mathbf{1,300 \text{ km}}$; $700 \times 1.151 \approx \mathbf{806 \text{ miles}}$. $150 \div 7.3 \approx 20$, so the march took about twenty times as long. Rome, after the First Punic War, controlled the western Mediterranean, so Hannibal had to take the long land road.
 (c) It could sting an enemy but could never by itself defeat a nation that held command of the sea, because the stronger fleet would sweep the raiders away and keep its own trade moving. The first aim of a navy is command of the sea, won by a concentrated battle fleet.

12. (a) ($\frac{1}{2}$ pt each) (1) Geographical position, G; (2) physical conformation (harbors, rivers, soil, climate), G; (3) extent of territory, G; (4) number of population, H; (5) national character, H; (6) character of the government (and national institutions), H.
 (b) Extent: not square miles, but the length of coast and number of harbors measured against the people available to use and defend them (the Confederacy's 3,500-mile coast became a weakness). Population: not the total count, but the number who follow the sea or could quickly be trained for it: sailors, fishermen, shipwrights and dock workers.
13. (a) $1,650 \times 1.852 \approx \mathbf{3,056 \text{ km}}$; $1,650 \times 1.151 \approx \mathbf{1,899 \text{ miles}}$. $1,650 \div 6 = 275 \text{ hours} \div 24 \approx \mathbf{11.5 \text{ days}}$, and every passage had to pass British-held Gibraltar.
 (b) $3.57 \times \sqrt{100} = 3.57 \times 10 = \mathbf{35.7 \text{ km (about 22 miles)}}$, more than twice the width of the strait, so yes, in clear weather.
 (c) Geographical position: position can let a nation concentrate its forces or force it to divide them. France's two coasts split its fleets, and the only sea gate between them was watched from Gibraltar.
14. (a) $43,000 \times 1.852 \approx \mathbf{79,600 \text{ km}}$; $43,000 \times 1.151 \approx \mathbf{49,500 \text{ miles}}$; $79,600 \div 40,075 \approx \mathbf{2}$, about twice around the earth.
 (b) $43,000 \div 10 = 4,300 \text{ hours} \div 24 \approx \mathbf{179 \text{ days}}$ under way; $179 \times 1,200 \approx \mathbf{215,000 \text{ tons}}$ of coal; $215,000 \div 5,000 \approx \mathbf{43 \text{ collier loads}}$.
 (c) The United States had few coaling stations abroad and a small merchant marine, so much of the coal came in chartered foreign colliers, which could have been withheld if war had come. Steam freed ships from the wind but chained them to coal, and coal to bases.
15. Germany's coast faces the North Sea, and Britain lies across both exits to the Atlantic: the Strait of Dover, about 33 km (21 miles) wide, closed with mines, nets and patrols, and the northern gap between Scotland (the Shetlands) and Norway, which scouting cruisers could watch while the Grand Fleet waited at Scapa Flow. Britain could bottle the fleet up without fighting; after Jutland (May 31–June 1, 1916) the German fleet never broke Britain's hold. Germany copied Mahan's prescription and ignored his diagnosis that position decides what a fleet can do. Japan fought close to home in its own waters; Tōgō met a Russian fleet that had steamed about 18,000 nm from the Baltic, coaling from chartered colliers with almost no friendly ports, and destroyed it on May 27–28, 1905. (1 pt Germany's exits; 1 pt Scapa Flow/blockade logic; 1 pt Japan contrast.)
16. (a) $22,500 \div 66 \approx \mathbf{341 \text{ km a day}}$; $14,000 \div 66 \approx \mathbf{212 \text{ miles a day}}$. Speed: $341 \div 24 \approx 14.2 \text{ km/h} \div 1.852 \approx \mathbf{7.7 \text{ knots}}$.
 (b) $26 \text{ m up} + 26 \text{ m down} = \mathbf{52 \text{ m}}$; $85 + 85 = \mathbf{170 \text{ ft}}$.
 (c) $(33.5 - 33.0) \div 2 = \mathbf{0.25 \text{ m}}$ per side (with unrounded widths, $33.53 - 32.97 = 0.56 \text{ m}$, or about 0.28 m per side); in feet, $110 \text{ ft} - 108 \text{ ft } 2 \text{ in} = 1 \text{ ft } 10 \text{ in} = 22 \text{ in}$, so $\mathbf{11 \text{ inches}}$ per side.
 (d) One American fleet could shift between the Atlantic and Pacific in about three weeks instead of two months, so the nation did not have to divide its fleet between two coasts, as France's fleets had been divided.
17. (a) $0.80 \times 3,500 = \mathbf{2,800 \text{ nm}}$. The direct Honolulu–Guam leg (3,310 nm) exceeds 2,800, leaving only 190 nm of reserve, so the ship must go by Midway and Wake. Its longest leg is then San Francisco–Honolulu, 2,080 nm, within the limit.
 (b) $2,080 + 1,140 + 1,030 + 1,310 + 1,380 = \mathbf{6,940 \text{ nm}} \approx 6,940 \times 1.852 \approx \mathbf{12,850 \text{ km}} \approx 6,940 \times 1.151 \approx \mathbf{7,990 \text{ miles}}$.
 (c) Bases must be defensible; a few strong bases are worth more than many weak ones, since a weak base is a hostage the fleet must leave its work to protect. In December 1941 Guam fell within days and Wake within weeks, while fortified Hawaii and the Panama Canal held.
18. (a) $1,730 - (700 + 700) = \mathbf{330 \text{ nm}} \approx \mathbf{611 \text{ km}} \approx \mathbf{380 \text{ miles}}$; $330 \div 9 \approx \mathbf{36.7 \text{ hours}}$, about a day and a half.

