

A FIELD MANUAL FOR NEW PLAYERS

The Civilization Newbie's Bible

Learn to play Civilization VI and VII from zero, and learn the real economics, politics, geopolitics and strategy the game is built on.

Civ VI: Gathering Storm, final patch · Civ VII: patch 1.5.0 (30 Sep 2026)

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PART 0

Start Here

Why this game is worth your time, and what it may do to your judgment. Then how each lesson works, which game to play, and a map of every real-world concept you will meet.

Before You Play: A Warning

In October 1962, by the best-known account, one officer on a Soviet submarine refused to approve firing a nuclear torpedo. This game can show you how that day might have gone the other way.

Why play a game about empires

Civilization hands you a people, a patch of land and one instruction: win. It never asks you to be good. Within a few evenings you will find yourself doing things you would condemn in a newspaper. You will settle land a neighbor wanted, break a promise when keeping it costs too much, and attack a friend who has grown weak. The game often rewards all of it, and it never shows you a single grieving family.

That is the reason to play. Many schoolbooks describe the world as it should work. Treaties hold, borders are respected, and the good side wins. Civ shows you the world from the chair of a ruler who wants to survive and grow. Rules exist in it, and they matter, but power decides whether they hold. In 416 BC Athenian envoys told the island of Melos, which asked to stay neutral, that "the strong do what they can and the weak suffer what they must" (Richard Crawley's translation of Thucydides). Athens then took the island. In Civ you will hear yourself making the same argument.

Niccolò Machiavelli, a Florentine diplomat sacked and tortured by the family he later advised, saw the gap in 1513. In chapter 15 of *The Prince* he wrote that "how one lives is so far distant from how one ought to live, that he who neglects what is done for what ought to be done, sooner effects his ruin than his preservation" (W. K. Marriott's translation). Civ is a machine for teaching what is done. This book adds what ought to be done, and shows you where the two split.

The warning

A game with one scoreboard teaches one goal. The Roman philosopher Cicero called the highest good a life should aim at the *summum bonum*. Civ has one too, and it is victory. Peace, justice and mercy count only when they help you win. When they get in the way, the game makes it easy to drop them.

Watch what this does to your judgment. In Civ VI a nuclear strike kills part of a city's Population and poisons the land around it for up to 20 turns. On screen, a city's number drops by a few points. After an hour of play, that number stops meaning people. The same habit, in a real leader, is how terrible choices start to feel like sensible ones. That habit forms in the player, and it can outlast the game. Notice the moment you start treating cities as counters.

Where the dark view goes too far

The cynic has a case. The strong, it says, write the rules and drop them when the stakes are high enough. Athens told Melos that right counts only between equals in power. Even in Civ VI, anger over a broken promise fades, and a superpower can shrug it off. So rules serve power, and the will to win beats everything.

Yet the game also pushes back. Break promises in Civ VI and other leaders hold Grievances (a running record of who wronged whom) against you and become harder to deal with. In a contest where you face the same rivals again and again, a reputation for keeping your word is worth more than one betrayal. Robert Axelrod's tournaments, in the [Diplomacy](#) lesson, show why.

The real world agrees. Strong countries write rules that suit them. Those rules then bind them too, and they often accept that, because rules are cheaper than force. Sometimes winning and doing right even point the same way, as they did with the Marshall Plan. The honest picture is darker than the schoolbook and brighter than the cynic.

The luck since 1945

Only two nuclear weapons have been used in war, at Hiroshima and Nagasaki in August 1945. That record has had close calls.

- **27 October 1962.** US destroyers dropped signaling depth charges to make the Soviet submarine B-59 surface near Cuba. By the best-known account, its captain thought war might have begun and wanted to fire a nuclear torpedo. A launch needed all three senior officers to agree, and Vasily Arkhipov refused. He persuaded the captain to surface. Vadim Orlov, an officer aboard, later said the captain lost his temper but calmed down.
- **26 September 1983.** A Soviet warning system reported one American missile launch, then four more. The duty officer, Stanislav Petrov, judged it a false alarm and waited for confirmation that never came. The satellites had malfunctioned.
- **November 1983.** A NATO exercise called Able Archer 83 rehearsed nuclear escalation. Its new realism, at a tense time, led some Soviet leaders to believe it was cover for a real first strike. Scholars disagree on how close it came.
- **25 January 1995.** Russian radar mistook a Norwegian science rocket for a possible attack. The nuclear briefcase, used to authorize a launch, was switched on and brought to President Boris Yeltsin. It is the only known case. The rocket was heading out to sea, and no launch was ordered.

In the 2003 film *The Fog of War*, Robert McNamara, US defense secretary in 1962, said of the Cuban crisis: "at the end we lucked out. It was luck that prevented nuclear war." Luck was not the whole story. After Cuba the two powers set up a direct hotline in 1963, and in 1969 began talks to limit their nuclear arsenals. Some scholars, most prominently Nina Tannenwald, argue that a "nuclear taboo" grew up, though others doubt it. Still, about eighty years is a short run. At least twice, the record may have rested on one officer who would not take a frightening signal as proof of war. That is cause for gratitude, and for unease.

Should every leader play?

Armies have trained officers with games for two centuries. In 1824 a junior Prussian officer, Georg von Reisswitz, showed his war game, *Kriegsspiel*, to the king and his senior generals. The chief of the General Staff called it schooling for war. The king ordered a set for every regiment. So should every politician and official play Civ?

The case for. Civ lets you feel, in an evening, lessons that cost real states centuries. You learn how a sensible defensive move frightens a neighbor into arming, how a war you meant to keep short drags on, and how fast you can talk yourself into anything. A leader who has caught that habit in a game may spot it sooner in a crisis.

The case against. Civ also teaches some lessons that would be dangerous in a leader. Its citizens are numbers. Its ruler never faces an election, a free press or a funeral. It knows every rule exactly, lives for six thousand years, and is never jailed for a war. [The Six Assumptions](#) covers gaps like these. A leader who learned only from Civ would learn the worst of it.

This book's answer is to play it, and to keep asking what the game leaves out.

Two guardrails

First, a description of how the world is does not tell you what to do about it. The Scottish philosopher David Hume made that point in 1740, and a book of facts about power is no license to use it. Second, the book never hands you a verdict. Many lessons carry a box called **The hard question**: a real case where winning and doing right pulled apart, the strongest honest case on each side, and a question back to you. They lead to the capstone lesson, [Winning and Doing Right](#).

Sources: Thucydides, *History of the Peloponnesian War*, trans. Richard Crawley, 5.89; Machiavelli, *The Prince*, trans. W. K. Marriott, chapter XV; Summum bonum; Nuclear weapons (Civ6); Grievances (Civ6); Vasily Arkhipov; Stanislav Petrov; Able Archer 83; Norwegian rocket incident; *The Fog of War* transcript (2003); Moscow–Washington hotline; SALT; Nuclear taboo; Kriegsspiel; "David Hume," *Stanford Encyclopedia of Philosophy*.

How to Use This Book

A game about building empires turns out to be a fast, safe place to feel ideas that real states and businesses learn slowly and at great cost. This book teaches both, and asks one question the game never does.

How the book works VI VII

Turn 1. A Settler (the unit that founds a city) stands on an unknown map, and the game is waiting for you to found a city. What you decide in the next 60 turns shapes the rest of the game. That is the first course: how to win Civ VI on Prince (the default difficulty), and how to find your way around Civ VII. The second course runs underneath it. About sixty real-world concepts, from opportunity cost to the security dilemma, are each tied to a game plan, so you feel the idea before you learn its name.

Every lesson has the same shape.

1. **The rule.** The game mechanic, with real numbers and a source.
2. **The concept.** A true story about real people first, then the idea it shows, who named it, and when.
3. **The map.** A two-column table: what happens in the game, and what happens in the world.
4. **Where the map breaks.** The ways the game gets the idea wrong. This part is never skipped.
5. **The hard question.** In many lessons, a short box on a real case where winning and doing right pulled apart. It gives both sides and no verdict.
6. **The lab.** A short in-game experiment: predict, play, measure. A debrief explains why your result might differ; a bridge shows the pattern in the world.
7. **Check yourself.** Three questions, on the game, the concept and the world. Answer before you look: the PDF prints the answers at the back, and the web hides each behind a "Show answer" button.
8. **Takeaways.** One line for the game and one for life.

Badges and stamps. VI marks a Civ VI rule, with the Gathering Storm (the second Civ VI expansion) expansion and all free updates. VII marks Civ VII. Civ VII still changes, so its numbers carry the patch they were checked against, such as [patch 1.5.0](#).

Concept cards. Each concept gets one full card, in the lesson where it fits best. Elsewhere a one-line *concept lens* links back to it.

Three ways to read this book

Play tonight. Read these, start a game, and come back to the rest when a question comes up. On the first evening you can skip the purple concept cards and the labs.

1. [What Kind of Game Is This?](#) p. 11
2. [Setting Up Your First Game](#) p. 15
3. [Reading the Screen and Taking a Turn](#) p. 17

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4. [Where to Settle](#) p. 21
 5. [Your First 60 Turns](#) p. 24
 6. [One-Page Checklists](#) p. 165

The course. Read in order, run each lab, and answer the questions before you check. The web edition adds a concept flashcard deck and three live models: a combat calculator, a growth-and-housing simulator and an expansion compounding model.

Tip Never played Civ? You can read this book without ever starting the game. Read each lesson's opening, its concept cards (a true story, the idea in one line, and where the game gets it wrong) and its hard questions. Skip the labs and the numbered step lists, which are for a player at the keyboard. [Part 10](#) and [Part 11](#) stand on their own. On the web edition, the "Ideas only" button does the sorting for you: it hides the game rules, labs and step lists.

Why a game book teaches real concepts

Teachers already do it. In 2011 Kimberly Weir and Michael Baranowski of Northern Kentucky University reported teaching international politics with Civilization. At the University of Georgia, Jeffrey Berejikian's course INTL 4265 has student teams run governments in Civilization IV and explain their moves with ideas such as complex interdependence. Kurt Squire's 2004 dissertation studied students learning world history through Civilization III.

Naming is what transfers. You can play a hundred games without noticing that your opening was compounding. The concept cards name the idea, and the labs make you test it. The two cards below explain why that step matters.

The breaks are lessons too. Knowing where Civ's version of an idea fails keeps you from mistaking the game for history. [The Six Assumptions](#) turns this on the whole game.

Careful The claim is modest. Civ will not make you a better manager, investor or diplomat. It gives you a fast, safe place to feel ideas that are slow and costly to feel in real life, and naming them gives that feeling a chance to carry over.

Sources: Weir & Baranowski, "Simulating History to Understand International Politics," *Simulation & Gaming* 42(4) (2011); INTL 4265 syllabus; Squire, *Replaying History* (2004).

LEARNING SCIENCE

Transfer of learning

"Brain training", computer puzzles sold to sharpen the whole mind, had grown into a multimillion-pound industry when a team led by Adrian Owen put it to the test, publishing in 2010. For six weeks, 11,430 volunteers trained online several times a week on tasks built to improve reasoning, memory, planning and attention. They got better at every task they practiced. On tasks they had not practiced, even closely related ones, the team found no evidence of any gain. A skill stays close to where it was learned unless something carries it across.

Transfer of learning: using what you learned in one setting in another. Low-road transfer happens by itself when the new setting looks like the old. High-road transfer takes deliberately pulling out the principle and asking where else it applies.

HOW THE GAME MAPS IT

In the game	In the world
Each game plan is paired with a named concept card.	<i>Bridging:</i> pulling out the principle on purpose, for high-road transfer.
Labs replay the same 20 or 30 turns with one thing changed.	<i>Hugging:</i> practice kept close to the real situation, for low-road transfer.

WHERE THE MAP BREAKS

- ✗ Far transfer, from games to unrelated real skills, has weak support. A 2017 review by Sala and Gobet found that the better the study, the smaller the effect.
- ✗ Civ's rules were designed, not discovered. A principle that works in the game may only reflect a designer's choice.
- ✗ The feeling of "getting it" is not the test. Doing a new task better is.

READ NEXT

- Accessible: Sala & Gobet, "Does Far Transfer Exist?" (2017); Owen et al., "Putting Brain Training to the Test," *Nature* 465 (2010).
- Primary: Perkins & Salomon, "Teaching for Transfer" (1988).

David N. Perkins & Gavriel Salomon, "Teaching for Transfer," *Educational Leadership* 46(1): 22–32 (1988)

LEARNING SCIENCE

Experiential learning cycle

Edwin Link learned about pumps, valves and bellows in his father's piano and organ company, and in 1929 he used them to build a cockpit on the ground that pitched and rolled like an airplane. In the Depression he sold some to amusement parks. Then the Army Air Corps took over carrying the air mail, and 13 of its airmen died in 78 days. Few had much practice flying by instruments in bad weather. In 1934 Link flew to a meeting with the Air Corps through fog its officers thought unflyable. They ordered six trainers at \$3,500 each. In the box a pilot could fly blind, get it wrong, see why, and go again. More than 500,000 American pilots trained on Link's machines.

Experiential learning cycle: Kolb's loop of four stages. Have a concrete experience, reflect on it, form an idea that explains it, then test the idea by acting, and the next experience looks different.

HOW THE GAME MAPS IT

In the game	In the world
Playing a game	Concrete experience
Looking back after the game, then reading the concept card	Reflection, then the abstract idea that explains it
The lab: replay with one change	Active experimentation

WHERE THE MAP BREAKS

- ✗ Kolb's cycle is a description, and a weakly tested one. The "learning styles" inventory that grew out of it has poor evidence behind it, and this book does not use it.
- ✗ Hidden AI difficulty bonuses can teach you the wrong reason for a loss, so you can reflect your way to a false lesson.
- ✗ Reflection is the stage players skip. Go straight to the next game and the cycle does nothing.

READ NEXT

- Accessible: James Madison University's two-page summary of Kolb's model.
- Primary: Kolb, *Experiential Learning* (1984).

David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (Prentice-Hall, 1984)

LAB · Lab: Can you build a bridge?

Predict first: of the sentences you will write in this lab, guess how many you can rewrite with no game words: most, about half, or few.

1. Read the opportunity cost card.
2. Play 20 turns. Each time you pick what a city builds next (its production choice), write one sentence naming what you gave up.
3. Close the game. List three real decisions from this week where the same sentence applies.

Measure: how many of your in-game sentences you can rewrite without any game words.

What you should see: most rewrite easily once you have named the idea. The ones that don't usually point to a place where the game's map breaks.

If your result differs: some costs exist only in the game, such as one of the 3 charges a Builder (the unit that farms and mines land) uses up; a sentence about those marks a place the map breaks. If you wrote very few sentences, your cities finished few items in 20 turns, so play on until you have ten.

In the world: a household budget runs on the same sentence. The money for a takeout meal is money not saved or spent elsewhere. Write down one purchase this week and what it pushed out.

In the game: read the rule, play the lab, then read the card.

In the world: after any experience, name the principle and one other place it applies, because naming is the step that makes learning carry over.

Which Game Should You Play?

Two games carry the name. One has stood still since 2023 and matches the numbers in this book. The other is newer, still changing with each patch, and may not.

The two games side by side VI VII

	Civ VI VI	Civ VII VII
Released	October 2016	February 2025
Steam players (late 2025 to 2026)	About 28,000–33,000 on average; monthly peaks of 48,000–54,000	About 10,500 on average (September 2026)
Steam reviews	Very Positive: 85% of about 108,000 English-language reviews	Mixed: about 51% positive of about 30,000 reviews
Critics	Metacritic 88 (PC)	Metacritic 79
Maturity	Finished. Two expansions (Rise and Fall, 2018; Gathering Storm, 2019) and two passes of paid add-ons (DLC); the last pack came out in March 2023.	Still changing. Patch 1.4.0 (May 2026) replaced the victory systems; 1.4.1 reworked happiness and governments; 1.5.0 (September 2026) added new maps.

	Civ VI VI	Civ VII VII
What to buy	Base game plus both expansions; the Platinum Edition bundles all three. The Anthology adds the New Frontier Pass and Leader Pass, which you do not need.	The base game. DLC collections add civs (playable nations) and leaders but are optional.
Mods (fan-made changes)	Steam Workshop since February 2017	Official Steam Workshop support since patch 1.2.2 (June 2025)
Coming next	No new content since the Leader Pass	The Earthrise expansion (space race, terraforming, disasters) and a free "Arc of Tomorrow" update adding a fourth age, the Atomic Age, both due in 2027

Sources: SteamCharts Civ VI; SteamCharts Civ VII; Steam store Civ VI; Steam store Civ VII; Civilization VI (fandom); Civilization VII (Wikipedia); Platinum Edition; Anthology; Modding (Civ6); 2K support (1.2.2); 1.4.0 notes; CivFanatics on Earthrise.

The recommendation

Learn on Civ VI, then read Part 7 for Civ VII. Civ VI's rules have not moved in years, so this book will match your screen, and its player base is nearly three times larger.

Civ VII is worth playing, but its systems changed as recently as 2026, and Part 7's numbers may drift with the next patch. Its cities, tiles, diplomacy and war will feel familiar after VI.

Concept lens: the first game you learn shapes your habits in every later one. Early choices lock in a path, so learn on the stable game. **Path dependence**

In the game: Civ VI with Gathering Storm (the second Civ VI expansion) for your first ten games; then Part 7 and Civ VII.

In the world: learn a skill on a stable version of the tool before you chase the newest one.

What Kind of Game Is This?

In 1993 a magazine preview gave a whole kind of game its name, "4X", after four words: explore, expand, exploit, exterminate. They describe a good deal of history too. Here is what they mean and how you win.

Explore, expand, exploit, exterminate VI VII

The label "4X" comes from a 1993 *Computer Gaming World* preview by Alan Emrich on the space game *Master of Orion*. The four X's are the four things you do.

- **Explore:** send units (your movable pieces) into the unknown map to find land, resources and other civilizations, or *civs*.
- **Expand:** train Settlers (the units that found cities), the unit that founds a city, and found new cities.
- **Exploit:** work the land around your cities for *yields*. Food grows a city; Production (the yield that builds units and buildings) builds things; Gold, Science, Culture and Faith (the yield spent on religion) pay for the rest.
- **Exterminate:** fight, or deter, your rivals.

Turns. You give your orders and press End Turn; then the computer players (the AI) move. A Standard-speed Civ VI game runs up to 500 turns. Civ VII splits a game into three ages: Antiquity, Exploration and Modern patch 1.5.0.

Ways to win. In your first game you need not pick one; aim for three or four cities by turn 60 (**Your First 60 Turns**). **Part 5** has the detail; the **Glossary** defines terms such as **Tourism** (cultural pull that wins a Culture victory).

Game	Victory	In one line
VI	Science	Be first through the space-race projects.
VI	Culture	Your visiting tourists outnumber each rival's domestic tourists.
VI	Domination	Control the original capital of every other civ.
VI	Religious	Your religion holds more than half the cities of every civ still in the game.
VI	Diplomatic	Reach 20 Diplomatic Victory Points, earned mostly in the World Congress.
VI	Score	Have the highest score when the turn limit is reached.
VII patch 1.5.0	Military, Cultural, Economic	Lead second place in Dominion points (a military score), Tourism or GDP by a set multiple (6× late in Exploration, falling to 1.25× at the end) for 5 turns.
VII patch 1.5.0	Science	Reach 100 points, then keep a Launch Pad (a space-race building) active for 5 turns.
VII patch 1.5.0	Domination or score	Eliminate every rival, or have the highest score when the Modern age ends.

Sources: Alan Emrich (Wikipedia); Victory (Civ6); Speed (Civ6); Civ VII patch 1.4.0 notes.

Concept lens: picking a victory early and lining every system up behind it is grand strategy: matching ends, ways and means. **Grand strategy**

The concept map at a glance

Every concept in the book, by discipline. Each name links to its full card.

Discipline	Concept
Learning science	Transfer of learning
	Experiential learning cycle
	Deliberate practice
Economics	Opportunity cost
	Marginal analysis
	Diminishing returns
	Malthusian trap
	Time value of money
	Agglomeration economies
	Division of labor
	Learning by doing
	Endogenous growth
	Comparative advantage
	Information asymmetry
	Externalities
	Tragedy and governance of the commons
	Creative destruction

Discipline	Concept
Systems and models	Compounding
	Path dependence
	Stocks, flows and feedback
	Collapse of complex societies
	“All models are wrong”
Technology	Diffusion of innovations
	General-purpose technologies
Political economy and sociology	Institutions
	Inclusive vs extractive institutions
	Principal-agent problem
	Network spread of religion
	Imagined communities
	Exit, voice and loyalty
	Stationary vs roving bandit
	Monopoly of legitimate violence
	“War made the state”
International relations	Realpolitik
	Complex interdependence
	Balancing vs bandwagoning
	Security dilemma
	Deterrence and compellence
	Soft power
	Imperial overstretch
	Structural realism
	Offensive realism
Geopolitics	Geography and development
	Sea power
	Heartland and rimland
Strategy and war	Fog, friction and the culminating point
	Sun Tzu
	Lanchester's laws
	OODA loop
	Revolution in military affairs
	Grand strategy
Decision science and game theory	Bounded rationality
	Sunk-cost fallacy
	Expected value and risk
	Repeated games
	Arrow's impossibility theorem
	Nash equilibrium
	Prisoner's dilemma
	Credible commitment

Check yourself

1. In Civ VI, a rival's religion holds more than half the cities of every civ except yours. It now holds 5 of your 10 cities. How many more must it convert to win?
2. You are going for a Science Victory, yet you keep spending Production (the yield that builds units and buildings) on an army you never use. Which concept names the mismatch?
3. A student faces four exams, a sports tryout and a part-time job in the same month. What would picking a "victory" first do for her?

In the game: explore early, expand fast, exploit your land, and fight only when it serves your plan.

In the world: sixty ideas sound like a lot, yet you will have felt each one in play before you read its name.

PART 1

Your First Game of Civ VI

From the setup screen to turn 60. You will pick settings that let you learn, read the screen, found good cities, and run an opening that gives you three or four cities.

Setting Up Your First Game

On the hardest level the computer is no smarter than on the easiest. It just starts with 3 Settlers (the units that found cities) to your 1 and double Production (the yield that builds units and buildings). Pick a level where you can still see why you lost.

The rule: difficulty is a set of AI bonuses VI

Civ VI has eight difficulty levels. The AI does not get smarter as you go up. It gets bigger numbers: extra yields, extra combat strength (the fighting number every unit has) and extra starting units. On the three lowest levels you get the bonuses instead.

Level	AI Science, Culture, Faith	AI Production, Gold	AI combat strength	Your combat strength	AI starting Settlers
Settler	+0%	+0%	-1	+3	1
Chieftain	+0%	+0%	-1	+2	1
Warlord	+0%	+0%	-1	+1	1
Prince (default)	+8%	+20%	0	0	1
King	+16%	+40%	+1	0	1
Emperor	+24%	+60%	+2	0	2
Immortal	+32%	+80%	+3	0	2
Deity	+40%	+100%	+4	0	3

From Prince (the default difficulty) up, the AI also gets free tech and civic boosts (1 at Prince, 5 at Deity; [Reading the Screen](#) explains boosts), and from King up it gets extra starting Warriors (basic fighting units). Forum data-miners disagree on whether Prince already has the first +8%/+20% step, so treat Prince as "roughly even".

Source: Difficulty level (Civ6), built from the game files via CivFanatics.

Which difficulty, and why VI

Play your first game on **Chieftain**, then move to **Prince** (the default difficulty). Below Prince you get a combat bonus. Damage grows exponentially with the gap in combat strength, so on Settler your +3 and the AI's -1 make a 4-point swing, and your hits do about 17% more damage and theirs about 15% less. A first game is for seeing every system, so survive long enough to reach them.

[Climbing the Ladder](#) covers when to move up.

Map, speed and help VI

Setting	Pick this	Why
Ruleset	Gathering Storm	The full modern game. This book assumes it.
Map type	Continents or Pangaea	Pangaea is "one massive landmass", so you meet neighbors early and rarely need boats. Continents is "a few large landmasses".
Map size	Small	6 civs and 9 city-states (minor powers that cannot win) by default. Standard has 8 and 12, which is more to track.
Speed	Standard (500 turns)	Every turn number in this book assumes Standard. Faster speeds scale all costs down.
Advisor	"New to Civilization"	The advisor explains the basics as they come up. Set it in Game Options.

To set this up, choose Single Player, then Create Game, not Play Now (which picks Small Continents, Prince and a random leader). The leader list starts on "?", Random Leader, so pick Trajan, then set the difficulty to Chieftain. For a guided start, try the Tutorial on the main menu.

Do you own Gathering Storm (the second Civ VI expansion)? If you do, Choose Ruleset at the top of the Create Game screen offers "Expansion: Gathering Storm". If it is stuck on Standard Rules, open Additional Content on the main menu and check that the expansions are enabled (Steam community advice). Without it, play anyway. A few numbers differ (base-game Eureka's pay 50%, not 40%), and the book names Gathering Storm where it matters.

Sources: Starting a new game (Civ6); Map (Civ6); Speed (Civ6); official manual, pp. 6–9 and 20–21; Steam discussion on enabling expansions (2024); Boost (Civ6).

Your leader

Each civ is played as one historical leader, and both bring bonuses. This book's default is **Trajan of Rome** VI. Every city you found starts with a free Monument (a Culture building) and a road to your capital if it is close enough. Screen Rant's list for new players also names Sumer, Scythia, Greece and Russia.

Sources: Screen Rant, "Civilization 6: Best Leaders for New Players" (2020); fandom pages Trajan, Roman.

Tip Leave mods (fan-made add-ons) off for your first game. When you want them, **Resources** lists the ones worth installing.

Concept lens: research on expert performance finds that skill grows fastest from practice set just beyond your current level, with fast feedback. Too easy and you learn nothing; too hard and you cannot see why you lost. **Deliberate practice**

LAB · Lab: How big is the handicap?

Predict first: at turn 40, how many more points will the best AI lead you by on Prince than on Chieftain?

- When you create the game, open Advanced Setup and write down the Map Random Seed, the number that generates the map. Start on Chieftain as Trajan.
- Play to turn 40. Note your score and the highest AI score on the World Rankings screen (top right).
- Start again with the same seed and leader on Prince. Make the same choices where you can and play to turn 40.

Measure: the gap between your score and the best AI score in each run.

What you should see: a bigger AI lead on Prince with identical play. Only the difficulty bonuses changed, so the extra gap is the handicap.

If your result differs: forum data-miners dispute whether Prince's first +8%/+20% yield step applies, so the AI's edge may be small. Chieftain's +2 combat strength for you and -1 for the AI never shows if you fought no battles. And any different choice makes the two runs unequal.

In the world: a golf handicap or a chess "odds" game works the same way. Change only the handicap and the score gap shows its size. Play a friend at a game you both know, once even and once with one of you giving up a piece.

Check yourself

1. You play on Settler, where you get +3 combat strength and the AI gets -1. How much harder do your units hit, and how much softer do theirs?
2. After ten easy wins on Chieftain, your games feel the same and you rarely lose a unit. Which concept explains why you stopped improving, and what should you change?
3. One beginner guitarist only replays three songs she knows. Another attempts a piece far too hard and quits. What would deliberate practice suggest to each?

In the game: first game on Chieftain, Small Pangaea or Continents, Standard speed, Trajan, advisor on.

In the world: set practice just past your current level, where you can still see why you failed.

Reading the Screen and Taking a Turn

Every turn offers more choices than anyone can weigh. Strong players do not try. They spend their thinking on the few that matter and take a good-enough answer for the rest.

The rule: the screen, piece by piece VI

The top bar. A strip across the top shows what your whole empire earns each turn: ● **Science** (pays for technologies), ● **Culture** (pays for civics), ● **Faith** (founds a religion and buys religious units) and ● **Gold** (buys things outright and pays upkeep). It also shows your stock of strategic resources (such as Horses and Iron, which some units need) and the turn number.

Research and civics. A tracker on the left shows the technology and the civic you are working on. Open the full *tech tree* and *civics tree* (social ideas) from the buttons at the top left. Most tree items have a boost: do the listed task, such as "kill a unit with a Slinger" (an early ranged unit), and you get 40% of its cost at once. A tech boost is a *Eureka*, a civic boost an *Inspiration*.

Government and policies. Your first civic, Code of Laws, unlocks the Government screen and your first government, Chiefdom. A government has slots; you fill them with *policy cards*, small rules such as Urban Planning (+1 Production in every city). You can swap cards for free whenever you finish a civic. At most other times swapping costs Gold (**Governments and Policies** lists the exceptions).

Lenses. The Lenses button sits above the mini-map at the bottom left. A lens recolors the map to show one thing. The one you need now is the Settler (the unit that founds a city) lens (hotkey 4), covered in **Where to Settle**.

The city panel. Click a city's banner to see its yields, growth and Production (the yield that builds units and buildings) list, where you choose units, buildings and districts (specialist zones built on tiles near the city, such as a Campus for Science).

Unit actions. Select a unit and its actions appear at the bottom right.

Action	What it does
Move	Right-click a tile. Long moves continue over several turns.
Attack	Melee units: move onto the enemy's tile. Hover over the enemy first to see the Combat Preview.
Ranged Attack	Slingers and Archers: select the unit, choose Ranged Attack, then click a target in range. The attacker takes no damage back.
Found City	Settler only. Finds a city on its tile and uses up the Settler.
Build Improvement	Builder only. Stand on the tile and click Farm, Mine or another improvement. Each use spends one of its 3 charges.
Automate Exploration	The unit, usually a Scout, explores on its own every turn until you cancel.
Fortify	Military only (most melee and ranged units). The unit digs in for a defense bonus: +3 after one turn, +6 after two or more. It stays put until you select it again.
Sleep	For units that cannot fortify (civilians, cavalry, ships). Stays put until you wake it. No defense bonus.
Skip Turn	Does nothing this turn only. It will ask again next turn.

Notifications and End Turn. The large button at the bottom right ends your turn. While something still needs a decision it shows that instead: "Choose Research", "Choose Production", "Unit Needs Orders". Click it to jump to the thing that needs you.

Sources: Lens (Civ6); Government (Civ6); Unit actions (Civ6); Combat (Civ6); Boost (Civ6); official manual, pp. 27, 50, 55, 71–72, 75; Gold (Civ6); Pixel Twelve beginner guide.

How a turn works VI

- 1 Read the notifications. Answer anything that blocks the turn: research, civic, production.
- 2 Glance at the top bar. Is Gold per turn positive? If not, delete a unit you no longer need (most units cost Gold upkeep; Warriors, Slingers and Scouts are free) or slot God King (+1 Gold in the capital).
- 3 Move units. Sleep or fortify idle ones so they stop asking.
- 4 If you finished a civic, check your policy cards. Swaps are free right now.
- 5 Press End Turn. The AI moves, yields arrive, and the next turn starts.

DECISION SCIENCE

Bounded rationality and satisficing

In 1934–35 Herbert Simon, a student writing a term paper, studied how his home city of Milwaukee ran its playgrounds. The school board and the public works department shared the job. They seemed to agree on the goals, yet argued constantly over how much to spend on upkeep and how much on play supervisors. Simon's economics books said to weigh what one more dollar bought in each. Nobody could measure that. To public works a playground was "a green oasis in the crowded gray city"; to the recreation staff it was a place for children to play with adult guidance. Each side judged by the goal it could see. The puzzle shaped a career that won Simon a Nobel Prize in 1978.

Bounded rationality: real decision-makers have limited information, time and brainpower, so they cannot find the best option. They satisfice instead: set a good-enough bar and take the first option that clears it.

HOW THE GAME MAPS IT

In the game	In the world
Each turn offers dozens of choices: builds, research, moves, swaps. Nobody computes the best combination.	Limited computing power. A manager with forty decisions a week cannot optimize them all.
Build orders and "always keep one more unit than my neighbor" rules.	Heuristics and aspiration levels: a good-enough rule frees attention for the choices that matter.

WHERE THE MAP BREAKS

- ✗ Civ shows you exact numbers: yields, turns to finish, a combat preview. Real decision-makers rarely get figures that clean.
- ✗ The game waits for you. You can think about one turn for an hour, and you can reload a save. Real time pressure and irreversibility are what make bounds bite.
- ✗ Aspiration levels move. What counts as good enough on Chieftain will lose on Deity (the hardest difficulty).

READ NEXT

- Accessible: Simon's Nobel lecture (1978), which tells the Milwaukee story; his 1953 RAND paper, "A Behavioral Model of Rational Choice" (RAND P-365).
- Primary: Simon 1955, *Quarterly Journal of Economics* 69(1): 99–118.

Herbert A. Simon, "A Behavioral Model of Rational Choice," *Quarterly Journal of Economics* 69(1): 99–118 (1955); "satisficing" named in "Rational Choice and the Structure of the Environment," *Psychological Review* 63(2) (1956)

LAB · Lab: Can you play a turn in one minute?

Predict first: which run will have more Production per turn at turn 20, and by how much?

1. Save on turn 1. Play 20 turns with a 60-second timer per turn. When it rings, press End Turn.
2. Reload. Play the same 20 turns with no timer.
3. In the timed run, jot down each decision you skipped or guessed.

Measure: Science, Culture and Production per turn at turn 20 in each run.

What you should see: a small gap, if you had a simple plan (the opening in **Your First 60 Turns**). Most of the turns that "needed" thought did not change much. The few that did are the ones worth slowing down for.

If your result differs: if the timed run fell far behind, look for units left standing (a Scout that stood still found fewer Tribal Villages), a missed free policy swap after a civic (Urban Planning alone is +1 Production in every city), or no simple plan, so every turn needed fresh thought.

In the world: timed exams often split the same way. Many marks come from questions you can answer quickly, and a few hard ones repay extra minutes. Time yourself on a practice paper and note which questions actually changed your score.

Check yourself

1. You make 5 Science a turn. You trigger the Eureka for a tech that costs 50 Science before you start it. How many turns does that save?
2. On turn 3 you spend twenty minutes choosing between two nearly identical moves for your Warrior. Which concept says you should stop, and what would you do instead?
3. A family is choosing a dentist from 40 nearby options. How would a satisficer choose, and when is a longer search worth it?

In the game: clear the blockers, move units, check policies after civics and end turn, saving deep thought for settling, war and wonders.

In the world: decide what "good enough" means before you start searching, then stop when you find it.

Where to Settle

Your Settler (the unit that founds a city) can found a city on almost any open tile, and the choice is permanent. One step can mean 5 Housing (a city's soft population cap) or 2. Scholars still argue over how much the ground under a society decides its fate.

The rule: what makes a good city site VI

Turn 25. Your second Settler stands on a dry plain, and the next tile touches a river. Found here and growth slows from size 1. Step to the river first and it slows only at size 4.

The map is made of six-sided tiles, or hexes. A city works tiles up to 3 hexes from its center, so judge the neighborhood. Check these in order.

1. Water, which sets Housing. *Housing* is how many people a city can hold before growth slows. Your water source sets the starting value.

City center is next to	Housing
Fresh water: River, Lake or Oasis	5
Coast (no fresh water)	3
Neither	2

Growth runs at full speed with 2 or more spare Housing, half speed with 1 spare, and quarter speed once Population (the city's number of citizens, who work its tiles) reaches Housing. So a dry city grows at half speed from its first citizen, unless it is your capital (its Palace adds 1 Housing). [Housing and Amenities](#) covers how to add more.

2. Coast. A city on the coast can build ships. A city within 2 hexes of Coast or Lake can build a Harbor (a sea district) once that water is inside its borders. Founding a coastal city also gives the Eureka (a 40% research discount for a related task) for Sailing.

3. Hills. A city on Hills gets a defensive bonus, and units defending on Hills get +3 combat strength. A city center is raised to at least  **2 Food** and  **1 Production** (the yield that builds units and buildings); Plains Hills gives  **2 Food** and  **2 Production**, the best center you can get without a resource.

4. Resources in reach. A *luxury* resource (Wine, Silk and so on) gives +1 Amenity, a measure of contentment, to up to 4 of your cities once improved. A second copy of the same luxury adds nothing, so it is best traded away. *Strategic* resources (Horses, Iron, later Coal and Oil) add to your stockpile every turn in Gathering Storm (the second Civ VI expansion), and many appear only after you research the matching tech.

5. Distance. A new city center must be at least 4 hexes from any other city center, leaving 3 tiles between them. If water separates the two, the minimum drops to 3 hexes.

Settling removes Woods, Rainforest or Marsh from the tile with no bonus yield.

Sources: City (Civ6); Housing (Civ6); Amenities (Civ6); Combat (Civ6); Sailing (Civ6).

The Settler lens VI

It turns on when you select a Settler; press 4 to show it any time. Dark green tiles have fresh water (5 Housing), light green are coastal (3), gray have neither (2), and red cannot be settled.

Source: Lens (Civ6).

GEOPOLITICS

Geography and development

Yali, a politician in New Guinea, once asked the American writer Jared Diamond why white people had developed so much "cargo", the local word for manufactured goods, and brought it to New Guinea, while his own people had so little. Neither man thought Europeans were born superior. Diamond's answer, in a 1997 book, was the ground itself. Eurasia had more wild plants and animals that could be farmed, and its long east-west axis let crops and herds spread through lands with similar seasons. The Americas and Africa run north-south, where a crop from one latitude struggled at the next. Farming brought more people, bigger states, better tools and, from life beside livestock, deadlier germs.

Geography and development: the theory that a region's plants, animals, continental shape and diseases, more than its people, explain why some societies built states and conquered others. Critics give institutions and colonial history more weight.

HOW THE GAME MAPS IT

In the game	In the world
A river start gives 5 Housing; a dry start gives 2, which cuts growth to half and then a quarter within a few citizens.	Early farming societies clustered on rivers: the Nile, the Tigris and Euphrates, the Indus, the Yellow River.

WHERE THE MAP BREAKS

- ✗ Civ's map generator gives every civ a playable start, and you can tell it to balance them. Real geography made no such promise.
- ✗ Diamond's scale is continents over 13,000 years. Civ's is a city over a few hundred turns.
- ✗ Civ VI has no disease. The single biggest factor in Diamond's account of the conquest of the Americas does not exist in the game.
- ✗ Your settlers walk onto empty land. Real settlers almost never did. [The Six Assumptions](#) takes this up.

READ NEXT

- Accessible: Diamond, *Guns, Germs, and Steel* (1997), which is also the primary source.
- Primary, the institutions case: Acemoglu, Johnson & Robinson, "The Colonial Origins of Comparative Development," *American Economic Review* 91(5): 1369–1401 (2001).

Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (1997); critics J. M. Blaut, *Eight Eurocentric Historians* (2000), and Acemoglu, Johnson & Robinson, "The Colonial Origins of Comparative Development," *American Economic Review* 91(5) (2001)

The hard question: is "empty land" ever empty?

In Civ, unclaimed land is free. At noon on April 22, 1889, about 50,000 people raced into Indian Territory to claim nearly two million acres. The Creek and Seminole had owned it until 1866, when the United States made them cede it as a penalty for their treaties with the Confederacy. No tribe was assigned it after that. The Creek got 30 cents an acre, for land their treaty said would house other Indians and freedmen.

The case for the run: the land had been sold by treaty and left vacant for 23 years, and in 1889 the Creek were paid over \$2.2 million more to give up their remaining claims; the Seminole made a similar deal. Many who raced in were poor farmers hoping to earn 160 acres under the Homestead Act.

The case against: a cession forced on the losers of a war is a sale under pressure. Some Creek had fought for the Union, and their nation lost half its land anyway. Land meant for other Indians and freedmen went to non-Indian settlers. A map shows land as empty only after its owners have been made to sign it away.

Your call: *if land was taken under pressure a generation ago, does a family that settles it in good faith owe anything for how it was taken?*

LAB · Lab: How much is a river worth?

Predict first: 30 turns after founding, how many more citizens will the river city have than the dry one?

1. Around turn 20, with a Settler ready, find two legal sites: one dark green on the Settler lens, one gray.
2. Save. Found on the dark green site. Play 30 turns with the same build in the new city (Warrior, then Builder, then Monument).
3. Reload. Found on the gray site and repeat.

Measure: the new city's Population and Production per turn 30 turns after founding.

What you should see: the river city is larger. The dry city drops to quarter-speed growth once it reaches 2 Population. Then ask how much of the gap you could close with play (a Farm, or a Granary for +2 Housing) and how much is the site itself.

If your result differs: if the gap is small, check the dry site's color again. Light green is coastal, with 3 Housing, not 2. Or neither city had much spare Food: each citizen eats 2 Food a turn, so both grew slowly and the Housing brake barely mattered.