- (b) Aircraft from Iceland narrowed it, and very-long-range aircraft and small escort carriers closed it in 1943. It questions his dismissal of commerce raiding: U-boats, raiding trade, came close to deciding both world wars (more than 800,000 tons sunk in April 1917; some 3,500 Allied merchant ships lost in 1939–1945), though Mahan’s defenders reply that convoys were sea control brought close around the merchant ships.
19. (a) (¼ pt each) Pivot: Ob–Yenisei basin. Inner (marginal) crescent: Germany, India, China, Turkey. Outer (insular) crescent: Britain, Japan, the United States.
 (b) Any two: the great Siberian rivers (Ob, Yenisei, Lena) run north into an Arctic Ocean locked in ice most of the year; the Volga, Amu Darya and Syr Darya drain into the Caspian and Aral seas, which have no outlet to the ocean; the open steppe gave land powers fast movement across the interior.
 (c) The roughly four centuries after Columbus when European sea powers spread over the world against little resistance; $1904 - 1492 = \mathbf{412 \text{ years}}$. After it the world became a “closed political system,” with no empty room to claim, so every gain by one power pressed on others.
20. (a) “Who rules East Europe commands the Heartland; Who rules the Heartland commands the World-Island; Who rules the World-Island commands the World.” (1 pt for the three links in order, 1 pt for exact wording.)
 (b) The Treaty of Brest-Litovsk, March 3, 1918: Bolshevik Russia left the war and gave up Poland, the Baltic lands, Finland and Ukraine, so for a few months Germany and Austria-Hungary dominated East Europe from the Baltic to the Black Sea. Germany’s defeat in the west that autumn, aided by British sea power and American armies carried across the Atlantic, undid it.
 (c) Europe, Asia and Africa as one continuous landmass, joined at Suez; about two-twelfths of the globe and about seven-eighths of the human race.
21. (a) $12 \times 900 = 10,800$ a day; $180,000 \div 10,800 \approx \mathbf{16.7 \text{ days}}$ (about 17). Double track: $30 \times 900 = 27,000$ a day; $180,000 \div 27,000 \approx \mathbf{6.7 \text{ days}}$. Capacity, not length, decides a railway’s value.
 (b) $9,289 \div 30 \approx 310$ hours $\approx \mathbf{12.9 \text{ days}}$ ($5,772 \div 18.6 \approx 310$ hours). $224 \div 12.9 \approx \mathbf{17}$, so the train is about seventeen times faster than the fleet’s voyage.
 (c) Any two: the line was mostly single track and the Circum-Baikal section was not open in early 1904 (rails were laid across the ice), so capacity was limited; Russia fought at the far end of one thin thread that was slow to repair; Japan, an island power, fought close to home supplied by sea; the Baltic Fleet arrived worn out after 18,000 nm and was destroyed at Tsushima (May 27–28, 1905); Port Arthur fell (January 1905) and the army was beaten at Mukden (March 1905).
22. (a) Ratzel (1844–1904): a founder of human geography (*Anthropogeographie, Political Geography*) who described the state as an organism rooted in its soil and used *Lebensraum*, “living space.” Haushofer: a retired Bavarian general and Munich geographer who helped launch the *Zeitschrift für Geopolitik* and led the German school of *Geopolitik*.
 (b) Mackinder warned the sea powers against a German-Russian combination; Haushofer urged one, a continental bloc of Germany, Russia and Japan to dominate Eurasia and break British and American power.
 (c) Any three: a metaphor treated as a law of nature (“states must grow”); scholarship written to serve a ruler’s goal; maps that hide the people already living on the land (suggestive maps with arrows and shading); the claim that geography or “necessity” excuses a moral choice.
23. (a) $126 \div 1,600 \approx \mathbf{7.9\%}$; $146 \div 8,300 \approx \mathbf{1.8\%}$; $7.9 \div 1.8 \approx \mathbf{4.4 \text{ times}}$ smaller (about 4.5 with unrounded shares, $7.88 \div 1.76$).
 (b) $6,430 \div 400 \approx \mathbf{16 \text{ hours}}$ ($4,000 \div 250 = 16$); $7 \times 24 = 168$ hours; $168 \div 16 \approx \mathbf{10 \text{ times}}$ faster.

(c) That air power would soon join sea and rail, and that the powers with the greatest industrial base would win, whatever their position.

(d) A bridgehead in France, a moated aerodrome in Britain, and a reserve of trained manpower, farms and industry in the eastern United States and Canada.

24. **Grading points (7):** claim stated fairly in Mahan's terms (1); supporting evidence, two items (2); counterexamples from submarines and aircraft, two items (2); defenders' reply (1); a revised claim that fits the evidence (1).

Model answer: Mahan's claim has two parts: fleets win command of the sea, and war on trade is secondary. Much of it held. In 1914-1918 the Royal Navy's blockade slowly starved Germany, and Allied control of the Atlantic carried some two million American soldiers to France. Germany's battle fleet failed for the reason his own first element gives, its position behind Britain. In the Pacific the war was a contest for fleets and bases, and Midway (June 4, 1942) was a decisive battle won by concentration. His forecast that the canal and Pacific bases would matter came true.

But the weapon he dismissed nearly won twice. After February 1917 U-boats sank more than 800,000 tons in April alone; in 1939-1945 the Allies lost some 3,500 merchant ships, and Churchill wrote that the U-boat peril was the only thing that ever really frightened him.

American submarines sank more than half of the Japanese merchant tonnage lost and strangled Japan's imports. Aircraft changed the fleet itself: Taranto (1940), Pearl Harbor and the sinking of *Prince of Wales* and *Repulse* under way (December 10, 1941), and the Coral Sea, where fleets never sighted each other. The carrier replaced the battleship.

Defenders reply that convoys were simply command of the sea brought close around the merchant ships, and that sea control did win in the end. That is fair, but it concedes that control now had to reach into the air and under the water. Revised claim: "Command of the sea, won in three dimensions, still decides what land power can do; war on trade by submarine and aircraft can come close to deciding a war against a sea-dependent nation, and must be met by convoy, air cover and sea control." His geography lasted; his technology faded.