In the world: open a map of any country and count how many of its largest cities sit on a river or coast. Then ask the lesson's second question: which grew because of later choices, such as a port, a railway or a capital placed there?

Check yourself

1. You can found a city beside a river or on a dry inland site. Neither will be your capital. At Population 3, how fast does each grow?
2. Your rival started on a river with Plains Hills; you started dry and flat. At turn 50 they lead. Which concept frames this, and what would its critics want you to check?
3. Two towns were founded the same year, one on a navigable river, one inland and dry. A century later the river town is far larger. What two explanations should you test?

In the game: dark green first, then coast and hills, then a new luxury, with 3 tiles between it and your other cities.

In the world: geography sets the starting hand and choices decide how it is played, so be wary of any story that explains everything with just one of the two.

Your First 60 Turns

Found your second city 20 turns earlier and it outproduces its later twin all game, and helps pay for the next. The first 60 turns are where small choices compound.

The rule: the early pieces VI

You start with one Settler (the unit that founds a city) and one Warrior. Everything else you build.

Item	Production	What it is for
Scout	30	3 moves. Finds Tribal Villages (a free reward for the first unit in), city-states and neighbors.
Slinger	35	Cheap ranged unit (ranged strength 15). Killing a unit with it gives the Archery Eureka.
Warrior	40	Basic melee unit (strength 20).
Builder	50	Builds Farms, Mines and other improvements, one per charge, 3 charges. Civ VI has no Worker unit.
Monument	60	+1 Culture.
Settler	80	Founds a city. Needs Population 2 and costs 1. Each one raises the next one's cost.

First civics. Code of Laws (cost 20) gives you Chieftom, with one Military and one Economic policy slot. Good first cards are Urban Planning (+1 Production in every city) or God King (+1 Faith, +1 Gold in the capital), plus Discipline (+5 combat strength against barbarians). Craftsmanship's Inspiration (a 40% civic discount for a related task) is "improve 3 tiles", and it unlocks Ilkum (Babylon's own Builder) (+30% Production toward Builders). Early Empire's Inspiration is "6 total Population", and it unlocks Colonization (+50% Production toward Settlers).

Useful early Eurekas (40% research discounts for related tasks). Writing (a technology): meet another civ. Bronze Working: kill 3 barbarians. Irrigation: farm a bonus resource. Astrology: find a natural wonder.

Barbarians (hostile raiders from camps). Barbarians are raiders who belong to no civ. Their camps send out a scout. If it finds your city and gets home, the camp sends 3 to 6 raiders. Kill barbarian scouts on sight.

Pantheon (an early faith bonus). 25 ● **Faith** (the yield spent on religion) founds a pantheon, a small permanent bonus (see [Religion](#)).

Sources: fandom pages Settler, Scout, Slinger, Builder, Monument, Code of Laws, Craftsmanship, Early Empire, Barbarian, Pantheon, Era.

The opening VI

There is no single correct opener. Community consensus (CivFanatics) is some order of **Scout** (a fast unit for exploring), **Slinger** (an early ranged unit), **Settler** (the unit that founds a city), with a **Builder** (a unit that builds farms, mines and the like) when you have good tiles to improve. Below is a sound default for Chieftain or Prince (the default difficulty), with rough turn numbers.

T1 Found your capital where your Settler stands, unless a dark green tile is one move away. Set production to Scout and your civic to Code of Laws. For research, hover over nearby tiles to see which resources they hold. Pick Animal Husbandry (a technology) for Sheep or Cattle (its Pastures improve them), Mining for Stone or hills, and Pottery if the capital has no fresh water (it unlocks the Granary, +2 Housing). If unsure, pick Mining: Mines work on any bare hill, and Mining lets Builders chop (clearing Woods for a lump of Production) woods for Production (the yield that builds units and buildings).

T1-10 Scout the unknown and pick up every Tribal Village (a hut with a free reward for the first unit in). Keep the Warrior near home.

T5-15 Build a Slinger. Finish Code of Laws and slot the cards above.

Concept lens: every turn spent on a unit is a turn not spent on a Settler. That trade-off is opportunity cost. **Opportunity cost**

T10-25 Build your first Settler as soon as the capital reaches Population 2. Escort it if barbarians are near. Put a Warrior on its tile and choose Create Escort Formation; a Settler caught alone can be captured. A Builder before or after is fine if you have bonus resources to farm or mine.

Concept lens: a city founded on turn 20 outproduces one founded on turn 40 for the rest of the game, and pays for more cities sooner. **Compounding**

T15-30 Head the civics tree toward Craftsmanship (improve 3 tiles for its Inspiration) and Early Empire. If a barbarian scout appears, kill it with the Slinger and Warrior before it gets home.

Concept lens: barbarians are raiders with no stake in your land, which is why clearing their camps pays. **Stationary vs roving bandit**

T20-35 Found city 2 on the best dark green site within a few tiles. Train Settlers in the capital whenever it reaches Population 2 or more, and use Builders or Monuments to fill the gaps while it regrows. When Early Empire finishes, slot Colonization.

T35-50 Found cities 3 and 4. Research Writing for your first Campus (a science district) and Astrology for a Holy Site (a Faith district) if you want a religion. A city can hold 1 **specialty district** at Population 1 and another at 4, so do not expect many yet. Skip wonders (one-of-a-kind buildings) until your third city; **Wonders and Great People** explains why.

Concept lens: the first district (a specialized city tile that holds buildings) you place locks in where later districts get their adjacency (extra yield from what sits next door) bonuses, the extra yield a district gets from its neighbors. **Path dependence**

T45–60

Head for Political Philosophy (a step on the culture tree) (Inspiration: meet 3 city-states). It unlocks the first full governments: Classical Republic, Oligarchy and Autocracy. If a neighbor's army is growing, add a unit or two of your own.

Concept lens: your neighbors are watching your army and you are watching theirs. Too few units invites attack; too many alarms them. **Security dilemma**

Sources: CivFanatics, "What is your opener and why?"; District (Civ6); Political Philosophy (Civ6); fandom pages Animal Husbandry, Mining, Pottery, Mine, Pasture; Pixel Twelve (tile tooltips); official manual p. 50 (escorts).

Pop-ups you'll see in the first 60 turns VI

- **Choose a pantheon** (at 25 Faith). Pick Religious Settlements if it is offered. In Gathering Storm (the second Civ VI expansion) it gives a free Settler, and faster border growth helps every plan.
- **Meeting a leader.** You may greet them politely without revealing anything. If they offer a delegation, accept it: you get 25 Gold.
- **A Eureka** (a 40% research discount for a related task) **or Inspiration** (a 40% civic discount for a related task). Nothing to answer. 40% of that tech or civic is already paid.
- **An envoy to place.** Send it to a city-state (a minor power that cannot win) you have met. One envoy gives your capital a small bonus, such as +2 Science from a scientific city-state.

Sources: Religious Settlements (Civ6); Diplomacy (Civ6); Envoy (Civ6).

Checkpoints VI

Rough targets from experienced players on CivFanatics. A first game that misses them is still a good first game.

By about	Rough target
Turn 50	3–4 cities founded
Turn 50	Political Philosophy civic finished
Turn 100	4–5 cities and a Tier 1 government, one of those three (a lower bar)

Source: CivFanatics, "Benchmarks" (posts by greenOak, Victoria, XVeris).

SYSTEMS

Compounding

In 1785 Charles-Joseph Mathon de la Cour, a French mathematician who admired Benjamin Franklin, wrote a friendly parody of Franklin's almanac. In it a man leaves five small sums in his will to earn interest for one to five centuries, then pay for grand, impossible projects. Franklin, then 79, thanked him for the idea and did it for real. He left £1,000 to each of Boston and Philadelphia, to be lent out at interest for 200 years. By 1990 Boston's share, worth about \$4,400 at the start, had grown to almost \$5 million.

Compounding: growth that is added to the base, so each period grows from a bigger base than the last. Steady growth of r percent doubles a quantity about every $70 \div r$ periods, so early gains matter most.

HOW THE GAME MAPS IT

In the game	In the world
A second city on turn 25 produces for every remaining turn and helps pay for cities 3 and 4.	Reinvested returns: a firm's profits buy the machines that make next year's profits.
Each citizen eats  2 Food a turn but also works a tile, so early growth feeds later growth.	A growing workforce raises output, which supports a larger workforce.

WHERE THE MAP BREAKS

- ✗ Civ growth is not a steady percentage. Food thresholds rise with each citizen and Housing (a city's soft population cap) caps growth, so the curves bend into an S-shape.
- ✗ Compounding cuts both ways. In Civ, lost cities and war weariness (unhappiness that grows the longer you fight) (Amenities lost to fighting) snowball too.
- ✗ The game ends. A slow plan with a big late payoff can still win if the payoff lands in time.

READ NEXT

- Accessible: Donella Meadows, *Thinking in Systems* (2008), on reinforcing loops.
- Primary: Bartlett, "Forgotten Fundamentals of the Energy Crisis" (1978).

No single originator. Standard teaching treatment: Albert A. Bartlett, "Forgotten Fundamentals of the Energy Crisis," *American Journal of Physics* 46(9): 876–888 (1978)

Tip The web edition has a live expansion compounding model for this lesson. Change the numbers and watch what happens.

SYSTEMS / ECONOMICS

Path dependence

In the 1830s Isambard Kingdom Brunel set the Great Western Railway's rails 7 feet $\frac{1}{4}$ inch apart, a broad gauge he found better for speed and comfort. Most other lines used 4 feet 8½ inches, so where they met, as at Gloucester, goods had to be moved from one train to the other. A Royal Commission of 1845 agreed that Brunel's gauge was technically superior, then backed the narrow one anyway: most track already used it, and converting that would cost too much. From 1846 most new lines had to be narrow, and in May 1892 the Great Western converted the last of its own. The better gauge lost to the one with more track.

Path dependence: when each new adopter makes an option more attractive to the next, small early events can lock a system onto one path, and leaving it later costs too much, even when another path was better.

HOW THE GAME MAPS IT

In the game	In the world
You found your capital on turn 1 with almost no map revealed, and it can never move.	Early, poorly informed choices (a port, a capital, a standard) become fixed.
Districts cannot be moved, and each one gives +0.5 adjacency to districts placed next to it later.	Increasing returns: each new firm in a cluster makes the cluster more attractive to the next.

WHERE THE MAP BREAKS

- ✗ You can reload a save. History cannot.
- ✗ Most of Civ's lock-in comes from explicit rules (a district cannot move). Arthur and David studied lock-in that emerges from millions of separate choices.
- ✗ Whether QWERTY was really worse than its rivals is disputed among economists. The theory is stronger than its most famous example.

READ NEXT

- Accessible: David, "Clio and the Economics of QWERTY" (1985), six readable pages.
- Primary: Arthur, "Competing Technologies, Increasing Returns, and Lock-In by Historical Events" (1989).

W. Brian Arthur, "Competing Technologies, Increasing Returns, and Lock-In by Historical Events," *The Economic Journal* 99(394): 116–131 (1989); Paul A. David, "Clio and the Economics of QWERTY," *American Economic Review* 75(2): 332–337 (1985)

LAB · Lab: Settler first or Settler fourth?

Predict first: will Run A's lead in total yields per turn be bigger at turn 60 than at turn 30, smaller, or the same?

1. Start a Chieftain game, note the Map Random Seed, and save on turn 1.
2. Run A: Settler as the first thing you build once the capital reaches Population 2. Then Scout, Slinger, Builder.
3. Run B: reload. Scout, Slinger, Builder, then Settler.
4. Otherwise play the two runs the same way.

Measure: city count and total Food + Production + Science + Gold per turn at turn 30 and again at turn 60.

What you should see: a bigger gap at turn 60 than at turn 30. The early Settler bought more than one city's worth of output. Then check what Run A gave up for it.

If your result differs: if the gap shrank, barbarians may have hit Run A while its Slinger came late. The capital also lost a citizen to the Settler (each costs 1 Population) and regrew slowly. Or city 2 landed on a dry site with 2 Housing, so it grew at half speed or slower.

In the world: compare two savers. One sets aside a little from the first paycheck; the other waits five years, then saves more each month. A free online compound-interest calculator shows how long the late saver needs to catch up.

Check yourself

1. A Settler costs 80 Production and your capital makes 8 a turn. How many turns does it take, and how many with Colonization slotted?
2. Your first Campus (the science district) went on a poor spot, and later districts keep clustering beside it for adjacency (extra yield from what sits next door). Which concept is this, and how does Civ's version differ from the real one?
3. A neighborhood savings club earns 7% a year and reinvests it. Roughly how long until its money doubles, and why should members join early?

In the game: Scout, Slinger, Settler; a new city every time the capital can spare a citizen; three or four cities by turn 60.

In the world: start early on anything that compounds, and treat your first few hard-to-reverse choices with the most care.

PART 2

Building Your Empire

A Civ VI city grows, builds and researches by simple rules. Each has a twin in the real economy, with a true story behind it.

Tiles and Growth

Every citizen works one tile, so every tile you pick is one you passed up. A president once priced a bomber in schools.

The rule VI

The map is made of hexagonal tiles, and each produces **yields**, the resources the game counts: ● **Food**, ● **Production** (the yield that builds units and buildings), ● **Gold**, ● **Science**, ● **Culture** and ● **Faith** (the yield spent on religion). A tile's yield stacks three layers: base terrain, any feature (Woods, Rainforest, Marsh), and any resource or improvement.

Base terrain	Food	Production	Gold	
Grassland		2	0	0
Plains		1	1	0
Tundra		1	0	0
Desert, Snow		0	0	0
Coast, Lake		1	0	1
Ocean		1	0	0
Any Hills version	same as the flat tile, plus 1 Production			
Woods / Rainforest / Marsh	+1 Production / +1 Food / +1 Food			
Mountains	cannot be worked			

A **citizen** is one point of a city's population. Each citizen eats ● **2 Food** every turn and works one tile inside the city's borders, up to three tiles from the city. The City Center (the tile the city was founded on) is worked free on top of that, and the game raises it to at least ● **2 Food** and ● **1 Production**. A city of size 3 therefore works four tiles and eats 6 Food.

Whatever Food is left after eating goes into the city's **food basket**. When the basket fills, the city gains a citizen and the basket empties. The basket gets bigger every time: a size-1 city needs 15 Food to grow, a size-10 city needs 114, a size-30 city needs 403. If a city eats more than it makes, the basket drains, and when it is empty a citizen starves.

The game assigns tiles automatically; Manage Citizens in the city panel lets you lock a citizen onto a tile. Improvements raise a tile's yield: a **Farm** adds ● **1 Food** and a **Mine** on Hills adds ● **1 Production**, and both get better with later techs and civics.

Sources: List of terrains in Civ6; Population (Civ6); Farm (Civ6); Mine (Civ6).

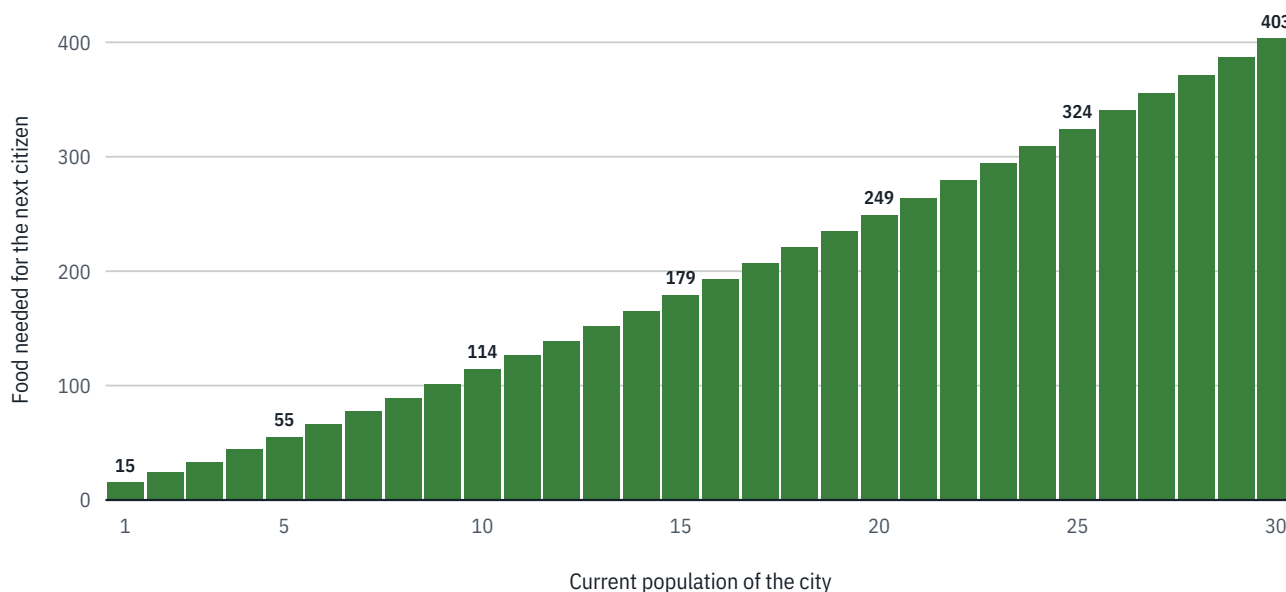


Figure: Food needed for the next citizen in Civ VI, by current city size, on Standard speed.

It climbs from 15 at size 1 to 403 at size 30. Source: Population (Civ6), civilization.fandom.com.

Growing a city from size 1 to 10 takes 504 Food in total; from 10 to 20 takes 1,731, more than three times as much.

A worked example VI

Your size-3 city sits on a Plains Hill next to a river. The City Center (the tile the city was founded on) gives 2 Food and 2 Production (the yield that builds units and buildings). Your three citizens work a farmed Grassland (3 Food), a plain Grassland (2 Food) and a mined Plains Hill (1 Food, 3 Production). Total Food is 8. The citizens eat 6, so 2 goes in the basket. The city needs 33 Food to reach size 4, so it grows in 17 turns.

Move the miner onto a second plain Grassland. Food becomes 9, the surplus becomes 3, and the city now grows in 11 turns. You paid for those six turns with 3 Production every turn. Neither choice is always right.

ECONOMICS

Opportunity cost

In April 1953 President Dwight Eisenhower, who as a general had led the D-Day invasion, gave a speech on the arms race. He priced a bomber in schools: "The cost of one modern heavy bomber is this: a modern brick school in more than 30 cities." It was also two hospitals, he said, or some 50 miles of highway. That was its real price.

Opportunity cost: the value of the best alternative you give up when you choose, even when no money changes hands.

HOW THE GAME MAPS IT

In the game	In the world
A citizen on a 2-Food tile is not on a 2-Production tile	An hour studying is an hour not earning
A Builder charge on a Mine is a Farm not built	A bomber bought is a school not built

WHERE THE MAP BREAKS

- ✗ Civ prices most choices in Production. Eisenhower weighed bombers against schools, with no exchange rate.
- ✗ Civ shows every option on one screen. In life the best alternative often goes unnoticed.

READ NEXT

- Accessible: Timothy Taylor, "Dissecting the Concept of Opportunity Cost," *Conversable Economist* (2016).

David I. Green, "Pain-Cost and Opportunity-Cost," *Quarterly Journal of Economics* 8(2) (1894).

ECONOMICS

Marginal analysis

At Christmas 1894 Samuel Insull, head of the money-losing Chicago Edison, visited Brighton in England. To his surprise, shops were shut but every light was on. Brighton's power company charged less at quiet hours: its plant was built for the busiest hour, so an extra unit off-peak cost it little. By 1897 Insull offered Chicago two-tier rates, and many homeowners' bills fell 32% within a year.

Marginal analysis: judge one more unit by its own extra benefit and extra cost, ignoring averages and totals.

HOW THE GAME MAPS IT

In the game	In the world
Should the next citizen work Food or Production?	Should a firm hire one more worker?
Amenity need is $\text{population} \div 2$, rounded up, so only some new citizens cost one	Costs that jump at thresholds, such as a second shift

WHERE THE MAP BREAKS

- ✗ Civ's margins are whole numbers: the next unit often adds exactly 0 or 1.
- ✗ For all-or-nothing rewards, like a wonder or a boost, compare totals.

READ NEXT

- Accessible: Jevons (1871), chapter III, free scan.

William Stanley Jevons, *The Theory of Political Economy* (1871); Carl Menger, *Grundsätze der Volkswirtschaftslehre* (1871).