25. **Grading points (7):** Mahan's strongest case with accurate evidence (2); Mackinder's strongest case with accurate evidence (2); each answers the other, or a critic such as Corbett, Amery, Kennedy or Spykman is used fairly (1); a reasoned judgment that admits its limits (2).

Model answer: *Mahan* would argue that sea power with industry won both world wars: the blockade starved Germany; Atlantic shipping brought American armies to France in 1917-1918 and to Normandy in 1944; the Pacific war turned on fleets and bases. He would add that the outer crescent, which Mackinder treated as weaker, produced the strongest power of the century, the United States. *Mackinder* would answer that both wars were fought largely over East Europe and between Germany and Russia: Brest-Litovsk (March 3, 1918) showed how near one land power came to the gate of the Heartland; the pact of August 1939 briefly made his nightmare real; and in 1941 depth and railways let the Soviet Union move more than 1,500 factories east and survive a blow that would have destroyed a smaller country. He would point to his own revision of 1943, the Midland Ocean, which the Normandy landing and NATO (1949) resembled.

Each has a reply. Mahan could note that no Heartland power ever commanded the World-Island; the Soviet Union held both East Europe and the Heartland for over forty years and broke up in 1991. Mackinder could note that submarines and aircraft upset Mahan's battleship navy. Amery's 1904 point cuts against both: air power and the industrial base mattered more than position, as Kennedy later argued for Britain's sea power.

Judgment: Mahan better explains how the wars were won (sea lanes, bases and industry), Mackinder better explains where and why they were fought (East Europe and the Heartland's

depth). Neither foresaw the airplane fully, and neither explains the choices of leaders and peoples, which decided what geography only made possible.

FINAL EXAM

Units 1-5 · 120 minutes

You have 120 minutes. A calculator is allowed; no notes, books or maps. The exam is cumulative, with most of its weight on Units 4 and 5. There are no figures: every map question is answered in words. For every calculation, write the setup, substitute with units, and give the answer with its unit; when a distance or area is asked for, give it in both metric and U.S. units (km and miles, km² and sq mi) unless the problem says otherwise. Use 1 km = 0.621 mile, 1 km² = 0.386 sq mi, 1 nautical mile (nm) = 1.852 km = 1.151 miles, 1 knot = 1 nm per hour, and 1° of latitude ≈ 111 km (69 miles). Points are earned for each part as shown; correct reasoning earns partial credit even if a final number slips, and a bare answer without work may not earn full credit. Short answers need only a sentence or two. Write about current affairs neutrally and with dates. The two essays (Problems 28 and 29) are graded on a fair statement of each view, accurate evidence, honest treatment of critics and counterexamples, and a reasoned judgment with its limits. The exam has 29 problems worth a total of 100 points.

1. (2 pts) The water of the Strait of Dover was the same in 1066, 1588 and 1940. Explain briefly why William of Normandy crossed successfully in 1066 while the Spanish Armada (1588) and Hitler's invasion plan (1940) failed, and state the general lesson.
2. (2 pts) (a) Quote the Athenian envoys at Melos (Thucydides 5.89) and state what Athens did to Melos when it refused to submit. (b) In one sentence, explain how Sparta, a land power, finally defeated Athens.
3. (3 pts) (a) Find Mercator's length and area factors at 70° N ($\cos 70^\circ \approx 0.342$). (1 pt) (b) An Arctic island truly covers 100,000 km² (38,600 sq mi) and is centered at 70° N. How large does it appear on a Mercator map? (1 pt) (c) What does a north polar azimuthal equidistant map show truly that a Mercator map does not? (1 pt)
4. (2 pts) Apply the counterexample test to the claim "The oceans will always keep the United States safe from attack." Give two counterexamples from the course and a revised claim that survives.
5. (3 pts) New York to San Francisco is about 22,500 km (14,000 miles) around Cape Horn and about 9,500 km (5,900 miles) through the Panama Canal. For a ship averaging 12 knots, find the time for each route in days (ignore time in the locks), the days saved, and the percentage of distance saved.
6. (2 pts) Give two events of 1940-1942 that showed aircraft could defeat battleships, and name the ship that replaced the battleship as the heart of the fleet. Which of Mahan's ideas survived this change?
7. (3 pts) (a) Write Mackinder's 1919 dictum exactly. (1 pt) (b) Give one event that supports the first link and one strong counterexample to the later links. (2 pts)
8. (2 pts) The Nazi regime claimed Germany "needed" living space. In 1939 Greater Germany had about 136 people per km² and Belgium about 275. As of 2026, Germany has about 232 per km² on about 40 percent less land than in 1939. What do these figures show about the claim, and what was the real source of the policy?

9. (3 pts) (a) Write Spykman's rimland dictum exactly. (1 pt)
(b) Name Spykman's two books with their years, and who prepared the second for publication after his death. (1 pt)
(c) What warning in his 1942 book shocked many readers about the postwar world? (1 pt)
10. (3 pts) Test Spykman with population density (as of 2026, rounded). India: about 1.45 billion people on about 3.29 million km² (1.27 million sq mi). China: about 1.41 billion on about 9.6 million km² (3.7 million sq mi). Russia: about 146 million on about 17.1 million km² (6.6 million sq mi). (a) Find each density in people per km² and per sq mi. (2 pts) (b) How many times as dense as Russia are India and China, and what does this suggest about Spykman's claim? (1 pt)
11. (3 pts) Map reasoning in words. Trace Spykman's rimland from west to east, naming at least four of its regions. Name four narrow sea passages on its marginal seas. Then explain why Spykman said the rimland states must be "amphibious."
12. (4 pts) (a) On what date did George Kennan send the Long Telegram, and from where? (1 pt)
(b) In the telegram, what did Kennan place "at bottom of Kremlin's neurotic view of world affairs," and what geographic picture lay behind it? (1 pt)
(c) Complete the central sentence of the X article (July 1947): "the main element of any United States policy toward the Soviet Union must be that of ..." (1 pt)
(d) What did Kennan expect if Soviet pressure were held for ten or fifteen years? (1 pt)
13. (3 pts) The Berlin Airlift carried about 2.3 million tons in some 278,000 flights. (a) What was the average load per flight? (1 pt) (b) On one day in April 1949 the airlift delivered nearly 13,000 tons. If each plane carried 10 tons, how many landings was that, and how often did a plane land, around the clock? (1 pt) (c) West Berlin lay about 160 km (100 miles) inside the Soviet zone. Explain how geography made the city a trap and what turned it into a demonstration. (1 pt)
14. (3 pts) Explain the difference between **strongpoint** and **perimeter** defense. Which did Kennan favor, and what five centers of power did he name in 1948? What did Walter Lippmann fear, and what 1950 paper moved policy toward the perimeter view?
15. (4 pts) (a) Complete the non-colonization sentence of December 2, 1823: "the American continents, by the free and independent condition which they have assumed and maintain, are ..." (1 pt)
(b) What two threats did the two parts of the message answer? (1 pt)
(c) Why did John Quincy Adams think the United States could speak alone, and what was his "cock-boat" argument? (1 pt)
(d) Put these in order with their years: Roosevelt Corollary; Good Neighbor Policy; French withdrawal from Mexico and Maximilian's execution; Polk's restatement; Cuban missile crisis; Olney's Venezuela boundary demand. (1 pt)
16. (4 pts) (a) The bulge of Brazil lies about 3,000 km (1,900 miles) from Dakar. How long would a sailing ship take at 5.5 km/h (the westbound packet average of the 1820s), and a 1940s aircraft at 350 km/h (about 217 mph)? About how many times faster is the aircraft? (2 pts)
(b) Why was the Atlantic a moat in 1823? Give the physical reason westbound voyages

- were slower, and the naval reason. (1 pt)
- (c) What did Spykman mean by the “American Mediterranean,” and why did he call the hemisphere a dangerous comfort? (1 pt)
17. (4 pts) Two airfields lie on the parallel 60.0° N, one at 150° W (near Anchorage) and one at 30° E (near St. Petersburg), 180° of longitude apart.
- (a) Find the rhumb-line distance along the parallel, using $111 \times \cos 60^\circ$ km per degree of longitude. (1 pt)
- (b) Find the great-circle distance. (Hint: because the meridians are opposite, the great circle runs over the Pole.) Check with $\cos d = \sin \varphi_1 \sin \varphi_2 + \cos \varphi_1 \cos \varphi_2 \cos \Delta\lambda$. (1 pt)
- (c) How much shorter is the great circle, in km, miles and percent? How many hours does it save a bomber at 800 km/h? (1 pt)
- (d) How does each route appear on a north polar azimuthal equidistant map? (1 pt)
18. (3 pts) (a) Identify Richard Edes Harrison and his 1944 atlas, and name the two kinds of maps he used. (1 pt)
- (b) Thule Air Base, built from 1951, lies at about 76.5° N. How far is it from the North Pole, in km and miles? (1 pt)
- (c) Name two things the air age did *not* overcome. (1 pt)
19. (4 pts) The U.S. Energy Information Administration estimated that about 20 million barrels of oil a day passed through the Strait of Hormuz in 2023–2024, about one-fifth of world consumption. (a) If tankers carried about 1 million barrels each, how many full loads would pass a day, and how often on average? (1 pt) (b) How many barrels is that a year? (1 pt) (c) What world consumption does “one-fifth” imply? (1 pt) (d) The strait is about 39 km wide at its narrowest; give that in miles and nautical miles, and say in which of Spykman’s zones it lies. (1 pt)
20. (4 pts) (a) Name four treaties of the American alliance ring around Eurasia, with their years. (2 pts)
- (b) In March 1969 Soviet and Chinese troops fought on Zhenbao (Damansky) Island, and on February 21, 1972, President Nixon landed in Beijing. Why does this episode count against a simple reading of rimland theory, and how did American policy use it? (1 pt)
- (c) What is a “shatterbelt”? Who coined it, when, and for which two regions? (1 pt)
21. (4 pts) (a) The Baltic study box runs 13° of latitude, about 1,443 km (897 miles) from south to north. You want it to fit in 30 cm of paper. What exact scale would do it? Round to a convenient scale that fits, and find the box’s height on the map in cm and inches (at 1:5,000,000, 1 inch $\approx$ 78.9 miles). (2 pts)
- (b) Label each region **formal** or **functional**: (i) the drainage basin of the Vistula; (ii) the hinterland of the port of Gdańsk; (iii) the lands served by the Trans-Siberian Railway; (iv) the area where Finnish is the main language. (1 pt)
- (c) Why are geopolitical regions usually best defined by a guiding question? (1 pt)
22. (3 pts) A student proposes the capstone question “What is the geopolitics of Asia?” Using the five tests for a good capstone region, explain what is wrong with it and rewrite it into a good region and guiding question. Then name the man who organized

the Inquiry's work in 1917–1918 and the arrangement the peacemakers made for Poland's access to the sea.