SYSTEMS

Stocks, flows and feedback loops

For 500 years Newfoundland lived on cod. From the 1950s new trawlers fished wider and deeper, and in 1968 the catch peaked at 810,000 tons. The catch, a flow, was easy to count. The fish left in the sea, the stock, were not. In 1992 the minister, John Crosbie, closed the fishery: the northern cod were down to 1% of historic levels, and about 37,000 people lost their jobs.

Stocks and flows: a stock is what has built up, like water in a bath; flows fill or drain it. Feedback loops link the two, amplifying or stabilizing.

HOW THE GAME MAPS IT

In the game	In the world
The food basket is a stock; surplus Food per turn is its inflow	A savings account and its deposits
Housing slows the inflow near the cap (balancing)	A thermostat

WHERE THE MAP BREAKS

- ✗ Civ shows every stock. The 1992 cod quota was 187,969 tonnes; fishers had caught only 129,033 the year before.
- ✗ Stocks refill slowly. Commercial cod fishing reopened only in 2024.

READ NEXT

- Accessible: Meadows (2008).
- Primary: Forrester (1961).

Donella H. Meadows, *Thinking in Systems: A Primer* (2008). Earlier: Jay W. Forrester, *Industrial Dynamics* (1961).

Concept lens: More citizens make more Food, which makes more citizens, so an early lead snowballs. **Compounding** has its full lesson in Part 1.

LAB · Lab: Food first or Production first?

Predict first: on turn 40, which run will have the bigger capital, and which will have built more units?

1. Start a game on Prince (the default difficulty), Standard speed. Found your capital and save on turn 1.
2. Open the city screen, press Manage Citizens and lock every citizen onto the highest-Food tiles. Play to turn 40 building only Warriors, Builders (units that build farms, mines and the like) and Settlers (the units that found cities).
3. Reload. This time lock citizens onto the highest-Production tiles and play to turn 40 with the same build order.

Measure: on turn 40 in each run, write down the capital's size, how many units you have built, and how many cities you have.

What you should see: the Food run has the bigger capital, the Production run finishes items sooner. Settlers need both (a Settler costs Production and uses up a citizen), so a balanced run often founds more cities. The next point of Food is worth most when the city is short of Food.

If your result differs: the Food run may have run short of Housing (a city's soft population cap), so its extra Food counted only 50% or 25% (see **Housing**). Each Settler used up a citizen, so the run that trained more Settlers shows a smaller capital. Both teach one thing: extra Food is worth only the growth the city can turn it into.

In the world: look back at your own week. An extra hour of paid work and an extra hour of study buy different things, and the fifth hour of either usually buys less than the first. Write down what your last hour of each bought.

Check yourself

1. Your size-2 city needs 24 Food to grow and makes 7 Food a turn. Ignoring Housing, how many turns until size 3? What if one citizen moves to a tile with 1 less Food?
2. A size-7 city needs 4 Amenities (city contentment from luxuries and entertainment). Does its 8th citizen need another one? Which concept says to judge that one step rather than the average?
3. A student can work a Saturday shift that pays 60 or study for an exam. She studies. What did studying cost her?

In the game: before you move a citizen, ask what the city loses. That loss is the price of where they stand.

In the world: the cost of anything is the best thing you gave up for it, and the next unit matters more than the total.

Housing and Amenities

Your city has Food to spare and still stops growing. Two invisible brakes are at work, and the same kind of brake held most of humanity near hunger until about 1800.

Housing VI

Turn 40. Your second city sits on a river and has been growing every few turns. At size 4 it slows. At size 5 it crawls. Nothing is starving, and the Food is still on the tiles. So where did it go?

It hit the **Housing** (a city's soft population cap) brake. Housing is the number of citizens a city has room for. Food decides whether a city *can* grow. Housing decides how much of that Food counts.

Housing minus population	Share of surplus Food that counts toward growth
2 or more spare	100%
1 spare	50%
0 to 4 over	25%
5 or more over	0%

So a city can never grow past its Housing plus 5, and it slows to a crawl long before that. Losing Housing never kills citizens. It only slows or stops growth.

Where Housing comes from:

- **Water at the City Center** (the tile the city was founded on). Fresh water (a river, lake or oasis next to the center) gives 5. Coast without fresh water gives 3. Anywhere else gives 2, so a dry city other than the capital is braked from size 1.
- **Buildings.** A Granary (Pottery) gives +2. A Sewer gives +2 later. The Palace gives +1 in your capital.
- **The Aqueduct** (a district that brings water and Housing). A **district** is a city tile with one job. The Aqueduct adds +2 to a fresh-water city, or raises any other city's water Housing to 6. It must touch the City Center and a river, lake, oasis or Mountain.
- **Improvements.** Each Farm, Pasture, Plantation, Camp or Fishing Boats gives +0.5.
- **Later.** Neighborhoods (districts that add Housing) (+2 to +6, by the tile's Appeal, a score for how attractive its surroundings are), the Dam (+3), **policy cards** and **wonders**.

That is what happened to your river city. Its water gives 5 Housing. At size 3 it has 2 spare and grows at full speed. At size 4 its surplus counts half. At size 5 it counts a quarter. A Granary built before size 4 keeps it at full speed for two more citizens.

Source: Housing (Civ6).

Tip The web edition has a live growth-and-Housing simulator for this lesson. Change the numbers and watch what happens.

Amenities VI

Housing decides how many people a city can hold. **Amenities** (city contentment from luxuries and entertainment) decide whether they are glad to be there. Each city needs one Amenity for every two citizens, rounded up: a size-7 city needs 4.

Amenities vs need	Level	Effect (Gathering Storm)
5 or more above	Ecstatic	+20% all yields
3 to 4 above	Happy	+10% all yields
0 to 2 above	Content	no effect
1 to 2 below	Displeased	-10% non-Food yields, -15% growth
3 to 4 below	Unhappy	-20% non-Food yields, -30% growth
5 to 6 below	Unrest	-30% non-Food yields, rebels appear
7 or more below	Revolt	-40% non-Food yields, more rebels

Where Amenities come from:

- **Luxury resources.** Improve a luxury (Silk, Wine, Whales and so on) and it gives +1 Amenity to up to 4 of your cities. A second copy of the same luxury adds nothing, so trade spares to other civs for ones you lack.
- **Entertainment.** The Entertainment Complex district (a specialized city tile that holds buildings) gives +1, and its Arena gives +2 more. Its later Zoo and Stadium reach every City Center within 6 tiles.
- **Later:** policies, governments, beliefs, wonders and National Parks.

Source: Amenities (Civ6).

Tip The City Details panel lists every Housing and Amenity source a city has. Check it first when a city slows.

ECONOMICS

Diminishing marginal returns

Fred Brooks ran the team that built the software for IBM's System/360 computers in the 1960s. When the project ran late, the obvious fix was more programmers. It made things worse. Each newcomer had to be trained by someone who was already busy, and every extra person added more conversations to keep everyone in step. In 1975 Brooks wrote the rule down: adding people to a late software project makes it later.

Diminishing returns: keep adding one input while the others stay fixed, and each extra unit eventually adds less than the one before.

HOW THE GAME MAPS IT

In the game	In the world
Citizens take the best tiles first, so each new citizen adds less surplus than the last	Extra workers on a fixed field
Housing counts 100%, then 50%, then 25%, then 0% of surplus Food	Programmers added to a project whose design and deadline are fixed

WHERE THE MAP BREAKS

- ✗ In Civ the returns fall because the map has only so many good tiles. Brooks's team slowed because people have to talk to each other, and Civ citizens never do.
- ✗ Lumpy jumps, like a new district slot every three citizens, reverse the trend for a while.
- ✗ Growing every input at once (more cities, not bigger ones) does not diminish in Civ. That is one reason wide beats tall (community consensus).

READ NEXT

- Accessible: Frederick P. Brooks, *The Mythical Man-Month* (1975), chapter 2. Stanley L. Brue, "Retrospectives: The Law of Diminishing Returns," *Journal of Economic Perspectives* (1993).
- Primary: Turgot (1767); David Ricardo, *On the Principles of Political Economy and Taxation* (1817).

First stated by Anne-Robert-Jacques Turgot (1767). Applied to land and rent in 1815 by Malthus, Ricardo, West and Torrens.

ECONOMICS / HISTORY

The Malthusian trap

In 1348 the Black Death reached England and killed perhaps half its people. For the survivors, life got better. Workers were scarce, so landlords had to compete for them. Parliament tried to freeze wages at their old level by law in 1351, and the law failed: farm wages roughly doubled over the next century. Then the population recovered, and wages fell again. The plague had brought no new technology. It had made each worker rarer.

The Malthusian trap: when population grows faster than food, any gain in living standards is eaten by more mouths, until people are back to bare survival. It held until technology broke the link.

HOW THE GAME MAPS IT

In the game	In the world
Food surplus turns into citizens, and each citizen eats 2 Food	Better harvests turning into more children
A city at its Housing cap keeps making Food that buys no growth	A pre-industrial society at the limit of its land
A Granary or Aqueduct lifts the cap	New farming methods and, after about 1800, sustained technical change

WHERE THE MAP BREAKS

- ✗ Malthus wrote about income per head. Civ has no wages, so its trap is only a growth stall.
- ✗ In Civ you escape the trap with one building. Humanity needed centuries and an industrial revolution.

READ NEXT

- Accessible: Gregory Clark, *A Farewell to Alms* (2007), chapters 1 to 3.
- Primary: Malthus (1798), free at Econlib.

Thomas Robert Malthus, *An Essay on the Principle of Population* (1798).

The hard question: when a theory says suffering is natural, do you still act?

In the game a city at its cap is a number to fix. In Ireland in 1845 a blight destroyed the potato, the main food of the poor. About a million people died and over a million emigrated. Food still left the country for Britain, although at the worst of the famine four times as much wheat came in as went out. Charles Trevelyan, the Treasury official who ran much of the relief, wrote in 1848 that the famine was "a direct stroke of an all-wise and all-merciful Providence".

The case for holding back: officials feared that free food would ruin the private grain trade, teach people to depend on handouts and leave the country weaker for the next bad year. Most economists of the day believed markets fed people better than governments did.

The case against: markets feed people who have money, and the starving had none. People were dying that winter, and the long-run benefits were a guess. A theory that asks other people to suffer costs its believers nothing.

Your call: *when a theory tells you that suffering is necessary, how much proof should you demand before you act on it?*

LAB · Lab: Watch the Housing brake bite

Predict first: write down how many turns the city will take to grow at each size, from 2 spare Housing down to 0, and then after the Granary.

1. Pick a city with 2 spare Housing and a steady Food surplus.
2. Each time it grows, note its surplus and its "turns to grow", until it reaches its Housing number.
3. Now build a Granary (+2 Housing) and watch the number again.

Measure: turns to grow at each size, next to the Food surplus shown.

What you should see: the surplus stays roughly flat while turns to grow jumps, first because the basket is bigger and then because Housing cuts what counts to 50% and 25%. Extra Food on the tiles barely helps. Extra Housing helps at once.

If your result differs: something else moved the surplus. A newly worked tile changes the Food, and a city that drops to Displeased grows 15% slower. Farms and other improvements add +0.5 Housing each, so two new ones delay the brake by a citizen. City Details lists all of these, so check it first.

In the world: watch a busy café at lunch. Once every seat is taken, a faster kitchen serves barely more people, and more seats would serve many more. A business, like a city, grows only as fast as its tightest limit allows.

DO

- Settle on fresh water when you can, for 5 Housing from turn 1.
- Build a Granary before a city's population reaches Housing minus 1.
- Improve each new luxury type as soon as you can, and trade duplicates.

AVOID

- Piling Food into a city that is already over its Housing.
- Letting a city sit Displeased. The penalty hits every yield except Food.

Check yourself

1. Your size-5 city has 5 Housing in total and +4 surplus Food. How much Food a turn counts toward growth, and what does a Granary change?
2. A city sits at its Housing (a city's soft population cap) cap. You move citizens onto higher-Food tiles, and Food rises but growth barely moves. Which concept is this, and what was the real-world escape?
3. A café has 20 seats and is full every lunchtime. The owner hires a third cook. Why might lunch takings barely rise, and what should she check first?

In the game: when a city slows, find the binding limit first (Food, Housing or Amenities), then fix that one.

In the world: adding more of one input gives less and less when another input is fixed, so find the constraint before you spend.

Builders and Chopping

A forest is a pile of Production (the yield that builds units and buildings) now or a trickle each turn you work it. A forester priced that trade in 1849.

Builders and improvements VI

Civ VI has no Workers; its improvement unit is the **Builder** (a unit that builds farms, mines and the like). A Builder has 3 **build charges**. Building an improvement is instant and uses one charge. Repairing a pillaged improvement or removing an improvement is free. When the last charge is used, the Builder disappears.

Ways to get more charges: the Pyramids wonder (+1 for all your Builders), **Governor** Liang's starting title (+1 for Builders trained in her city), the Serfdom and Public Works policy cards (swappable bonuses slotted into your government) (+2 for new Builders), and Qin Shi Huang's leader ability (+1).

Improvement	Goes on	Effect
Farm	flat Grassland, Plains, Floodplains, grain resources	+1 Food, +0.5 Housing; +1 Food more with two adjacent Farms (Feudalism)
Mine	featureless Hills, mineral resources	+1 Production (+1 more with Apprenticeship)
Pasture, Plantation, Camp, Quarry, Fishing Boats	the matching resource	unlocks the resource; all but the Quarry also give +0.5 Housing

Sources: Builder (Civ6); Tile improvement (Civ6); Housing (Civ6).

Harvesting and chopping VI

Your capital needs a Settler (the unit that founds a city). One Builder click turns the Woods next door into Production, and the Woods are gone for good.

A Builder can also spend a charge to **remove** a feature or **harvest** a bonus resource. The tile loses the feature or resource for good, and the owning city gets a one-time lump of yield. Players call removing Woods "chopping".

- Woods give Production. You can remove them after researching Mining.
- Rainforest gives Food and Production (after Bronze Working). Marsh gives Food (after Irrigation).
- Bonus resources such as Stone, Rice or Deer give Food, Production or Gold, depending on the resource.

The lump grows with how far you are through the tech and civic trees, and with game speed. A community-derived formula (not official) multiplies it by up to ten over a full game, as with district (a specialized city tile that holds buildings) costs. Any Production beyond what the current build needs carries over to the next item in the queue.

Three costly details:

- If you place a district or wonder on Woods or Rainforest, the feature is cleared and you get nothing. Chop first, then place.
- Woods you plant yourself (Builders can plant them after the Conservation civic) give no Production when removed.

- Magnus, the Steward Governor (a named official assigned to a city), adds 50% to every harvest and chop in his city with his starting title, Groundbreaker (Gathering Storm; it was 100% in Rise and Fall). He needs 5 turns to settle into a city before it works.

Sources: Builder (Civ6); Woods (Civ6); Magnus (Civ6); CivFanatics formula thread (community-derived).

Chopping trades a stream for a lump. Kept Woods give +1 Production every turn you work them; a chop gives a pile today and nothing from that tile again. With made-up round numbers, if a chop gave 30 and the Woods 1 a turn, the stream would need 30 turns to match. But a Settler (the unit that founds a city) built today pays you back at once, so "30 versus 1 a turn" understates the chop.

ECONOMICS

Time value and discounting

In 1849 Martin Faustmann, a German forester, tackled a basic question: when should you cut a forest? Waiting gives bigger trees and a bigger sale. But timber sold sooner is money sooner, and the land can be replanted sooner. Once Faustmann priced the waiting with an interest rate, the best time to cut came earlier than tree growth alone suggested. His formula is still in wide use.

Time value: a benefit now is worth more than the same benefit later, because it can be put to work at once. Discounting converts future benefits into today's value.

HOW THE GAME MAPS IT

In the game	In the world
Chop the Woods: a lump of Production now	Cash in hand today
Keep the Woods: a small yield every turn you work it	An annuity paid over years

WHERE THE MAP BREAKS

- ✗ Civ has no interest rate, so your discount rate is a guess.
- ✗ Civ ends, so a payoff after the last turn is worth nothing. Faustmann's formula counts every future harvest.

READ NEXT

- Primary and readable: Fisher (1930), chapters I to IV, free at FRASER.

Irving Fisher, *The Theory of Interest* (1930).

LAB · Lab: What is one forest worth?

Predict first: guess the ratio now, as a number of turns, and whether it will be bigger or smaller when you repeat the lab 80 turns later.

1. Pick a city building something big (a Settler or a district). Note the Production bar and the turns left.
2. Move a Builder onto a Woods tile in that city's territory and remove the Woods (you need the Mining tech).
3. Look at the Production bar again. The jump is your chop value. Call it C.

Measure: C, and C divided by the Production the Woods tile would have given per turn if worked. That ratio is how many turns of working the tile the chop is worth.

What you should see: early in the game the ratio is modest. Do it again 80 turns later and C will be noticeably larger, because harvest yields grow with your progress. Late chops can finish whole buildings.

If your result differs: a very large C may mean Magnus is established in that city (+50%). A C of zero means a Builder planted those Woods. If the bar filled, the rest of C carried over to the next item, so the jump understates it. Each is a rule to check before you chop.

In the world: look at any payment plan that charges interest. The payments add up to more than the price paid today. That gap is what the lender charges you for waiting, the same trade between a lump now and a stream later that a chop makes.

DO

- Chop Woods or Rainforest into Settlers and districts in the early game.
- Put Magnus in the city where you plan to chop the most.

AVOID

- Chopping every forest near a city with no hills. Woods may be its only Production.

Check yourself

1. A Builder with 1 charge left stands on Woods where you want a Campus (the science district). Magnus is established in this city. What order do you act in, and what happens to the Builder?
2. A chop gives 30 Production now; the worked Woods would give 1 a turn. A friend says the chop only pays if the game ends within 30 turns. What has he missed?
3. A shop owner can sell her old delivery van for cash today or keep it earning a little each month. What should she compare, and why does cash today count for more?

In the game: before you place your next district on Woods, chop the Woods first.

In the world: a sum today beats the same sum later, because it can go to work at once.

Districts

Districts side by side make each other better. A teenager's 1895 bedspread is why one Georgia town became the world's carpet capital.

What districts are VI

In Civ VI a city spreads across the map. A **district** (a specialized city tile that holds buildings) is a specialized neighborhood built on its own tile near the city. Most buildings go inside a district: the Library goes in a Campus (the science district), the Market in a Commercial Hub (the Gold and trade district). A district tile stops producing its old terrain yield and instead gives an **adjacency** (extra yield from what sits next door) **bonus** from what is next to it.

District	Main yield	Unlocked by
Campus	Science, Great Scientist points	Writing
Theater Square	Culture, Writer/Artist/Musician points	Drama and Poetry
Holy Site	Faith, Great Prophet points	Astrology
Commercial Hub	Gold, Great Merchant points	Currency
Harbor	Gold, naval units, Great Admiral points	Celestial Navigation
Industrial Zone	Production, Great Engineer points	Apprenticeship
Encampment	military units, Great General points	Bronze Working
Entertainment Complex / Water Park	Amenities	Games and Recreation / Natural History
Government Plaza (one per civ)	Governor titles, adjacency	State Workforce
Aqueduct, Dam, Canal	Housing, water, passage	Engineering, Buttress, Steam Power
Neighborhood	Housing	Urbanization
Aerodrome, Spaceport	air units, space race	Flight, Rocketry

Many civs have a unique district that replaces one of these at half the cost.

How many districts a city can hold VI

A city can hold 1 specialty district at size 1, 2 at size 4, 3 at size 7, and one more for every 3 citizens after that. The Aqueduct (a district that brings water and Housing), Dam, Canal, Neighborhood (a district that adds Housing) and Spaceport (the district that builds space projects) do not count against this limit.

District costs rise as you progress. The game multiplies a base cost (54 Production for most districts on Standard speed) by 1 plus 9 times the share of the tech tree or civic tree you have finished, whichever is larger. A district placed at the end of the game costs ten times what it cost at the start.

Sources: District (Civ6); List of districts in Civ6.

Adjacency VI

Adjacency bonuses come in three sizes: major (+2), standard (+1) and minor (+0.5). Minor bonuses are rounded down, and each *kind* of source is rounded down on its own. One Rainforest next to a Campus gives +0.5, which rounds to 0. Every district gives a minor bonus to every district next to it, and the Government Plaza (a one-per-empire district for government bonuses) adds a standard +1 on top.