23. (4 pts) (a) The Kiel Canal saves about 250 nm compared with sailing around Denmark. A ship cruises at 12 knots but must slow to 8 knots for the canal's 53 nm (98 km). Ignoring waiting at the locks, how many hours does the canal save? (2 pts)
(b) The Sound allows ships of about 8 m (26 ft) draft; the Great Belt about 15 m (49 ft). A loaded tanker draws 12 m (39 ft). Which strait must it use, and why? (1 pt)
(c) Land around the northern Gulf of Bothnia rises up to about 8–9 mm a year. At 8.5 mm a year, how much does it rise in a century, in meters and inches, and why does a capstone paper record this? (1 pt)
24. (3 pts) Label each statement F (physical fact), I (interpretation) or P (prediction): (a) The Sound is about 4 km wide at Helsingør. (b) Denmark held the key to the Baltic. (c) Traffic through the Kiel Canal will double. (d) The Baltic's average depth is about 55 m (180 ft). (e) The Kiruna ore fields explain why Britain and Germany both sent forces to Narvik in 1940. (f) The Sound Dues were abolished by treaty in 1857.
25. (4 pts) (a) By sea, St. Petersburg is about 700 nm from the Sound; Libau (Liepāja), Russia's ice-free base of the 1890s, is about 325 nm. How long does each voyage take at 12 knots? (1 pt)
(b) Moscow and Berlin are about 1,610 km (1,000 miles) apart. Compare an army marching 20 km (12.4 miles) a day with troops carried by rail at 50 km/h (31 mph). About how many times faster is the railway? (1 pt)
(c) In one sentence each, what question does each lens ask: Mahan, Mackinder, Spykman? (1 pt)
(d) Give one Baltic example of a "voice the lenses leave out." (1 pt)
26. (3 pts) Correct this draft sentence from a capstone paper and explain each error: "The Strait of Hormuz is only 39 miles wide, so it will obviously be closed in the next war. Recently Finland joined NATO because of aggressive neighbors."
27. (3 pts) (a) Quote Churchill's map sentence from Fulton, Missouri (March 5, 1946). (1 pt)
(b) Stettin to Trieste is about 866 km (538 miles). How would you say this in a talk, and why? A talk of 12 minutes at about 130 words a minute is how many words? (1 pt)
(c) Give the dates on which the Berlin Wall opened and Germany was reunited. What does the fall of the line suggest about geography and choice? (1 pt)
28. (8 pts) **Essay.** Consider this judgment: Spykman was a better guide to *where to look* than to *what would happen there*. Weigh it against the evidence of the Cold War (1947–1991). State Spykman's theory exactly, give the strongest evidence for it, give at least three serious criticisms, mention one later revision, and reach your own judgment.
29. (7 pts) **Essay.** Using the Baltic Sea model region (or your own capstone region, if you name its guiding question), look through all three lenses. For Mahan, Mackinder and Spykman, state the view at its strongest, give one piece of evidence and one critic's reply. Add at least one voice the lenses leave out, and end with a judgment that states its limits.

1. In 1066 the English fleet and levies had been sent home in September when supplies ran out, and King Harold was in the north defeating a Norwegian invasion at Stamford Bridge (September 25); William landed unopposed at Pevensey (September 28) and won at Hastings (October 14). In 1588 English ships, fireships and storms scattered the Armada; in 1940 the German air force could not win control of the skies over southern England, and the plan was put off in September. Lesson: geography stays the same; what changes is who holds the sea (and air) and what choices people make. (1 pt cases, 1 pt lesson.)
2. (a) "The strong do what they can and the weak suffer what they must." Athens killed the men of military age and sold the women and children as slaves (416 BC).
(b) With Persian money Sparta built a fleet; Lysander caught the Athenian ships on the beach at Aegospotami on the Hellespont (405 BC), closed the grain route, and Athens starved and surrendered in 404 BC. (1 pt each.)
3. (a) Length factor = $1 \div 0.342 \approx \mathbf{2.92}$; area factor $\approx 2.92^2 \approx \mathbf{8.55}$.
(b) $100,000 \times 8.55 \approx \mathbf{855,000 \text{ km}^2}$; $38,600 \times 8.55 \approx \mathbf{330,000 \text{ sq mi}}$, more than eight times its true size.
(c) Distances and directions from its center (the North Pole) are true; meridians are straight lines from the Pole and parallels are circles, so the lands around the Arctic appear as neighbors.
4. Counterexamples (any two): Pearl Harbor (December 7, 1941), struck by carrier aircraft; Soviet missile sites in Cuba (October 1962), about 145 km (90 miles) from Key West, with Washington within range; bombers and, from 1957, intercontinental missiles that could cross the Arctic by the polar route. Revised claim (any fair version): "The oceans give the United States distance and warning time, but only so long as it can control the seas, the air and the far shores; they are highways as well as moats." (1 pt counterexamples, 1 pt revision.)
5. 12 knots = $12 \times 1.852 \approx 22.2 \text{ km/h}$. Around the Horn: $22,500 \div 22.2 \approx 1,012 \text{ hours} \approx \mathbf{42.2 \text{ days}}$. Through the canal: $9,500 \div 22.2 \approx 428 \text{ hours} \approx \mathbf{17.8 \text{ days}}$. Saved: about **24.4 days** (about 23 if a day is allowed for the locks). Distance saved: 13,000 km (about 8,100 miles), $13,000 \div 22,500 \approx \mathbf{58\%}$. (1 pt each route, 1 pt savings.)
6. Any two: Taranto (November 11-12, 1940), British torpedo planes from *Illustrious* crippled the Italian fleet in harbor; Pearl Harbor (December 7, 1941); *Prince of Wales* and *Repulse* sunk by land-based bombers while under way (December 10, 1941); the Coral Sea (May 1942), fleets fighting without sighting each other; Midway (June 4, 1942), four Japanese carriers sunk by carrier planes. The **aircraft carrier** replaced the battleship. What survived: his geography of sea lanes, choke points, bases and the bond of trade and naval power, and his principle of concentration (Midway). (1 pt events, 1 pt carrier and survival.)
7. (a) "Who rules East Europe commands the Heartland; Who rules the Heartland commands the World-Island; Who rules the World-Island commands the World."
(b) Support (any one): Brest-Litovsk (March 3, 1918) put East Europe briefly under German and Austrian control; both world wars and the Cold War turned largely on East Europe; the Nazi-Soviet pact and partition of Poland (1939). Counterexample: the Soviet Union held both East Europe and the Heartland for more than forty years after 1945, yet never dominated Western Europe, the Middle East, India or China, and it dissolved on December 26, 1991. (Also acceptable: Germany ruled much of East Europe in 1918 and 1941 but never gained the Heartland.)
8. Belgium was about twice as crowded as Germany in 1939, and today's Germany is about 1.7 times as crowded as the Germany of 1939, yet it feeds and employs its people by work and trade; denser nations prospered without conquest. So the "need for space" was not a geographic fact but a political and ideological claim. The policy came from the regime's racial

ideology and its choice to conquer land in the East, remove or starve its peoples and settle Germans there: crimes chosen by men, not forces of nature. (1 pt numbers, 1 pt source.)

9. (a) "Who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world."
(b) *America's Strategy in World Politics: The United States and the Balance of Power* (1942) and *The Geography of the Peace* (1944), prepared by his colleague Helen R. Nicholl from his lectures, notes and maps (he died June 26, 1943).
(c) That a Russian state stretching to the North Sea would be no better for America than a German state stretching to the Urals; that a defeated Germany and Japan might be needed as counterweights; that the oceans would not keep America safe from an Old World united under hostile powers. (Any one, stated clearly.)
10. (a) India: $1,450,000,000 \div 3,290,000 \approx 441$ per km²; $\div 1,270,000 \approx 1,140$ per sq mi.
China: $1,410,000,000 \div 9,600,000 \approx 147$ per km²; $\div 3,700,000 \approx 381$ per sq mi. Russia: $146,000,000 \div 17,100,000 \approx 8.5$ per km²; $\div 6,600,000 \approx 22$ per sq mi.
(b) India $\approx 441 \div 8.5 \approx 52$ times; China $\approx 147 \div 8.5 \approx 17$ times. People and farms crowd the rimland, as Spykman said; but numbers are not power by themselves, since organization, industry and unity matter, and the rimland is divided among many states.
11. Regions (any four, in order): Western (coastal) Europe, the Middle East, India, Southeast Asia, China, Korea; it runs in an arc of roughly 11,900 km (7,400 miles) from Lisbon to Shanghai, far longer along the coasts. Passages (any four): Gibraltar, the Turkish Straits, Suez, Bab-el-Mandeb, Hormuz, Malacca. Beyond lie the offshore islands (Britain, Japan) and offshore continents (Africa, Australia). Amphibious: the rimland faces both ways, with the land power of the Heartland behind it and the marginal seas and ocean in front, so its states must be ready to fight both on land and at sea. (1 pt each part.)
12. (a) February 22, 1946, from the U.S. embassy in Moscow, in five parts.
(b) The "traditional and instinctive Russian sense of insecurity," originally that of a peaceful agricultural people on a vast exposed plain next to fierce nomadic peoples; Mackinder's Heartland seen from inside, with no mountains or seas to guard it.
(c) "... a long-term, patient but firm and vigilant containment of Russian expansive tendencies."
(d) That the Soviet system would mellow or break down from its own strains.
13. (a) $2,300,000 \div 278,000 \approx 8.3$ tons per flight.
(b) $13,000 \div 10 = 1,300$ landings; $1,300 \div 24 \approx 54$ an hour, about **one every 66 seconds** (1.1 minutes) across the airfields.
(c) On the ground the enclave was surrounded, and in June 1948 the Soviets cut road, rail and canal links. In the air it was not: three corridors, each 20 miles (32 km) wide, led in, and aircraft, strict timing and will supplied the city until the blockade was lifted on May 12, 1949.
14. Strongpoint: defend a few vital places, chiefly the centers of industry and skilled people; perimeter: resist expansion at every point along the frontier. Kennan favored strongpoint defense, chiefly by economic and political means, naming five centers able to build modern military power: the United States, Britain, Germany and the Rhine valley, the Soviet Union and Japan (four outside Soviet control). Lippmann (*The Cold War*, 1947) feared the X article committed America to defend every point on the Eurasian rim, often through weak or unpopular governments. NSC-68 (April 1950) leaned toward the perimeter view and a large military buildup. (1 pt each part.)
15. (a) "... henceforth not to be considered as subjects for future colonization by any European powers."
(b) Russia's 1821 claim to the Pacific coast of North America down to 51° N; and the rumor that the Holy Alliance might help Spain win back its former colonies, now independent

republics.

(c) Britain's merchants traded freely with the new republics, so the Royal Navy would block any European fleet bound for Spanish America anyway. Adams argued it was "more candid, as well as more dignified," to state American principles directly "than to come in as a cock-boat in the wake of the British man-of-war" (November 7, 1823).

(d) Polk 1845; French withdrawal/Maximilian 1867; Olney 1895; Roosevelt Corollary 1904; Good Neighbor 1933; Cuban missile crisis 1962.

16. (a) Ship: $3,000 \div 5.5 \approx 545$ hours $\approx$ **22.7 days**. Aircraft: $3,000 \div 350 \approx$ **8.6 hours** ($1,900 \div 217 \approx 8.8$). Ratio: $545 \div 8.6 \approx$ **63 times** faster.

(b) In the middle latitudes of the North Atlantic the prevailing winds blow from the west and the Gulf Stream flows toward Europe, so ships bound for America worked against both (about 40 days westbound versus 23 eastbound). And the Royal Navy, for Britain's own reasons, would stop a European expedition.

(c) The Gulf of Mexico, the Caribbean and the lands around them, which the United States could dominate. A hemisphere is a mapmakers' convention: southern South America lay beyond the Amazon and far down the sea lanes, and by the 1940s ships, aircraft and radio made the oceans highways, so America's safety had to be secured by a balance of power in Europe and Asia.

17. (a) $111 \times 0.5 = 55.5$ km per degree; $180 \times 55.5 =$ **9,990 km** (about **6,200 miles**).