District	Gets adjacency from
Campus	+1 per Mountain; +2 per Reef or Geothermal Fissure; +0.5 per Rainforest; +0.5 per district
Holy Site	+2 per natural wonder; +1 per Mountain; +0.5 per Woods; +0.5 per district
Theater Square	+2 per wonder; +2 per Entertainment Complex or Water Park; +0.5 per district
Commercial Hub	+2 if next to a river; +2 per Harbor; +0.5 per district
Harbor	+2 from the City Center; +1 per coastal resource; +0.5 per district
Industrial Zone	+2 per Aqueduct, Dam or Canal; +1 per Quarry; +1 per strategic resource; +0.5 per Mine or Lumber Mill; +0.5 per district

The placement lens shows each tile's bonus and its sources.

Sources: Adjacency bonus (Civ6); List of districts in Civ6.

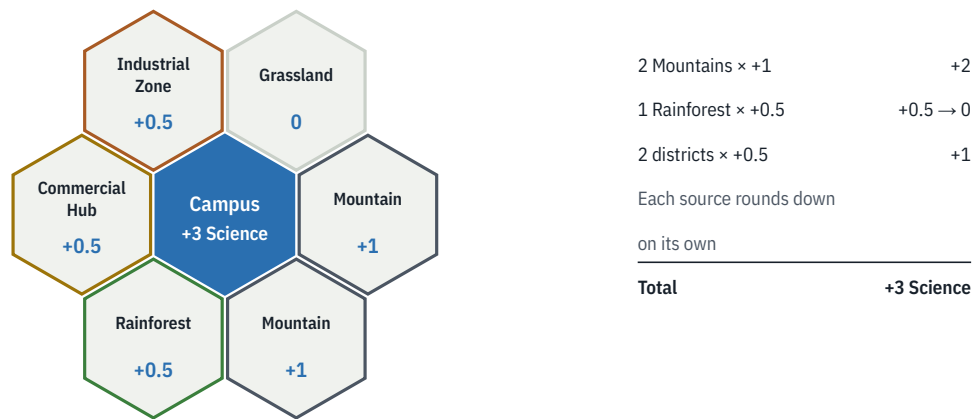


Figure: A worked Campus adjacency in Civ VI (Gathering Storm). Two Mountains give +1 each (+2). One Rainforest gives +0.5, which rounds down to 0. Two districts give +0.5 each (+1). Each kind of source is rounded down on its own, so the Campus gets +3 Science.
Source: Adjacency bonus (Civ6) and Campus (Civ6), civilization.fandom.com.

A third district on the Grassland tile would leave the district line at +1 (three halves round down to one), so the Campus (the science district) would stay at +3.

Specialists VI

A citizen does not have to work a tile. Once a district has buildings, it has **Specialist** (a citizen working a building instead of a tile) slots, up to three per district. A Specialist eats 2 Food like any citizen and gives a fixed yield instead of a tile's yield:

District	Specialist yield (base)
Campus	+2 Science
Theater Square	+2 Culture
Holy Site	+2 Faith
Commercial Hub	+4 Gold
Industrial Zone	+2 Production
Harbor	+1 Food, +2 Gold
Encampment	+1 Production, +2 Gold

Specialists matter most in big cities short of good tiles.

Source: Specialists (Civ6).

ECONOMICS / GEOGRAPHY

Agglomeration economies and clusters

In 1895 Catherine Evans, a Georgia teenager, sewed a tufted bedspread as a wedding gift. Others wanted one. By the 1930s nearly 10,000 "tufters" worked on porches around Dalton. After World War II machines began tufting carpet, and the industry settled in Dalton, where workers with the skill already lived. Today more than 90% of the world's functional carpet is made within 65 miles of the city.

Agglomeration: firms and workers are more productive near each other, through shared suppliers, shared skills and ideas spread by contact. Concentration then feeds itself.

HOW THE GAME MAPS IT

In the game	In the world
Every district gives +0.5 to each district next to it	Firms gaining from neighbors
The Government Plaza gives +1 to adjacent specialty districts	A university anchoring a cluster

WHERE THE MAP BREAKS

- ✗ Civ's adjacency (extra yield from what sits next door) is a fixed table; real clusters run on people learning from each other.
- ✗ Clusters have costs Civ never charges. Dalton's mills have taken up to a third of a river's summer flow.

READ NEXT

- Accessible: Krugman (1991), NBER working paper version.

Alfred Marshall, *Principles of Economics* (1890); Paul Krugman, "Increasing Returns and Economic Geography," *Journal of Political Economy* 99(3) (1991); Michael E. Porter, *The Competitive Advantage of Nations* (1990).

ECONOMICS

Division of labor

William Klann of Ford came back from a Chicago slaughterhouse with an idea: there, carcasses moved along a line, and each worker removed the same piece over and over. In 1913 Ford started a moving assembly line for the Model T, split into 45 steps. Labor per car fell from 12.5 hours to 1 hour 33 minutes. The price fell from \$825 in 1908 to \$360 in 1916.

Division of labor: splitting work into specialized tasks raises output per worker. Adam Smith's limit: it pays only if the market can absorb the output.

HOW THE GAME MAPS IT

In the game	In the world
A Specialist works in a Campus instead of a field	A worker who does one task all day
Cities specialize, and trade routes move the yields	Regions that specialize and trade

WHERE THE MAP BREAKS

- ✗ Civ's cities need no buyers, so Smith's market limit barely exists.
- ✗ Civ's Specialists (citizens working buildings instead of tiles) never quit. Ford had to hire 963 men to add 100, until in 1914 it more than doubled most pay, to \$5 a day.

READ NEXT

- Primary and readable: Smith (1776), Book I, chapters I to III, free at the Internet Archive.

Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), Book I, chapters I to III.

Wide or tall? VI

Wide means many cities; **tall** means a few large ones. Civ V V punished extra cities, since each one added Unhappiness. Civ VI has no direct penalty, and each new city brings its own City Center (the tile the city was founded on), district slot and production queue. Community consensus on CivFanatics is that wide beats tall in Civ VI, and that tall works mainly for specific civs or maps. Since districts unlock by population in steps of three, three size-4 cities hold six districts between them while one size-12 city holds four.

Source: CivFanatics, "Tall versus wide" (community consensus).

LAB · Lab: Cluster or scatter?

Predict first: which layout gives the bigger total adjacency, the triangle or the scattered best tiles, and by how much?

1. In one city, plan three districts in a tight triangle, each touching the other two. Use the placement lens to read each one's adjacency.
2. Reload and plan the same three districts each on its best single tile, ignoring the others.
3. Add up the total adjacency of all three in each layout.

Measure: total adjacency yield per turn for each layout.

What you should see: each district in the triangle gets +1 from its two neighbors. On flat, featureless land the triangle usually wins. Next to Mountains, terrain often wins.

If your result differs: terrain can beat neighbors. Each Mountain gives a Campus +1, twice what a district gives. A single Rainforest next to a Campus gives +0.5, which rounds down to 0. A tile touching the Government Plaza gets a standard +1 extra. Adjacency is a sum of separately rounded parts, so read the lens tile by tile.

In the world: search a map app for car dealers or phone repair shops near you. They often bunch along one road. Ask what each shop gains from rivals next door: passing customers, shared suppliers, staff who already know the trade.

Check yourself

1. A Campus tile touches 1 Mountain, 3 Rainforests and 1 other district. What is its adjacency bonus?
2. Civ says packing districts together always pays. Name the concept, and give one reason a real city might not cluster its firms.
3. Three bakeries in a small town each make bread, cakes and pastries. What could they gain if each specialized in one, and what would limit it?

In the game: read the adjacency on every candidate tile before you place; each kind of half-bonus rounds down on its own.

In the world: where things sit and who does what both shape output. Neighbors share skills, and specialists get fast.

Tech and Civics

Kill a unit with a Slinger (an early ranged unit) and Archery costs 40% less. Civ pays you to do before you study, and so do real economies.

Two trees VI

● **Science** pays for the **technology tree**: new units, buildings, improvements and districts (specialized city tiles that hold buildings). ● **Culture** pays for the **civics tree**: governments, policy cards (swappable bonuses slotted into your government), Governor (a named official assigned to a city) titles and more districts and wonders. You research one tech and one civic at the same time. Science comes mainly from Campuses (science districts) and their buildings, Culture from Theater Squares (culture districts) and the Monument, a cheap Culture building every city can build in its center.

Eurekas and Inspirations VI

Most techs have a **Eureka** and most civics an **Inspiration**: a task in the world that, once done, pays part of the cost. Since Rise and Fall (the first Civ VI expansion) a boost is worth **40%** of the tech or civic's cost (it was 50% in the base game). Babylon's Eurekas give the whole tech. Each boost fires once. Animal Husbandry, Mining, Pottery and Code of Laws have none.

Tech or civic	Boost task
Archery	Kill a unit with a Slinger
Masonry	Build a Quarry
Bronze Working	Kill 3 Barbarians
Sailing	Found a city on the Coast
Writing	Meet another civilization
Currency	Make a trade route
Craftsmanship (civic)	Improve 3 tiles
Early Empire (civic)	Reach 6 total population
State Workforce (civic)	Build any district
Political Philosophy (civic)	Meet 3 city-states

Tribal villages, some Great Scientists (famous scientists you recruit for one-time boosts) and spies also give boosts.

Sources: Boost (Civ6); List of boosts in Civ6.

The one rule that matters most VI

Careful Do not finish researching a tech or civic before you trigger its boost. Once it is done, its boost is gone for good, and you paid 100% for something you could have had for 60%.

A boost can land any time before the research completes, and if your progress plus the 40% reaches the full cost, the tech completes on the spot. So research other things while you work on the boost. If you must start the tech first, stop when its bar reaches about 60%, switch to something else, and let the boost finish it. The game draws a hollow bar on the tech icon to show where the boost would take you.

With a Slinger and Barbarians nearby, research Bronze Working or Animal Husbandry first and let the Slinger make a kill. That hands you 40% of Archery.

ECONOMICS

Learning by doing

In 1941 American shipyards began building the Liberty, a plain cargo ship of one design. The yards had never built welded ships, and the workforce was newly trained. At one new yard, Calship, the first Liberty took 1.73 million hours of labor. In mid-1943 the same ship took 406,000. By 1945, 18 yards on three coasts had built 2,710 of them.

Learning by doing: the more of something an economy has made, the cheaper the next one, and what one producer learns spills over to others.

HOW THE GAME MAPS IT

In the game	In the world
Build a Quarry and Masonry costs 40% less	Workers who learn a craft by practicing it
Improve 3 tiles: Craftsmanship costs 40% less	A shipyard faster with every hull

WHERE THE MAP BREAKS

- ✗ Arrow's learning keeps going. A Eureka (a 40% research discount for a related task) fires once.
- ✗ The economist Peter Thompson traced most of Calship's gains to new equipment and lower quality: more ships cracked.

READ NEXT

- Accessible: SFI Press commentary on Arrow (1962).

Kenneth J. Arrow, "The Economic Implications of Learning by Doing," *Review of Economic Studies* 29(3) (1962).

ECONOMICS

Exogenous and endogenous growth

In 1957 Robert Solow, an MIT economist, split American growth into its causes. From 1909 to 1949, output per hour in private non-farm business roughly doubled. The obvious cause, more machines per worker, explained only about one-eighth. The other seven-eighths was "technical change," which his model measured but could not explain. In 1990 Paul Romer argued that people make it on purpose, through research.

Exogenous and endogenous growth: in Solow's model, investment lifts income to a higher level, then hits diminishing returns. Lasting growth needs new technology, which Romer modeled as the product of research.

HOW THE GAME MAPS IT

In the game	In the world
More Farms and Mines raise yields once	More machines raise output once (Solow)
Campuses yield Science, which buys new techs	Firms researching to create ideas (Romer)

WHERE THE MAP BREAKS

- ✗ Civ's tech tree is finite and the same for everyone. Romer's ideas are unlimited.
- ✗ Civ shows where every point of Science comes from. Solow's seven-eighths was a leftover.

READ NEXT

- Story: Robert M. Solow, "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics* 39(3) (1957).

Robert M. Solow, "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics* 70(1) (1956); Paul M. Romer, "Endogenous Technological Change," *Journal of Political Economy* 98(5) (1990).

TECHNOLOGY

Diffusion of innovations

In 1747 James Lind, a navy surgeon on HMS Salisbury, tested several cures on sailors with scurvy. Oranges and lemons worked best. Then little happened: his result filled a few paragraphs of a long book, and leading doctors blamed other causes. In 1794 the Suffolk sailed for India with lemon juice and arrived four months later without scurvy. Commanders demanded lemons, and by June 1795 the Navy ordered a daily lemon-juice ration for every warship.

Diffusion of innovations: new ideas spread along an S-curve, slowly among early adopters, fast through the majority, then slowly among holdouts. Ideas people can see working spread faster.

HOW THE GAME MAPS IT

In the game	In the world
A Eureka pays 40% once you try the thing, like a Quarry for Masonry	People adopt faster once they can try an idea small
Religion spreads city to city by pressure (Part 3)	Ideas spreading through networks

WHERE THE MAP BREAKS

- ✗ Research a tech and every city has it at once. The Navy needed until 1800 to supply every ship.
- ✗ Rogers's adopters choose. Civ's cities change by arithmetic.

READ NEXT

- Accessible: Griliches (1957), which has clear graphs.

Everett M. Rogers, *Diffusion of Innovations* (1962). Classic evidence: Zvi Griliches, "Hybrid Corn: An Exploration in the Economics of Technological Change," *Econometrica* 25(4) (1957).

TECHNOLOGY

General-purpose technologies

In 1899 electric motors supplied under 5% of the power driving American factory machines. For twenty years factories added motors but often kept the old layout, with overhead shafts and belts. Productivity hardly moved until the early 1920s, when firms built new plants around the motor: one per machine, on a single floor. By then the first central power station was four decades old.

General-purpose technology: one used across many sectors that keeps improving and enables other inventions, like electricity. It pays off late, because users must reorganize around it first.

HOW THE GAME MAPS IT

In the game	In the world
Apprenticeship and Industrialization each add +1 Production to every Mine	Electricity raising output across many industries
Writing unlocks the Campus, which feeds every later tech	Printing, which sped up later learning

WHERE THE MAP BREAKS

- ✗ Real GPTs can take decades to pay. Civ pays the turn the tech completes.
- ✗ Bresnahan and Trajtenberg stress coordination between inventors and users. Civ has one decision-maker.

READ NEXT

- Story: Paul A. David, "The Dynamo and the Computer," *American Economic Review* 80(2) (1990).

Timothy F. Bresnahan and Manuel Trajtenberg, "General Purpose Technologies: 'Engines of Growth'," *Journal of Econometrics* 65(1) (1995).

The hard question: do you judge the science or the scientist?

In Civ a tech has no inventor, only a cost. In 1909 the German chemist Fritz Haber made ammonia from the nitrogen in air, and from 1913 Carl Bosch scaled the process up for industry. Vaclav Smil, who studies energy and food, estimated that by 2000 about 40% of the world's people depended on its fertilizer for food. In World War I Haber proposed chlorine gas as a weapon and helped supervise its first mass release, at Ypres on 22 April 1915. The 1907 Hague Convention, which Germany had signed, banned "poison or poisoned weapons." In 1919 he received the 1918 Nobel Prize in Chemistry, for ammonia.

The case for judging the science: the fertilizer feeds billions whatever its inventor did, and the prize was for the discovery alone. Every major power in that war used poison gas. Haber is reported to have said that in peace a scientist belongs to the world, and in war to his country.

The case against: Haber was not a bystander whose idea someone else misused. He proposed the gas attack and helped run it. Honoring him without that record tells future scientists that a great discovery excuses a terrible act.

Your call: *should a prize honor a discovery when its discoverer did something you believe was wrong?*

LAB · Lab: Can boosts win the research race?

Predict first: which game finishes all three techs first, and by how many turns?

1. On turn 1, write down the Science cost of Archery, Masonry and Writing.
2. In one game, research them in order as soon as you can, ignoring boosts.
3. In a second game, research other things first and do each boost task before researching that tech.

Measure: the turn on which all three are done, in each game.

What you should see: the boosted game spends 40% less Science on those three techs and puts the rest into others.

If your result differs: meeting another civ fires Writing's Eureka by itself, so the raw game may have had a boost anyway. If the boosted game was slower, a task kept you waiting, such as having no Slinger target. Babylon gets the whole tech from a Eureka, and China gets 50%. Boosts always save Science, but not always turns.

In the world: cook the same new recipe three times and time each attempt. The later attempts are usually faster, because doing teaches. Aircraft makers in the 1930s and wartime shipyards showed the same curve.

Check yourself

1. Archery is 30% researched when your Slinger kills a unit. You are not playing Babylon or China. Where does Archery's bar end up?
2. In Civ, the moment you research a tech, every city has it. Which concept does this skip, and what would the real version look like?
3. Your first attempt at a new recipe takes 60 minutes and your second takes 45. Name the concept, and say what Arrow added to it.

In the game: before you pick your next tech, read its boost and ask whether you can do it first.

In the world: knowledge grows from doing things and from deliberate investment, and it spreads slowly before it spreads fast.

Governments and Policies

Same land, same people, different rules, different lives. In Civ a government is a few card slots. In the world, rules may decide who grows rich.

The rule VI

Your **government** gives you a set of **policy card** (a swappable bonus slotted into your government) slots and one or two bonuses. Policy cards are small rules you choose, like "+1 Production (the yield that builds units and buildings) in every city". There are four kinds of slot: **Military**, **Economic**, **Diplomatic** and **Wildcard**. A Wildcard slot takes any card. You must fill every slot to end your turn.

Government	Tier	Civic	Mil	Econ	Dip	Wild
Chieftdom	0	Code of Laws	1	1	0	0
Autocracy	1	Political Philosophy	1	1	1	1
Oligarchy	1	Political Philosophy	2	1	0	1
Classical Republic	1	Political Philosophy	0	2	1	1
Monarchy	2	Divine Right	2	1	1	2
Theocracy	2	Reformed Church	2	2	1	1
Merchant Republic	2	Exploration	1	2	2	1
Communism	3	Class Struggle	3	3	1	1
Democracy	3	Suffrage	1	3	2	2
Fascism	3	Totalitarianism	4	1	1	2
Digital Democracy	4	Distributed Sovereignty	1	1	3	5
Synthetic Technocracy	4	Optimization Imperative	1	3	1	5
Corporate Libertarianism	4	Venture Politics	3	1	1	5

Tier 1 governments arrive in the Classical Era, tier 2 in the Medieval and Renaissance Eras, tier 3 in the Modern Era, and tier 4 (Gathering Storm only) in the Information Era.

Your first real choice is a tier-1 government (Rise and Fall and Gathering Storm values):

- **Classical Republic** (a government type): +1 Housing (a city's soft population cap) and +1 Amenity in every city with a district (a specialized city tile that holds buildings), and +15% Great Person (a famous figure you recruit for one big effect) points. Suits peaceful building.

- **Oligarchy** (a government type): +4 Combat Strength for land melee, anti-cavalry and naval melee units, and +20% unit experience. Suits an early war.
- **Autocracy** (a government type): +1 to all yields in a city for each Palace, Government Plaza (a one-per-empire district for government bonuses) building and Diplomatic Quarter (the diplomacy district) building in it, and +10% Production toward wonders.

When you can change VI

You can swap your government and all your cards for free whenever you complete a civic. You can also change when your number of slots changes, when a new era begins (Rise and Fall onward), and when you finish a Government Plaza building. At any other time it costs Gold.

Good early cards: **Urban Planning** (+1 Production in every city) and **God King** (+1 Gold and +1 Faith in the capital), both from Code of Laws (a step on the culture tree); **Discipline** (+5 Combat Strength against Barbarians); **Colonization** (+50% Production toward Settlers, from Early Empire); **Ilkum** (Babylon's own Builder) (+30% toward Builders) and **Agoge** (+50% toward early melee, ranged and anti-cavalry units), both from Craftsmanship.

Sources: Government (Civ6) and its pages for each government; List of policies in Civ6.

POLITICAL ECONOMY

Institutions: the rules of the game

On 2 January 1672 Charles II of England stopped repaying the goldsmith bankers who had lent him money. After the revolution of 1688, Parliament gained a veto: the Crown could no longer change loans or taxes alone. Tied hands made a better borrower. In nine years of war the debt grew from £1 million to nearly £17 million, and long-term rates fell from 14% to 6 to 8%.