(b) Each field is $90 - 60 = 30^\circ$ from the Pole, so $d = 30 + 30 = 60^\circ \times 111 =$ **6,660 km** (about **4,140 miles**). Check: $\sin^2 60^\circ + \cos^2 60^\circ \times \cos 180^\circ = 0.75 - 0.25 = 0.5$, so $d = 60^\circ$.

(c) $9,990 - 6,660 =$ **3,330 km** (about **2,070 miles**), one-third or **33%** shorter. Time: $9,990 \div 800 \approx 12.5$ h versus $6,660 \div 800 \approx 8.3$ h, saving about **4.2 hours**.

(d) The great circle is a straight line through the center (the Pole), since both cities lie on straight meridians; the rhumb line is an arc of the 60° circle around the Pole, plainly the longer way.

18. (a) A cartographer for *Fortune* magazine, trained as an architect, who drew the world from whatever point of view showed it best; *Look at the World: The Fortune Atlas for World Strategy* (Knopf, 1944). He used perspective maps (the earth seen from high above a chosen point) and azimuthal maps, especially centered on the North Pole.

(b) $90 - 76.5 = 13.5^\circ \times 111 \approx$ **1,500 km** (about **930 miles**).

(c) Any two: Arctic weather, darkness, ice fog and fuel-freezing cold; the need for runways, launch sites and bases, built on permafrost and supplied by sea in the short summer; the need for fuel and factories on the ground. Every projection still hides some relations.

19. (a) $20,000,000 \div 1,000,000 =$ **20 loads a day**; $24 \times 60 \div 20 =$ one every **72 minutes** (in practice the flow is split among ships of many sizes).

(b) $20,000,000 \times 365 \approx$ **7.3 billion barrels**.

(c) $20 \times 5 =$ about **100 million barrels a day**.

(d) $39 \times 0.621 \approx$ **24 miles**; $39 \div 1.852 \approx$ **21 nm**. It lies on the marginal seas of the rimland, at the edge of the Middle East.

20. (a) Any four: North Atlantic Treaty (1949); ANZUS (1951); security treaty with Japan (1951); with the Philippines (1951); with South Korea (1953); SEATO (1954); Baghdad Pact, later CENTO (1955). ($\frac{1}{2}$ pt each.)

(b) The rimland is not one thing: China, the greatest rimland power in Asia, joined the Soviet side in 1949 and broke with it a decade later, for reasons of its own. The United States moved to balance one communist power against the other, the balance-of-power policy Spykman recommended.

(c) A large region of many small, divided states caught between the interests of great powers,

where conflict is likely; Saul B. Cohen, *Geography and Politics in a World Divided* (1963); the Middle East and Southeast Asia.

21. (a) $1,443 \text{ km} = 144,300,000 \text{ cm}$; $144,300,000 \div 30 \approx 4,810,000$, so **1:4,810,000**. Round to **1:5,000,000** (1 cm = 50 km): $1,443 \div 50 \approx \mathbf{28.9 \text{ cm}}$; $897 \div 78.9 \approx \mathbf{11.4 \text{ inches}}$.
(b) (i) formal; (ii) functional; (iii) functional; (iv) formal.
(c) Geopolitical regions are usually tied together by movement and connection, and their edges are drawn by people for a purpose; the question decides which maps are needed, which facts matter and where the edges fall (the Inquiry studied "Where can Poland reach the sea?", not "Europe").
22. The five tests: right size; a real geographic question; all three thinkers have something to say; good sources exist; it can be treated fairly. "Asia" is far too large to master in four weeks, and "what is the geopolitics" is a topic, not an open question. A good rewrite (any fair one): "Who controls the Strait of Malacca, and has it been a highway or a choke point for the powers that use it?" or "Has the Persian Gulf and the Strait of Hormuz been a highway or a trap for the powers on its shores?" Isaiah Bowman, director of the American Geographical Society, organized the Inquiry; Poland received a corridor to the sea along the lower Vistula, and Danzig became a Free City under the League of Nations. (1 pt diagnosis, 1 pt rewrite, 1 pt identification.)
23. (a) The extra 250 nm at 12 knots: $250 \div 12 \approx 20.8$ hours. The canal stretch at 8 knots: $53 \div 8 \approx 6.6 \text{ h}$, versus $53 \div 12 \approx 4.4 \text{ h}$ at sea speed, a loss of about 2.2 h. Saved $\approx 20.8 - 2.2 \approx \mathbf{18.6 \text{ hours}}$.
(b) The Great Belt: 12 m is deeper than the Sound's 8 m sill allows but within the Great Belt's 15 m.
(c) $8.5 \times 100 = 850 \text{ mm} = \mathbf{0.85 \text{ m}}$ (about **33 inches**, 2.8 ft). Harbors grow shallower and islands join the mainland; geography is slow but not frozen, and a fair paper records facts that change.
24. (a) F; (b) I; (c) P; (d) F; (e) I (it rests on the fact that ore went by rail to ice-free Narvik when the Gulf of Bothnia froze, but "explains why" is a judgment); (f) F (a historical fact that can be checked in the record). ($\frac{1}{2}$ pt each.)
25. (a) St. Petersburg: $700 \div 12 \approx \mathbf{58 \text{ hours}}$ (about 2.4 days). Libau: $325 \div 12 \approx \mathbf{27 \text{ hours}}$ (about 1.1 days).
(b) Marching: $1,610 \div 20 \approx \mathbf{80.5 \text{ days}}$. Rail: $1,610 \div 50 \approx \mathbf{32 \text{ hours}}$ (1.3 days). $80.5 \div 1.34 \approx \mathbf{60 \text{ times}}$ faster.
(c) Mahan: who commands the sea, and where are the bases and narrow passages? Mackinder: who controls the great plains and the railways of the interior? Spykman: who holds the coastlands where land and sea power meet, and with whom are they allied?
(d) Finland in the Winter War of 1939–40: far outnumbered, the Finns fought so hard that Finland kept its independence, though it lost land; no map predicted that. (Other fair answers: the peoples, faith, memories and economies of Estonians, Latvians, Lithuanians or Poles.)
26. Errors (any three, 1 pt each, with a corrected version): (1) Units: the strait is about 39 *km* (24 miles, 21 nm) wide at its narrowest. (2) A prediction is stated as a certain fact ("will obviously be closed"); label it as a prediction and give whose it is, or weigh it against evidence. (3) "Recently" is undated: Finland joined NATO in April 2023. (4) "Aggressive" is a loaded word; describe each government's actions and its stated reasons instead. Corrected: "The Strait of Hormuz is about 39 km (24 miles) wide at its narrowest. Some analysts predict it could be closed in a war; others doubt it. Finland joined NATO in April 2023, citing its security after events in its region."