Institutions: the rules people make to shape how they deal with each other, written or unwritten, and how they are enforced. Organizations are the players; institutions are the rules.

HOW THE GAME MAPS IT

In the game	In the world
Your government and policy cards set the payoff of every later move	Laws and taxes that make some activities pay
Colonization makes Settlers cheaper, so you expand	A subsidy that pulls investment into one sector

WHERE THE MAP BREAKS

- ✗ North stresses that enforcing rules is costly and imperfect. Civ enforces every rule perfectly and free.
- ✗ You rewrite your rules whenever a civic completes. England's rewrite took a civil war and a revolution.

READ NEXT

- Accessible: Phil Agre's review of North.

Douglass C. North, *Institutions, Institutional Change and Economic Performance* (1990).

POLITICAL ECONOMY

Inclusive and extractive institutions

A fence cuts the city of Nogales in half. In 2012 Daron Acemoglu and James Robinson reported that the average household in Nogales, Arizona, earned about \$30,000 a year, and most adults had finished high school. On the Sonora side, households earned about a third as much, and most adults had not. The land and weather are the same. The rules, the authors argue, are not.

Inclusive and extractive institutions: inclusive rules spread power and protect property widely. Extractive rules funnel power and income to an elite that blocks change; the authors argue such growth fades.

HOW THE GAME MAPS IT

In the game	In the world
Cards that raise yields in every city	Rules that let everyone keep the gains from investing
Cards that pull yields toward the capital or the army	Rules that funnel income to a ruling group

WHERE THE MAP BREAKS

- ✗ In Civ you are the whole elite, and no government is tied to long-run growth.
- ✗ The thesis is contested. Critics point to fast growth under extractive rule, as in China, and to geography and culture.

READ NEXT

- Evidence base: Acemoglu, Johnson and Robinson, "The Colonial Origins of Comparative Development" (2001).

Daron Acemoglu and James A. Robinson, *Why Nations Fail* (2012).

The hard question: is order and prosperity worth limits on freedom?

In Civ you swap governments like tools. Singapore had one prime minister, Lee Kuan Yew, from 1959 to 1990. Over those years GNP per head rose from \$1,240 to \$18,437, unemployment fell from 13.5% to 1.7%, and public flats rose from 22,975 to 667,575. His government also sued critics for defamation and detained opponents without trial: 113 left-wing activists in Operation Coldstore in 1963, and a former opposition MP, Chia Thye Poh, for 23 years. Of his rules on private life, Lee said: "We decide what is right. Never mind what the people think."

The case for Lee's way: in 1965 Singapore was a small island with no natural resources, newly separated from Malaysia and facing threats from communists and from Indonesia. Lee argued that stability had to come first, and the results are real: jobs, homes and clean government. When he died in 2015, about 1.7 million people paid their respects.

The case against: no one can rerun history to show the detentions were needed. People value the right to speak and to vote their rulers out for its own sake, whatever it does for wealth. And a system that trusts one wise ruler has no defense against an unwise one.

Your call: *how much freedom would you trade for safety and a rising income?*

LAB · Lab: Swap cards to fit the job

Predict first: how many turns will Colonization save on one Settler (the unit that founds a city), and how many will Ilkum save on one Builder (a unit that builds farms, mines and the like)?

1. When you plan two Settlers in a row, slot Colonization. Note the turns to build a Settler.
2. When the Settlers are done and you start Builders, wait for your next civic, then swap Colonization for Ilkum.
3. Note the turns to build a Builder with and without Ilkum.

Measure: turns saved per item from each card.

What you should see: Colonization cuts a Settler's build time by about a third, Ilkum a Builder's by about a quarter, and neither helps anything else. Cards are tools for the job in front of you.

If your result differs: the city's Production changed between measurements. It grew, a citizen moved tile, or it fell to Displeased (–10% to non-Food yields). A chop's overflow may also have landed in one item. A card multiplies the Production you have, so hold everything else still while you measure.

In the world: a shop's "buy two, get one free" sign changes what people put in their baskets, though nobody is forced. Stand near one such offer and count how many shoppers take three. The rule did the work.

Check yourself

1. Early Empire (a step on the culture tree) has just completed and you plan three Settlers in a row. What do you do before ending the turn, and how much faster is each Settler?
2. A player calls Autocracy "a tool for a wonder push." Why would Acemoglu and Robinson object, and why does Civ let it pass?
3. A city council makes downtown parking free on Saturdays. Using North's idea of institutions, predict one change in behavior, and say who might defend the rule later.

In the game: each time a civic finishes, ask what the next ten turns are for and slot cards for that.

In the world: rules shape what people find worth doing, so to change behavior, look at the rules first.

Governors

In Civ your officials do exactly what you want. Real ones have their own interests, as a 1790 contract to ship convicts to Australia showed.

The rule VI

Governors (named officials assigned to cities) arrived with Rise and Fall (the first Civ VI expansion). A **Governor** is a named official you assign to one city. Every city with a Governor gets +8 Loyalty (how firmly the city stays yours) per turn from the moment you assign them. Their other powers start only once they are **established**, which takes 3 turns for Victor and 5 turns for everyone else. Moving a Governor to a new city restarts that count.

Governor	Starting title
Reyna, the Financier	Land Acquisition: the city gains new tiles faster
Victor, the Castellan	Redoubt: +5 Combat Strength for the city's garrison
Amani, the Diplomat	Messenger: can sit in a city-state and count as 2 Envoys (the tokens that win a city-state's favor)
Magnus, the Steward	Groundbreaker: +50% from harvests and chops
Moksha, the Cardinal	Bishop: religious pressure from the city +100%, +2 Faith per specialty district
Liang, the Surveyor	Guildmaster: Builders trained in the city get +1 charge
Pingala, the Educator	Librarian: +15% Science and Culture in the city

Suleiman of the Ottomans gets an eighth, Ibrahim, who establishes in 3 turns.

Titles and promotions VI

You spend **Governor titles** on Governors. Each title either appoints a new Governor or buys one promotion for an existing one. Each Governor has a starting title plus five promotions arranged in a small tree, so later promotions require earlier ones. Titles come from 13 civics, 4 from the Government Plaza (a one-per-empire district for government bonuses) (1 for the district, 1 for each of its three building tiers), the repeatable Future Civic, and a few Great People (a famous figure you recruit for one big effect) and wonders.

Appointing and fully promoting all seven Governors would take 42 titles. The civics and the Government Plaza give 17. So you must choose between many Governors with basic powers and a few with deep powers. Promotions cannot be undone.

Sources: Governor (Civ6) and each Governor's page.

POLITICAL ECONOMY

The principal-agent problem

In 1790 Britain paid a private firm a flat £17 7s 6d per convict shipped to Australia, whether they landed alive or not. Only two of the crew answered to the Crown. Of 1,038 convicts embarked, 273 died at sea, a record for the route. The guard's commander wrote that the masters profited from every ration they withheld. From 1792 a naval surgeon took charge of the convicts, and deaths fell sharply.

Principal-agent problem: when someone acts for you with their own interests and better information, you bear agency costs: monitoring, incentives and the losses that remain.

HOW THE GAME MAPS IT

In the game	In the world
You assign Magnus to a city to chop for you	A shareholder hiring a manager
Automated units follow their own simple goals	An agent who does the job their own way

WHERE THE MAP BREAKS

- ✗ Civ's Governors never shirk, steal or misreport, so the problem's hidden information is gone.
- ✗ Jensen and Meckling studied contracts. Civ has none to get wrong.

READ NEXT

- Accessible: ProMarket on the paper's influence.

Michael C. Jensen and William H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* 3(4) (1976).

LAB · Lab: What is establishment worth?

Predict first: by what percentage will the capital's Science and Culture rise when Pingala establishes, and how many turns of that bonus will one move cost?

1. Assign Pingala to your capital. Note its Science and Culture on the turn you assign her.
2. Note them again on the turn she is established, 5 turns later.
3. Later, move her to a second city and count the turns of Librarian you lose to re-establishing.

Measure: Science and Culture per turn before and after, and the yield lost during the move.

What you should see: a 15% jump when she establishes, and a 5-turn hole every time you move her. Governors reward picking a home and leaving them there.

If your result differs: the city changed during the wait. It grew, a citizen moved tile, or its Amenity level shifted (Happy adds +10% to all yields). Moving her again within the 5 turns restarts the count. Change one thing at a time to see what the Governor alone is worth.

In the world: a sports team that changes coach mid-season needs time before the new coach's ideas show in results. Any handover has a settling-in cost, so count it before you move a good person.

Check yourself

1. You move Pingala from your capital to a new city. For how many turns does the new city go without her Librarian bonus, and what does it get at once?
2. You hand your cities to Governors, yet Civ shows no principal-agent problem. Why not?
3. A café owner hires a manager on a fixed wage, whatever the takings. Name one agency cost the owner faces and one way to reduce it.

In the game: spend your first title on the Governor whose starting power your capital needs most, and do not move Governors often.

In the world: whenever you hand someone a job, ask what they gain and what they know that you don't.

Wonders and Great People

Wonders are races you can lose, and Great People (a famous figure you recruit for one big effect) are prizes you can buy. The hard part is quitting a race you have already paid into.

Wonders VI

Twenty turns into the Pyramids, you get the news: a rival has finished them first.

A **wonder** is a one-of-a-kind building, so building one is a race against every other civ. In Civ VI a wonder takes its own tile near the city and has placement rules: the Pyramids need flat Desert, Stonehenge needs to be next to Stone, and so on.

A wonder pays you in two ways: its own effect, and Tourism (the score behind a Culture Victory) later in the game. Finishing any wonder triggers the Inspiration (a 40% civic discount for a related task) for Drama and Poetry.

If a rival finishes the wonder first, sources disagree on what you get back: the Civ VI wiki says 50% of the Production (the yield that builds units and buildings) you put in; many players on the Steam forums report getting nothing. Plan as if most of it is lost.

Sources: Wonder (Civ6); Steam Civ VI discussion.

When is a wonder worth it? VI

Community consensus on CivFanatics is that most early wonders are a poor trade for a beginner. The Production (the yield that builds units and buildings) for one ancient wonder could have been a Settler (the unit that founds a city) or two, and a new city keeps paying for the whole game. The exceptions are wonders whose effect fits your plan and your land, such as Stonehenge when you start beside Stone and want a religion.

Source: CivFanatics, "Are wonders worth it?" (community consensus).

Great People VI

Great People are named historical figures, each with a one-time or lasting power. There are nine kinds: Great General (a famous general who strengthens nearby units), Admiral, Engineer, Merchant, Prophet, Scientist, Writer, Artist and Musician. Each named person can be earned once per game, by whoever gets there first.

You earn them with **Great Person points** of the matching kind. Points pool across your whole empire. They come mostly from districts (a Campus makes Great Scientist points, a Theater Square makes Writer, Artist and Musician points), plus some buildings, policy cards (swappable bonuses slotted into your government) and district projects.

Great Person's era	Base points needed (Standard speed)
Classical	60
Medieval	120
Renaissance	240
Industrial	420

Great Person's era	Base points needed (Standard speed)
Modern	660
Atomic	960
Information	1,320

Great Prophets (famous prophets who found religions) run out early (none from the Industrial Era on, and fewer on smaller maps). In Gathering Storm (the second Civ VI expansion), points for a kind you can no longer earn turn into Faith (the yield spent on religion) one for one. You can pass on a Great Person you do not want and keep most of your points for the next one.

Patronage VI

You can also **patronize** a Great Person: pay to recruit them now. On Standard speed the price is 150 Faith plus 10 Faith per missing point, or 200 Gold plus 15 Gold per missing point. With 40 of the 60 points for a Classical Great Scientist (a famous scientist you recruit for a one-time boost), you are 20 short, so the price is 350 Faith or 500 Gold. The Oracle wonder cuts Faith patronage by 25%.

Source: Great People (Civ6).

Tip Patronage is cheapest when you are nearly there, and paying the gap can beat losing a Great Person to a rival forever.

DECISION SCIENCE

The sunk-cost fallacy

Psychologists Hal Arkes and Catherine Blumer ran an experiment on the first 60 season-ticket buyers at the Ohio University Theater for its 1982–83 season. The seller handed out tickets in random order: full price, \$15, or a "promotion" at \$2 or \$7 off. In the first half of the season, full-price buyers went to more plays. Everyone held the same tickets. Only what they had paid differed.

Sunk-cost fallacy: letting money or effort you cannot get back push you to keep going. A good decision weighs only future costs and benefits.

HOW THE GAME MAPS IT

In the game	In the world
Twenty turns into a wonder a rival is about to finish	A project over budget and behind
Starting another wonder "to make the first one count"	Throwing good money after bad

WHERE THE MAP BREAKS

- ✗ Not every Civ cost is fully sunk. Check what the game gives back first.
- ✗ In multiplayer, quitting a war can signal weakness, so continuing can be rational.
- ✗ The theater effect had faded by the second half of the season.

READ NEXT

- Accessible: Decision Science News on the paper.
- Primary: Arkes and Blumer (1985), PDF.

Hal R. Arkes and Catherine Blumer, "The Psychology of Sunk Cost," *Organizational Behavior and Human Decision Processes* 35(1) (1985).

Concept lens: Every wonder is a Settler you chose not to build, an **opportunity cost** decision.

The hard question: is a great project worth the lives it costs?

In Civ a wonder costs only Production. The Panama Canal cost lives. A French company led by Ferdinand de Lesseps, builder of the Suez Canal, dug from 1881 until it went bankrupt in 1889, and an estimated 22,000 men died of disease and accidents. The United States took over in 1904. Its sanitation chief, William Gorgas, attacked the mosquitoes that spread yellow fever and malaria, and deaths fell. Even so, reported deaths in the American years run from 5,609 to 5,855. Most were West Indian laborers, paid on a separate "silver roll," with worse housing and mosquito control than white workers. The canal opened on 15 August 1914.

The case for building: the canal cut about 7,800 miles from a voyage between New York and San Francisco, and it has carried world trade ever since. Its workers were recruited with wages. The Americans learned from the French disaster and saved thousands of lives by fighting disease.

The case against: the risk fell hardest on the workers with the least say. Fewer deaths than the French is a low bar. Gorgas showed that disease could be fought, so protecting some workers less than others was a choice.

Your call: *who should decide how much risk a great project may put on the people who build it?*

LAB · Lab: The wonder or the city?

Predict first: which game will have the higher total Science, Culture and Production per turn on turn 100?

1. Save before starting an ancient wonder in your capital. Note its Production cost and your capital's Production per turn.
2. Build the wonder. Play to turn 100.
3. Reload. Spend the same turns building Settlers instead. Play to turn 100.

Measure: total Science, Culture and Production per turn across your empire on turn 100 in each game.

What you should see: community consensus predicts the extra cities out-produce the wonder by turn 100. When the wonder wins, its effect matched your plan exactly. Learn to spot that case.

If your result differs: the wonder's effect may have matched your plan, as Stonehenge does for a religion. The new cities may sit on dry land with 2 Housing (a city's soft population cap) and grow slowly. The same choice pays differently on different land.

In the world: a small business can spend its savings on a smart new shopfront or on a second van that earns every day. Ask which it would rather own in five years. That is the wonder-or-city test.

DO

- Chop (clearing Woods for a lump of Production) into a wonder you have committed to, so it finishes before rivals.

AVOID

- Hoarding Great Generals and Admirals. Their bonuses only help units of their own era and the next.

Check yourself

1. You have 50 of the 60 points for a Classical Great Scientist, 300 Faith and 300 Gold. A rival is close. Can you patronize, and with what?
2. Twenty turns into the Pyramids, you see a rival will finish first. A friend says you have put in too much to stop. Name the error and the right test.
3. A town has spent half its budget on a stadium that now looks likely to sit empty. Council members want to finish it "so the money is not wasted." How should they decide?

In the game: before each wonder, name what the same Production would build instead. When a race is lost, switch at once.

In the world: what you already spent is gone either way, so decide on what the next unit of effort buys.

PART 3

Living With Others

Rivals, city-states, barbarians and the weather all have plans for you. This part covers the systems that tie you to them, and the economics and international relations that explain how they behave.

Religion

A rival Missionary (a unit that spreads religion) walks in, and soon half your city prays to someone else's god. Faiths spread along friendships, and a steady trickle becomes a majority.

The rule VI

Turn 60. A rival founds the fourth religion, and a Standard map has room for five. You are behind in the Prophet race.

Pantheon (an early faith bonus). Your first 25 ● **Faith** (the yield spent on religion) (Standard speed) buys a **pantheon**, a small bonus usually tied to terrain. It stays all game, even if a foreign religion converts your cities.

Holy Sites (faith districts) **and the Great Prophet** (a famous prophet who founds a religion). The Holy Site, a district (a specialized city tile) unlocked by Astrology, earns ● **Faith** from adjacent Mountains, Woods, districts and natural wonders, and makes 1 Great Prophet point per turn, plus 1 per building in it (Shrine, then Temple). Enough points recruit a **Great Prophet**. With a pantheon, activate the Prophet on a Holy Site (or on Stonehenge, which grants a free one) to found a religion; that city becomes your **Holy City**.

The race. Religions are capped at half the map's default player count plus one: 5 on a Standard map, 4 on Small. Once the last Prophet is claimed, nobody else can found one. The Holy Site Prayers project adds Prophet points.

Beliefs. A religion holds four beliefs, one of each type. You pick two at founding: a **Follower** belief (helps every follower city, whoever owns it) plus a **Founder** (helps only you, scaling with spread), **Worship** (a tier-3 Holy Site building) or **Enhancer** (spread and defense) belief. An Apostle (a religious unit that spreads and defends a faith) can later add each of the other two. Each belief belongs to one religion only, so late founders get leftovers.

How cities convert. A city follows the religion held by more than half its citizens. Each city with a majority religion pushes *pressure* onto every city within 10 tiles: 1 point, doubled with a Holy Site, quadrupled in the Holy City (so 8 from a Holy City with a Holy Site). Trade routes carry a little too. Religious units speed this up; their *Religious Strength* is their strength in theological combat.

Religious unit	Needs	Religious Strength	Job
Missionary	Shrine	100	3 charges of Spread Religion; cuts rival pressure in the city by 10%
Apostle	Temple	110	3 spreads (cuts rivals by 25%); starts theological combat; one promotion
Guru	Temple	90	Heals itself and adjacent religious units
Inquisitor	Temple + an Apostle's "Launch Inquisition"	lowest	Removes rival religions from your own cities (75% in Gathering Storm); +35 strength in your territory

Religious units are bought with ● **Faith** in a city with a Holy Site and a majority religion, at a price that rises with each purchase. A unit takes its city's current religion.

Theological combat. Apostles and Inquisitors (units that remove rival religions) can attack enemy religious units on adjacent tiles. Damage depends on the gap in Religious Strength. Terrain does not count; whose land you stand on does. A defender gets +5 in territory of a city following its religion and +15 in its Holy City's territory. Winning raises your religion's pressure nearby and lowers the loser's. Military units can destroy ("condemn") enemy religious units only at war, or when a World Congress (the game's recurring global vote) resolution allows it.

Religion and other systems. Your cities following the religion you founded get +3 Loyalty (how firmly a city stays yours) per turn; the rest get -3. A Religious Victory needs your religion to be the majority in more than half the cities of every civilization still in the game; city-states (minor powers that cannot win) don't count.

Source: Religion (Civ6), Great Prophet (Civ6), Belief (Civ6), Theological combat (Civ6), fandom

When to skip religion VI

Skipping religion costs little while nobody nears a Religious Victory. Skip it when rivals lead the Prophet race, your start lacks Mountains or Woods, or you plan an early war; your cities still get the Follower belief of whatever religion converts them. If one religion nears victory, defend: grow your cities (bigger ones take more charges to convert), buy Inquisitors (units that remove rival religions) if your religion has launched an Inquisition, or go to war so your military can condemn its missionaries. Take a pantheon regardless.

SOCIOLOGY OF RELIGION

Network spread of religion

In the 1960s the sociologist John Lofland lived with a small group of American Unification Church members as they hunted for converts. Most efforts failed; most who joined came through personal ties, often family. His co-author Rodney Stark later did the math. Start from 1,000 Christians in the year 40, grow them 40% a decade, the Mormon rate over the past century, and by 300 you have 6,299,832. No mass conversions needed.

Network spread: religions grow mainly through existing ties of family, friends and trade, and a modest rate compounded over centuries turns a sect into a majority.

HOW THE GAME MAPS IT

In the game	In the world
Pressure from nearby cities and trade routes	Conversion through neighbors and trade partners
Missionaries and Apostles: fast, costly bursts	Mass preaching, which Stark thinks mattered less than ties

WHERE THE MAP BREAKS

- ✗ A Civ city follows one religion by majority. Real cities held several faiths side by side for centuries.
- ✗ Stark credits women, fertility and care during epidemics for much of the growth. None of that has a mechanic.

READ NEXT

- Accessible: Stark, "Reconstructing the Rise of Christianity: The Role of Women"
- Primary: Stark, *The Rise of Christianity* (1996)

Rodney Stark, *The Rise of Christianity: A Sociologist Reconsiders History* (1996)

The hard question: is a religion a gift when it arrives with an empire?

The game rewards converting every city you can reach. In British Africa until 1940, mission schools, mainly run by African converts, provided the bulk of education at extremely low cost. In Canada, for more than a century until 1997, churches ran government-funded residential schools. About 150,000 Indigenous children were placed in them. Many were forbidden to speak their own languages, and some were beaten for it. More than 4,000 student deaths have been documented, and in 2015 the country's Truth and Reconciliation Commission called the system cultural genocide.

The case for the missions: they gave British Africa most of its schooling, African converts ran most of the schools themselves, and a 2012 study found that the historic presence of Protestant missionaries explains about half the variation in democracy across Africa, Asia, Latin America and Oceania.

The case against: the same institutions decided which beliefs were allowed, and with colonial power behind them they could enforce it. A 2021 study re-ran the 2012 analysis with other measures of democracy and found no significant link. Schools can be given without taking a people's language.

Your call: *can a gift be real when the receiver had no power to refuse it?*

LAB · Lab: Can pressure beat a Missionary?

Predict first: which of the two cities will gain more followers from pressure alone in 15 turns, and will one Missionary charge beat all fifteen turns of pressure?

1. Found a religion, then open the Religion lens.
2. Pick two cities that don't follow your religion yet (a rival's or a city-state's): one about 6 tiles from your Holy City, one about 9 away. Note each one's followers.
3. For 15 turns, send no religious units. Then spend one Missionary charge on the far city only.

Measure: followers gained per turn from pressure alone, against followers gained from one Missionary spread.

What you should see: pressure works slowly. Your Holy City pushes the same amount at 6 tiles as at 9, so any gap between the two cities comes from their size and the other cities pushing on them. A single spread usually moves the far city more in one turn than pressure did in fifteen.

If your result differs: a rival religion may be pushing on the same city, shrinking your share. A city that grows adds 50 pressure to its current majority religion, which may not be yours. Your other cities within 10 tiles push too, so the city nearer your core can pull ahead.

In the world: think of how you found your phone, your gym or a favorite show. Ask five friends whether they first heard of theirs from someone they know or from an ad. Stark's pattern predicts mostly people.

Check yourself

1. Your Holy City has a Holy Site. Rival cities sit 7 and 12 tiles away. How much passive pressure does your Holy City push onto each per turn?
2. A Missionary converts a city in a few turns; passive pressure takes far longer. Which is closer to how Stark says real religions grew, and why?
3. A new running club has ten members and a small budget. Should it pay for posters or reward members who bring a friend? Use network spread.

In the game: decide early whether to race for a Great Prophet. If a rival is ahead, keep your pantheon and build something else.

In the world: ideas travel along personal ties more than through broadcasts, so who knows whom often beats who says what.

Trade Routes

A Trader is the quietest unit in the game and binds you tightest to other players. The gain that makes a route pay makes cutting it hurt.

The rule VI

Turn 45. You have one Trader (the unit that runs a trade route) and one slot. Feed the capital, grow a new city or take a neighbor's Gold. The choice also decides who can hurt you later.

Traders and capacity. The Foreign Trade (a step on the culture tree) civic unlocks the **Trader** unit (40 ● **Production** (the yield that builds units and buildings) to start, rising with each one you build) and gives you a *trading capacity* (routes you can run at once) of 1. Each city with a Market or a Lighthouse adds 1; a city with both still adds only 1. Some wonders, Great Merchants (famous merchants you recruit for trade bonuses) and civ abilities add more.

Range and duration. A land route reaches 15 tiles; a sea route 30, once you have Celestial Navigation (a technology). The first time a route to a city finishes, you get a **trading post** in both the origin and the destination. A route through a city with your trading post gets its full range again from there, and posts along the way add ● **Gold**. A route runs about 20 turns on Standard speed; in Gathering Storm (the second Civ VI expansion) the Medieval, Industrial and Information Eras add 10, 20 and then 30.

Roads. A Trader builds a road on every land tile it crosses. Builders (units that build farms, mines and the like) can't make roads, so early on Traders are your road crews.

What a route pays. The *origin* city collects the yield, which depends on the districts (specialized city tiles that hold buildings) in the *destination*, so a route grows richer as that city builds.

District in destination	Domestic route (to your own city)	International route (to a rival or city-state)
City Center	1 ● Food , 1 ● Production	3 ● Gold
Commercial Hub, Harbor	1 ● Production	3 ● Gold
Campus	1 ● Food	1 ● Science
Holy Site	1 ● Food	1 ● Faith
Theater Square	1 ● Food	1 ● Culture
Encampment, Industrial Zone	1 ● Production	1 ● Production

In Gathering Storm, crossing water, canals or railroads can raise a route's base Gold by up to 100%.

Side effects. An international route to another civ gives you one level of diplomatic visibility with them (you see more of their affairs), +25% **Tourism** toward them, and +2 to their opinion of you. War cancels routes with the enemy. Enemy units and barbarians can *plunder* a Trader: it dies and they take Gold.

Source: Trade route (Civ6), Trading post (Civ6), Roads (Civ6), fandom; yields from game data (see ledger)

Domestic or international VI

A route from your capital to a new city feeds the capital. To feed the young city, move the Trader there first ("Transfer to another city"), then send it to your most developed city. Use international routes for Gold and city-state (a minor power that cannot win) quests (community consensus on CivFanatics, though the best-known guides predate the expansions).

ECONOMICS

Comparative advantage

David Ricardo made his fortune financing government borrowing, then retired and wrote economics. In 1817 he set a puzzle. Portugal can make a year's cloth with 90 men and its wine with 80; England needs 100 and 120. Yet both gain if Portugal makes only wine and England only cloth, "notwithstanding that the commodity imported by Portugal could be produced there with less labour than in England".

Comparative advantage: two parties both gain from trade when each makes what it gives up least to make, even if one of them is better at everything.

HOW THE GAME MAPS IT

In the game	In the world
An international route pays in the partner's specialty (Science from a Campus)	Importing what your partner makes cheaply
Swapping a spare luxury for one you lack; both civs gain Amenities	Exchange where each side gives up little

WHERE THE MAP BREAKS

- ✗ Ricardo's gains come through prices. A Civ route has none; it just adds yields to the sending city.
- ✗ Real trade has losers, such as workers in shrinking industries. The two-good model and the game both ignore them.

READ NEXT

- Accessible: CEPR VoxEU, "The principle of comparative advantage: 200 years"
- Primary: Ricardo 1817, chapter VII

David Ricardo, *On the Principles of Political Economy and Taxation* (1817), chapter VII

INTERNATIONAL RELATIONS

Complex interdependence

In October 1973 Arab oil exporters embargoed the United States, the Netherlands, Britain and others that had backed Israel in that month's war. By March 1974, when it ended, oil had gone from \$3 a barrel to nearly \$12, and the shock helped push the world into recession. The exporters lost little, selling less oil at nearly four times the price. The importers had no quick substitute.

Complex interdependence: when states are tied by many channels and force is too costly, power comes from uneven dependence. Whoever would lose less from cutting the ties holds the leverage.

HOW THE GAME MAPS IT

In the game	In the world
War cancels every route between you; the side with more routes loses more	Vulnerability: the cost of cutting ties
Routes add opinion (+2), visibility and Tourism	Many channels beyond the state

WHERE THE MAP BREAKS

- ✗ Civ AIs will attack their biggest trade partner. Lost trade barely enters their war decision.
- ✗ Keohane and Nye wrote about pairs like the US and Canada, where force was off the table. In Civ it never is.

READ NEXT

- Primary: Keohane and Nye 1977, chapters 1–2

Robert O. Keohane and Joseph S. Nye, *Power and Interdependence: World Politics in Transition* (1977)

The hard question: should you trade with a state you believe is in the wrong?

In the game a trade partner's politics never matter. In 1963 Egon Bahr, later the architect of Willy Brandt's opening to the East, proposed "Wandel durch Annäherung", change through rapprochement. Its offspring, "Wandel durch Handel", change through trade, bet that commerce would change autocracies. From 2011 Nord Stream 1 piped Russian gas under the Baltic to Germany. In February 2022, before Russia invaded Ukraine, 55% of Germany's gas imports came from Russia, and Chancellor Olaf Scholz suspended approval of Nord Stream 2. In April President Frank-Walter Steinmeier said, in Reuters' translation: "My adherence to Nord Stream 2 was clearly a mistake." By September Russia had shut Nord Stream 1.

The case for trading: Soviet gas had flowed west since 1973, through the Cold War. In 2007 Steinmeier wrote that Europe could find lasting peace only with Russia. After the invasion Scholz argued that Europe's energy for "heat generation, mobility, electricity supply and industry cannot be secured in any other way at the moment" (AFP's translation).

The case against: the dependence ran one way. Gas money funded the state that invaded, and when the tie was cut it was Germany that scrambled. Trade changed the buyer more than the seller.

Your call: *how much would a trade have to pay before you accepted whom it strengthens?*

LAB · Lab: Which job pays your Trader best?

Predict first: which route will pay more total yield per turn, the domestic or the international one, and which will help your new city grow faster?

1. Move your first Trader to your newest city ("Transfer to another city"), then send it on a domestic route to your capital. The new city, as the origin, collects the yields. Note them in the route list.
2. When it ends, send the same Trader on the best international route on offer. Note its yields.
3. Track the new city's population and build times across both periods.

Measure: Food plus Production per turn from the domestic route against Gold per turn from the international one.

What you should see: the domestic route shortens the new city's build queue noticeably; the international route earns more total yield but leaves the young city where it was.

If your result differs: the destination's districts set the pay, so a capital with few districts pays little. Trading posts along the way add Gold, and in Gathering Storm crossing water or railroads can raise base Gold by up to 100%. A plundered Trader ends its route early.

In the world: watch two roommates split chores. The faster cook cooks and the other cleans, even if the cook is also faster at cleaning, and both finish sooner. That is Ricardo's rule in a shared flat.

Check yourself

1. Your new city can send its Trader to your capital (City Center, Campus) or to a rival city (City Center, Commercial Hub). From the district table, what does each route pay?
2. Most of your routes run to one rival, and it threatens war. Which concept says who holds the leverage, and where does the game's version break?
3. A baker makes better bread and slightly better coffee than the café next door. Why might she still buy her coffee from the café?

In the game: an idle trade slot is lost yield. Keep capacity full, and base Traders in the city you want to grow.

In the world: trade pays because partners differ, and the same gain makes cutting the tie expensive for whoever needs it more.

City-States and Envoys

Twelve small neighbors can't win the game, but six well-placed envoys can tip it your way. Real small states choose between the giant next door and the one far away.

The rule VI

Turn 25. Your Scout (a fast unit for exploring) meets a Scientific city-state (a minor power that cannot win) first, and the free envoy pays +2 Science in your capital. Three would pay in every Library.

What a city-state is. A one-city AI minor power that never expands or competes to win. A Standard map has 12 by default, of six types.

Envoys (tokens of influence sent to city-states). **Envoys** are tokens of influence you place in the City-States screen. They never decay. You earn them from Influence (a diplomacy currency) Points (your government sets the rate: a tier-1 government like Classical Republic makes 3 per turn, and 100 points buy one envoy), from being the first civ to meet a city-state (+1 there), from its quests (+1 there), and from several civics. Declaring war on a city-state deletes all your envoys in it.

Thresholds. Bonuses depend only on how many envoys *you* have there.

Type	1 envoy	3 envoys	6 envoys
Scientific	+2 ● Science in capital	+2 ● Science in every Library	+2 more in every University
Cultural	+2 ● Culture in capital	+2 ● Culture in every Amphitheater	+2 more in every Art or Archaeological Museum
Religious	+2 ● Faith in capital	+2 ● Faith in every Shrine	+2 more in every Temple
Trade	+4 ● Gold in capital	+2 ● Gold in every Market and Lighthouse	+2 more in every Bank and Shipyard
Industrial	+2 ● Production in capital (wonders, buildings, districts)	+2 in every city with a Workshop	+2 more with a Factory
Militaristic	+2 ● Production in capital (units)	+2 in every city with a Barracks or Stable	+2 more with an Armory

Since Rise & Fall the 3- and 6-envoy bonuses need those buildings. The paid Ethiopia Pack changes this table.

Suzerain (the player who controls a city-state). The civ with at least 3 envoys and strictly more than anyone else is the city-state's **suzerain**. A tie means nobody is. The suzerain gets the city-state's unique bonus, its luxury and strategic resources, vision around it, the right to build improvements in its land, and in Gathering Storm (the second Civ VI expansion) +1 Diplomatic Favor (a currency for World Congress votes, covered in **Diplomacy**) per turn. The city-state follows its suzerain into war and peace.

Levying. A suzerain can pay ● Gold to take control of the city-state's whole army for 30 turns (Standard speed). The price equals the units' total Production (the yield that builds units and buildings) cost, so 5 Warriors and a Swordsman cost 290 Gold. You pay their upkeep, and you lose them early if you lose suzerainty.

Source: City-state (Civ6), Envoy (Civ6), Suzerain (Civ6), fandom

Spread or stack VI

Early on, spread your envoys: one in each city-state (a minor power that cannot win) pays its capital bonus at once. Later, stack them where a suzerain (the player who controls a city-state) bonus fits your plan and the 3/6 thresholds match buildings you will have. A one-envoy lead can vanish in a turn.

INTERNATIONAL RELATIONS

Balancing vs bandwagoning

In June 1940 France fell to Germany. Hungary joined Germany's Tripartite Pact on 20 November 1940, Romania three days later, hoping for protection against the Soviet Union, and Slovakia the day after. Bulgaria, unable to resist by force, signed in March 1941. Britain, with the sea in between and American aid coming, fought on. Weak and alone, you join the danger. With options, you resist it.

Balancing vs bandwagoning: states usually ally against the power they fear most; weak, isolated states more often join it. Fear depends on power, nearness, offensive capability and intentions.

HOW THE GAME MAPS IT

In the game	In the world
Envoy bidding between you and a rival over one city-state	Great powers competing for small clients
Suzerain's city-state joins its wars; an attacker hands the suzerain a Protectorate War	Patron and client: protection for alignment

WHERE THE MAP BREAKS

- ✗ City-states don't choose. Envoy (a token of influence sent to a city-state) counts decide, so threat and intentions play no part.
- ✗ AIs balance against score, so a peaceful culture leader can draw the same hostility as a conqueror.
- ✗ Walt's evidence comes mostly from Middle East alliances of 1955–79, which shifted slowly. Civ alliances form in one turn.

READ NEXT

- Accessible: Walt, "Alliance Formation and the Balance of World Power", *International Security* 9(4) (1985)
- Primary: Walt 1987, chapter 2

Stephen M. Walt, *The Origins of Alliances* (1987)

The hard question: should a small state fight a giant it cannot beat?

In the game a city-state never resists; it follows its suzerain. On the evening of 2 August 1914, Germany demanded free passage through Belgium for its army, with twelve hours to reply. An 1839 treaty guaranteed Belgian neutrality. Belgium refused, saying that to accept would sacrifice the nation's honour and betray its duty to Europe. Germany invaded on 4 August. That evening its chancellor told the British ambassador, by the ambassador's account, that Britain was going to war "just for a scrap of paper", and that night it did. The Liège forts held for eleven days; the Germans had expected two. Germans shot 5,500 to 6,500 Belgian and French civilians by November, burned Leuven's university library and occupied more than 95% of the country for four years.

The case for fighting: a treaty is worth only what someone will defend. Belgium's refusal brought Britain in and cost Germany days it had not planned to lose.

The case against: Belgium could not win, and its people paid in executed civilians, a burned library and four years of occupation. Honor is cheap for the ministers who invoke it and dear for those who live along the road.

Your call: *if refusing will cost lives and may not change the outcome, is it still right to refuse?*

LAB · Lab: Can you win a bidding war for a city-state?

Predict first: who will hold the title after 30 turns, and how many envoys will each side have spent by then?

1. Pick a contested city-state where you and one AI both hold envoys.
2. Each time you or the AI adds an envoy there, write the turn and the new counts.
3. Keep it up for 30 turns or until one side gives up.

Measure: envoys each side spent to hold the title, and the bonus you earned while holding it.

What you should see: a bidding war that can eat many envoys; often the same envoys would have bought more spread across uncontested city-states.

If your result differs: the AI earns envoys from quests and civics as well as Influence, so it can jump ahead fast. A tie leaves nobody suzerain. From Rise & Fall on, a spy's Fabricate Scandal removes envoys of whoever leads there.

In the world: watch the last minutes of an online auction with two keen bidders. The price often ends well above what either first planned to pay. An envoy race overspends the same way.

Check yourself

1. You and a rival each have 3 envoys in a Scientific city-state, and you have 2 Libraries. What do you get, and who is suzerain?
2. One AI leads on score with a peaceful culture game; another, smaller, masses troops next door. Which does Walt say a small state should fear more, and whom do Civ AIs target?
3. A small country sits between a large distant power and a smaller neighbor massing troops on its border. What does Walt predict it will do, and when might it bandwagon instead?

In the game: one envoy everywhere first, then concentrate where a suzerain bonus changes your plan.

In the world: small states choose patrons by threat as much as by power, so the biggest player does not automatically win them.

Loyalty and Ages

A city you founded, fed and walled declares independence, though nothing attacked it. Its people felt closer to someone else. Nations form that way, and states break.

Loyalty VI

Every city has a Loyalty (how firmly a city stays yours) score from 0 to 100.

Loyalty	State	Growth	All yields
76–100	Loyal	normal	normal
51–75	Wavering	75%	–25%
26–50	Disloyal	25%	–50%
1–25	Unrest	none	–100%

Pressure from nearby citizens. Every citizen within 9 tiles pushes Loyalty toward its own civ, weaker with distance (10 minus the distance, per citizen). Your Age multiplies your citizens' push: 1.5 in a Golden or Heroic Age, 1 in a Normal Age, 0.5 in a Dark Age (a penalty era after low Era Score). Your push is set against the foreign push, capped at ± 20 per turn.

Other sources. Any assigned **Governor**: +8. Happy or Ecstatic citizens (a city with spare **Amenities**): +3 or +6; Displeased or Unhappy: –3 or –6. Following the religion you founded: +3; not following it: –3. A Monument: +1. An occupied city with no garrison: –5. Several policy cards (swappable bonuses slotted into your government) add more.

Free cities. A city whose Loyalty hits 0 while still falling declares independence and becomes a **Free City**. It is hostile to everyone and trains units, but it still feels pressure. When some civ's pressure wins, the city asks to join it whole, so you can "flip" a rival's city without firing a shot.

Source: Loyalty (Civ6), fandom

Ages and Era Score VI

World eras. The world shares one era, which advances with the civs' overall progress after a 10-turn warning.

Era Score (points for historic moments that set your next era). During each era you earn Era Score from *historic moments*: meeting a civ, clearing a barbarian camp and more. When the world era changes, your score sets your next Age. (A Dedication, in the table, is an era-long goal; see below.)

Age	How you get it	Effect
Dark	Below the Dark Age threshold	Citizens exert 0.5 Loyalty pressure; special Dark Age policy cards; next threshold lowered
Normal	Between the two thresholds	Pressure 1; your Dedication's basic effect
Golden	At or above the Golden Age threshold	Pressure 1.5; your Dedication's powerful Golden version; next thresholds raised
Heroic	Golden threshold reached straight after a Dark Age	Golden Age pressure and <i>three</i> Golden Dedications

Thresholds. In Gathering Storm (the second Civ VI expansion) the base thresholds are 14 Era Score for a Normal Age and 28 for a Golden Age (a bonus era earned with high Era Score). Rise & Fall used 12 and 24. Both rise by 1 per city you own, by 5 for each earlier Golden Age, and fall by 5 for each earlier Dark Age. Score beyond the Golden threshold is wasted. The ring around the End Turn button shows your live numbers.