27. (a) "From Stettin in the Baltic to Trieste in the Adriatic an iron curtain has descended across the Continent."
(b) "About 870 kilometers, some 540 miles": rounded numbers are easier for the ear to hold. $12 \times 130 = 1,560$ words, so you speak from notes rather than reading the paper.
(c) The Berlin Wall opened November 9, 1989; Germany reunited October 3, 1990. For most of its length the line followed no great mountain or river; it was held by armies, barbed wire, ideology and fear, and it fell with almost no war: human choices drew and erased it.

28. **Grading points (8):** theory stated exactly and fairly (1); evidence for, at least two items with dates (2); at least three criticisms with evidence (3); a later revision such as Cohen's shatterbelts (1); a reasoned judgment that admits limits (1).

Model answer: Spykman held that "who controls the rimland rules Eurasia; who rules Eurasia controls the destinies of the world," and that American safety required a balance of power on the Eurasian rim. Much of the Cold War looks drawn from his map. The United States did not try to invade the Heartland; it built an alliance ring around it: NATO (1949), ANZUS (1951), treaties with Japan and the Philippines (1951) and South Korea (1953), SEATO (1954), the Baghdad Pact (1955). Nearly every crisis came on the rimland or its marginal seas: Greece, Berlin, Korea (1950–1953), the Taiwan Strait, Indochina, the Middle East, Afghanistan (1979–1989). Western Europe and Japan stayed out of Soviet hands, and the contest ended without a great war: the Wall opened November 9, 1989, and the Soviet Union dissolved December 26, 1991.

The critics are serious. The rimland is not one thing: China joined the Soviet side in 1949 and broke with it a decade later, fighting at the Ussuri in 1969; India under Nehru stayed nonaligned, and nonaligned leaders met at Bandung in 1955. Ideas and internal politics often decided more than position: China became communist through a civil war among Chinese. Defending every point brought overstretch, as Lippmann warned: more than 58,000 Americans and far more Vietnamese died, and Saigon fell on April 30, 1975. Nuclear missiles could cross the Pole without touching the rimland. And balance-of-power reasoning could excuse support for harsh governments; defenders answer that the balance kept a third world war from happening and that statesmen must choose among imperfect partners. Saul Cohen (1963) kept the frame but called the Middle East and Southeast Asia shatterbelts, divided regions where outside powers compete.

Judgment: the claim is largely right. Spykman correctly predicted where the struggle would center. His second claim, that uniting the rimland brings world rule, was never tested, because no one united it, and the theory cannot tell whether that was due to American policy, the rimland's own divisions, or both. A theory of where to look, not a law of what must happen.

29. **Grading points (7):** Mahan steelmanned with evidence (1); Mackinder steelmanned with evidence (1); Spykman steelmanned with evidence (1); a fair critic's reply to each (1); a voice the lenses leave out (1); a reasoned judgment with its limits (2).

Model answer (Baltic: "Has the Baltic been a highway or a prison for the powers on its shores?"): *Mahan:* the Baltic is a closed sea whose only exits, the Danish straits (the Sound about 4 km wide), pass Denmark; British fleets entered in force in 1801 and 1854. Peter I founded St. Petersburg in 1703 and won a coast at Nystad (1721), but a coast is not command of the sea: Russia's fleets were divided among the Baltic, Black Sea and Pacific, and the Baltic ships sent around Africa were destroyed at Tsushima (May 27–28, 1905). Critic: a big-battleship navy was the wrong tool for narrow seas thick with mines and submarines; in the First World War the British battle fleet never entered the Baltic. *Mackinder:* the southern shore is the northern flank of East Europe, a nearly flat plain (Berlin to Warsaw rises only about 65 m in 520 km) crossed by railways; he urged a buffer tier, and Poland, Lithuania,

Latvia and Estonia won their independence in 1918–1920. Critic: the middle states fell in 1939–1940 through a pact between two dictatorships, not through the plain alone, and the Heartland never commanded the World-Island. *Spykman*: the coasts are rimland, and their alliances matter most; in the Cold War Denmark and Norway joined NATO (1949) and West Germany (1955) while the southern and eastern shores lay in the Soviet bloc; after Finland joined NATO (April 2023) and Sweden (March 2024), every Baltic shore state except Russia, which holds St. Petersburg and Kaliningrad, is a member. Critic: rimland states choose their alliances for their own histories and interests; they are not pieces moved on a board. *Left out*: in the Winter War of 1939–40 Finland, far outnumbered, kept its independence; no map predicted that.

Judgment: for most of its history the Baltic has been a highway within and a prison at its exit; the sea joined its shores in trade, while the straits let outside sea powers decide who could leave. Mahan explains the exits, Mackinder the plain, Spykman the alliances; none explains the choices of the Finns or the Balts. Limits: the judgment rests on a few great wars, and new technology (aircraft, missiles, the Øresund Bridge of 2000) keeps changing what the straits mean.