Dedications (bonuses picked when a new age or era begins). At each new era you pick a Dedication. In a Normal or Dark Age it earns Era Score for an activity (Monumentality: +1 per specialty district you build). In a Golden Age it becomes a bonus: Golden Monumentality lets you buy civilian units with ● **Faith** (the yield spent on religion), makes Settler (the unit that founds a city) and Builder (a unit that builds farms, mines and the like) purchases 30% cheaper and gives Builders +2 movement.

Source: Age (Civ6), Era (Civ6), fandom; thresholds from game data (see ledger)

Careful A Dark Age (0.5) facing a Golden neighbor (1.5) means their citizens push three times as hard. Check both Ages before settling near a rival.

POLITICAL SOCIOLOGY

Imagined communities

On 28 October 1928, in Batavia, young delegates from clubs like Jong Java pledged one motherland, one nation and one language of unity, Indonesian. In 1945 it was the native language of about 5% of the people. Javanese, the mother tongue of 42 to 48%, was passed over so that no group would own the nation. A trade language native to few taught millions of strangers to say "we".

Imagined community: a nation whose members will never meet most of the others yet feel they are one people, a feeling Anderson says mass-printed books and newspapers spread ("print capitalism").

HOW THE GAME MAPS IT

In the game	In the world
Loyalty pressure from nearby citizens of your civ	Identification with a wider "us"
Golden and Dark Ages scale that pressure	National pride and national doubt

WHERE THE MAP BREAKS

- ✗ Anderson's community lives in people's heads. Civ's Loyalty (how firmly a city stays yours) is a distance-weighted head count.
- ✗ Print capitalism has no mechanic. In Civ, Printing is just a tech.

READ NEXT

- Accessible: Verso, "The Origins of National Consciousness" (excerpt)
- Primary: Anderson 1983, chapters 1–3

Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (1983)

POLITICAL ECONOMY

Exit, voice and loyalty

On 19 August 1989 more than 600 East Germans ran through a gate in Hungary's border fence, and in September Hungary let them all cross. In Albert Hirschman's 1970 book, leaving and protesting were alternatives. In 1989 both surged at once: on 9 October 70,000 marched in Leipzig chanting "Wir sind das Volk", we are the people, and on 9 November the Berlin Wall opened.

Exit, voice and loyalty: in a declining firm, party or state, members can leave (exit) or complain and organize (voice). Loyalty delays exit and gives voice time; easy exit can drain voice.

HOW THE GAME MAPS IT

In the game	In the world
A city at 0 Loyalty becomes a Free City and may join a rival	Exit
Governors, Amenities and Monuments raise Loyalty	Repairs that keep members in

WHERE THE MAP BREAKS

- ✗ Civ citizens have no voice. Disloyalty is a number you manage, and nobody marches.
- ✗ Exit starving voice, as when the most demanding parents leave public schools, has no game version.

READ NEXT

- Primary: Hirschman 1970, chapters 1–3

Albert O. Hirschman, *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States* (1970)

LAB · Lab: Can a Governor hold a border city?

Predict first: write the city's Loyalty per turn you expect once the Governor (a named official assigned to a city) arrives, and guess whether the next Age change will move it more or less than the Governor did.

1. Pick your city closest to a rival. Hover its Loyalty bar and copy every line of the breakdown.
2. Assign a Governor there and note the change next turn.
3. After the next era change, note both civs' new Ages and the new breakdown.

Measure: Loyalty per turn before the Governor, after the Governor, and after the Age changes.

What you should see: the Governor adds a flat +8; the Age change moves the citizen-pressure line, sometimes by more than the Governor did.

If your result differs: citizen pressure is capped at ± 20 per turn, so a big Age swing can hit the cap. Amenities (city contentment from luxuries and entertainment) sliding from Happy to Displeased moves Loyalty by 6. A city growing, or a new one settled, within 9 tiles changes the pressure line too.

In the world: people in a border town often shop, watch TV and work across the line. Ask someone from a border region which side they feel part of, and what pulls them that way.

Check yourself

1. Your border city shows 60 Loyalty. What is that costing it, and which single flat bonus in this lesson adds the most Loyalty per turn?
2. A Disloyal city declares independence and later joins your rival. In Hirschman's terms, what did its people use, and which response did the game never offer them?
3. A gym raises prices and cuts classes. Some members cancel at once; others complain to the manager. Which group is likelier to get the classes back, and what keeps them there?

In the game: Loyalty is a population map. Keep more of your citizens near a city than your rival does, and it stays yours.

In the world: a state holds people through shared identity and a fair hearing. Take both away and they leave.

Diplomacy and the World Congress

An AI leader smiles, signs a friendship and votes against you at the next Congress. Every opinion is a number you can read, and the oldest rules of cooperation apply.

Relationships and agendas VI

Agendas. Every AI leader has a public **leader agenda** based on the historical figure and a random **hidden agenda**; Gathering Storm (the second Civ VI expansion) adds a second hidden one later. Pleasing an agenda raises the leader's opinion of you. Diplomatic visibility reveals hidden ones.

Visibility, delegations and embassies. You raise *diplomatic visibility*, how much you see of a rival's affairs, with a **delegation** (25 ● Gold, +3 opinion), later replaced by an **embassy** once you have the Diplomatic Service (a step on the culture tree) civic (50 Gold, +5 opinion), with an international trade route, and with a spy's Listening Post. A leader who dislikes you refuses both.

Opinion. The diplomacy screen lists every modifier as a number. Plus: shared government, trade routes, open borders, gifts, kept promises. Minus: settling near them, troops on their border, broken or refused promises, caught spies, and being close to winning.

Source: Diplomacy (Civ6), Agenda (Civ6), fandom

Friendship, alliances and grievances VI

Declared friendship is possible with a leader whose attitude is Friendly. It lasts 30 turns, bans war and denunciations between you, and is the gate to an alliance. **Denouncing** a leader is the opposite: a public hostile statement that lasts 30 turns, expels delegations, and five turns later lets you declare a Formal War (a war with advance warning, which angers other civs less than a Surprise War).

Alliances need the Civil Service (a step on the culture tree) civic and declared friendship. Each includes a defensive pact (an attack on one brings in the other) and grows through three levels as it earns *alliance points* over time, faster with trade routes between you. In Gathering Storm each alliance also earns +1 Diplomatic Favor (a currency spent in the World Congress) per turn per level.

Alliance	Level 1 example	Level 3
Research	+2 ● Science on your routes to your ally	Faster research on techs one of you already has
Military	+5 combat strength against your shared enemies	New units start with a free promotion
Economic	+4 ● Gold on your routes to your ally	Share each other's suzerain bonuses
Cultural	No Loyalty pressure between your cities	Gain 20% of your ally's city Tourism and 10% of its city Culture
Religious	No religious pressure on each other's cities; +2 ● Faith on routes to your ally	+1 ● Faith per citizen of yours following your ally's religion

Grievances (a running record of who wronged whom) (Gathering Storm): each pair of civs keeps a score of who has wronged whom. A Surprise War adds 150 grievances against you, a Formal War 100, a denunciation 25, and occupying, keeping or razing cities adds more. A *casus belli* (a recognized reason for war) lowers the cost; see **Why wars start**. Your victim's allies gain half its grievances against you. Grievances fade each turn you are at peace, by 10 per turn in the Ancient Era down to 2 in the Future Era, so a late war is remembered far longer. Liberating cities cuts them at once.

Source: Alliance (Civ6), Grievances (Civ6), Casus belli (Civ6), fandom; decay rates from game data (see ledger)

Diplomatic Favor and the World Congress VI

Diplomatic Favor (Gathering Storm) is a currency for votes. You earn it per turn from your government (1 per government tier, so Monarchy gives 2 and Democracy 3), from each city-state (a minor power that cannot win) you are suzerain (the player who controls a city-state) of (+1), from alliances, and in lump sums from liberating cities. You lose it per turn for large grievances held against you (up to -10), for emitting well above the world's average CO₂ (-1 per 3 points over, up to -20) and for each original capital you hold that isn't yours (-5).

Regular sessions. The **World Congress** (the game's recurring global vote) first meets after the world enters the Medieval Era, then every 30 turns. Each session puts two resolutions to the vote. Each has two opposite outcomes and a target (a district type, a luxury, a civ), and lasts until the next session. Every civ gets one free vote per resolution; extra votes cost 10, then 20, then 30 Favor and so on. The outcome with the most votes wins, then the target with the most votes among its backers. Voters who backed the winning outcome and target earn 1 Diplomatic Victory point. From the Modern Era a third resolution awards or removes 2 Diplomatic Victory points from one leader. You win a Diplomatic Victory at 20 points.

Special sessions and emergencies. When a civ commits a serious act, such as conquering a city-state, converting another religion's Holy City or using a nuclear weapon, an affected civ can spend 30 Favor to call a special session, at least 15 turns after the last one. If the emergency passes, everyone who voted for it shares visibility and open borders and goes to war with the target without grievances (a religious emergency is fought with religious units instead). Most last 30 turns, and success pays the members in Favor.

Source: Diplomatic Favor (Civ6), World Congress (Civ6), Emergency (Civ6), fandom

INTERNATIONAL RELATIONS

Realpolitik

In 1833 about fifty students stormed Frankfurt's main guardhouse to start a German revolution, and failed. One, Ludwig von Rochau, was sentenced to life and escaped into ten years of exile. In 1849 an elected German parliament chose the King of Prussia as emperor; he refused, and that June soldiers occupied what was left of the parliament. In 1853 Rochau wrote, in a German Historical Institute translation: "To rule is to exercise power, and only those who have power can exercise it." Prussian power then united Germany in 1866–71.

Realpolitik: politics follows real power the way nature follows physics; ideals win only when force backs them. Rochau, a liberal, meant it as advice about means and kept his goals.

HOW THE GAME MAPS IT

In the game	In the world
A strong civ can make demands of an Unfriendly one and often gets them	Power sets terms
Favor buys votes, and the richest civ steers the Congress	Institutions reflect the power behind them

WHERE THE MAP BREAKS

- ✗ Rochau counted public opinion and ideas as forces in their own right. Civ has no public opinion.
- ✗ The popular meaning, "the ends justify the means", reverses much of what Rochau wrote.

READ NEXT

- Accessible: John Bew, *Realpolitik: A History* (2016), chapter 1
- Primary: Rochau 1853, English extracts at German History in Documents

Ludwig August von Rochau, *Grundsätze der Realpolitik* (1853)

GAME THEORY

Repeated games and the evolution of cooperation

Robert Axelrod, a political scientist at Michigan, invited experts in game theory, economics and mathematics to a tournament. Each program played the prisoner's dilemma against every other, 200 rounds a pair, though in any single round cheating pays best. The winner was a very simple entry from Anatol Rapoport: cooperate first, then copy the other side's last move. In a second tournament Tit for Tat won again.

Repeated games: when the same players meet in a prisoner's dilemma again and again with no known last round, cooperation can last if each reciprocates: start nice, punish betrayal, forgive.

HOW THE GAME MAPS IT

In the game	In the world
A broken promise costs 100 grievances and hands the victim a casus belli	Punishing defection
Grievances decay each turn of peace	Forgiveness

WHERE THE MAP BREAKS

- ✗ Many Civ games have a known last turn, and theory says cooperation unravels as it approaches.
- ✗ Axelrod's players were equals. A Civ superpower can defect and shrug off the punishment.

READ NEXT

- Primary: Axelrod and W. D. Hamilton, "The Evolution of Cooperation", *Science* 211 (1981)
- Robert Axelrod, *The Evolution of Cooperation* (1984)

SOCIAL CHOICE

Arrow's impossibility theorem

In 1785 the Marquis de Condorcet, a French mathematician, found a flaw in majority voting. With three options, majorities can prefer A to B, B to C and C to A, leaving no coherent first choice. Ramon Llull, a Catalan philosopher, had found it in the thirteenth century, but his work was lost until the twenty-first. In 1950 Kenneth Arrow proved the flaw was general: no ranked voting rule meets a few mild fairness conditions at once.

Arrow's theorem: with three or more options, no ranked voting rule can always turn individual rankings into a group ranking while allowing any rankings, respecting unanimity, ignoring irrelevant options and having no dictator.

HOW THE GAME MAPS IT

In the game	In the world
Votes split across targets of the same outcome	Vote splitting between similar options
A Favor-rich civ outvotes everyone	Arrow's "dictator", a voter whose ranking always wins, here bought with Favor

WHERE THE MAP BREAKS

- ✗ Arrow's theorem is about full rankings. The Congress only picks one winner, a narrower problem.
- ✗ Buying votes with Favor (a currency spent in the World Congress) measures how much you care, which Arrow's ranked framework leaves out.

READ NEXT

- Accessible: Amartya Sen, "The Possibility of Social Choice", Nobel lecture (1998)
- Kenneth J. Arrow, "A Difficulty in the Concept of Social Welfare," *Journal of Political Economy* 58(4) (1950); expanded as *Social Choice and Individual Values* (1951)

The hard question: should you ally with a monster to stop a worse one?

In the game nobody checks an ally's record. The evening before Germany invaded the Soviet Union in June 1941, Winston Churchill told his private secretary, John Colville, that if Hitler invaded Hell he would make at least a favourable reference to the devil in the House of Commons. The next day he broadcast that no one had opposed Communism more consistently, but "all this fades away before the spectacle which is now unfolding." In April 1943 Germany announced mass graves at Katyn. They held some of the nearly 22,000 Poles shot in 1940 by the Soviet secret police on an order Stalin signed. Britain pressed the Poles to drop their call for a Red Cross inquiry. Moscow admitted the killings only in 1990.

The case for the alliance: about 8.7 million Soviet soldiers died in the war, and without them it might have been lost or lasted years longer. A leader's first duty is to the people he can still save.

The case against: the ally was also a mass murderer. Silence about Katyn was paid for first by Poles, and victory left Poland and its neighbors in the Soviet bloc until 1989.

Your call: *which of your values would you set aside for a partner you needed, and who would pay?*

LAB · Lab: Can you buy the World Congress?

Predict first: will your 5 votes (1 free, 4 bought) carry the resolution, and how many votes will the winning option get?

1. Save up at least 100 Favor before a regular session.
2. Pick one resolution where you care about the outcome. Put 4 extra votes on it ($10 + 20 + 30 + 40 = 100$ Favor). On the other, use only your free vote.
3. Note the totals the session reports for each option.

Measure: the votes the winning option needed, and your Favor refunded.

What you should see: rising vote prices make concentration expensive; a small group of AIs voting alike often outweighs one big spender.

If your result differs: votes for one outcome add up across all its targets, so AIs split over targets can still beat you. Ties go to whoever committed more Favor. The refund depends on the result: none if your outcome and target won, half if only your outcome won, all if your outcome lost.

In the world: at any club or council vote, count the winners' backers. A small group voting together usually beats one keen member, which is why people agree a joint line before the meeting.

Check yourself

1. You hold 50 Favor at a World Congress session. How many votes can you put on one resolution, and what do you earn if your outcome and target both win?
2. You promised an AI not to settle near it, and a great city site appears there. What does Axelrod say decides whether breaking the promise pays, and what does Civ charge?
3. A club of 9 picks a trip by plurality: 4 vote beach, 3 mountains, 2 city. All 5 others rank beach last. What went wrong, and what would a runoff pick?

In the game: AI opinion is a ledger you can read. Work the numbers up before you need a friend.

In the world: cooperation lasts when the parties expect to meet again, and every voting rule shapes which choice wins.

Espionage

Your rival's Campus (the science district) is about to hand you a free Eureka (a 40% research discount for a related task), if your spy gets out alive. Markets, deals and wars all turn on who knows what.

The rule VI

Spies. The Diplomatic Service (a step on the culture tree) civic (Renaissance Era) lets you train your first **Spy** (225 ● **Production** (the yield that builds units and buildings) to start; can't be bought with Gold). Later civics raise your spy capacity, and the Intelligence Agency building in the Government Plaza district (a specialized city tile that holds buildings) adds one more, for a usual maximum of 6. Spies don't walk the map; you pick a city and they travel there.

Offensive missions. What you can do depends on the districts in the target city.

Mission	Target	Effect
Listening Post	City Center	Raises diplomatic visibility while it runs; can't fail
Gain Sources	City Center	Your spies in that city act 2 levels higher for 24 turns; can't fail
Siphon Funds	Commercial Hub	Steals ● Gold
Steal Tech Boost	Campus	Gives you the Eureka (tech boost) for a tech they know and you don't
Great Work Heist	Theater Square	Steals a Great Work
Sabotage Production	Industrial Zone	Pillages its buildings
Disrupt Rocketry	Spaceport	Pillages it, pausing their space projects
Foment Unrest	City Center	Cuts the city's Loyalty (Rise & Fall on)
Neutralize Governor	City Center	Takes their Governor out for several turns (Rise & Fall on)
Fabricate Scandal	City-state	Removes envoys of the leading civ there (Rise & Fall on)
Breach Dam	Dam	Causes a flood (Gathering Storm)

Defense. A spy left in one of your own cities on **Counterspy** guards one district and every district next to it, and makes enemy spies there much more likely to be caught.

What decides success. The mission briefing shows the odds before you commit. The odds rise with your spy's level (Recruit, Agent, Secret Agent, Master Spy; each success can earn a level and a promotion chosen from three), with matching promotions (Technologist counts as 2 levels higher when stealing boosts), with Gain Sources and with the Intelligence Agency. They fall when an enemy counterspy is in or next to the target district.

Getting caught. A discovered spy must escape; faster exits are riskier. The victim gains a *casus belli* (a justification for war) against you, asks you to stop, and in Gathering Storm (the second Civ VI expansion) accrues grievances.

Source: Espionage (Civ6), Spy (Civ6), fandom

ECONOMICS

Information asymmetry

In 1967 George Akerlof, a Berkeley economist, sent off a paper about used cars. If buyers can't tell good cars from bad, they offer an average price, owners of good cars won't sell, and the market fills with "lemons". Two journals rejected it as trivial. A third explained why he was wrong; the killer, Akerlof recalled, was that "if this paper was correct, economics would be different." He later shared the 2001 Nobel Prize.

Information asymmetry: when one side knows more about quality, the uninformed side pays an average price, good sellers withdraw and quality falls. Inspection, warranties and signals close the gap.

HOW THE GAME MAPS IT

In the game	In the world
Hidden agendas and diplomatic visibility levels	Not knowing the other side's real preferences
Listening Posts, delegations, trade routes	Paying to inspect

WHERE THE MAP BREAKS

- ✗ Akerlof's result needs a market with many sellers. Civ diplomacy is mostly one-on-one bargaining.
- ✗ The game's spies never bring back false information. Real intelligence is often wrong.

READ NEXT

- Accessible: Akerlof, "Writing 'The Market for Lemons': A Personal and Interpretive Essay"

George A. Akerlof, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics* (1970)

The hard question: may you deceive a friend to protect a secret source?

In the game you can spy on allies, and nobody minds. In January 1917 Germany's foreign secretary, Arthur Zimmermann, cabled his ambassador in Mexico: if the United States entered the war, Mexico should join Germany and "reconquer her lost territory of New Mexico, Texas and Arizona" (Britain's translation). Britain's codebreakers in Room 40 read it, and their chief, William Hall, waited three weeks. Releasing it would tell Germany its codes were broken, and America that Britain read its cables. So a British agent bribed a telegraph clerk in Mexico for another copy, and the Americans were told, a half-truth, that it was "bought in Mexico". Wilson published it on 1 March, and Zimmermann then admitted it: "I cannot deny it. It is true." Congress declared war on 6 April.

The case for the cover story: the codebreakers kept their secret, the ally got the truth that mattered, and the lie harmed no one. Intelligence that reveals itself dies.

The case against: Britain was reading the cables of the ally it courted. Americans were told falsely that the text was stolen in Mexico, and many took it for a British forgery. Trust built on a managed truth belongs to the manager.

Your call: *is a friend who lies to you for your own good still a friend?*

LAB · Lab: Steal a Eureka, guard a Campus

Predict first: by how many percentage points will Gain Sources raise your Steal Tech Boost odds, and how many rival spies will your counterspy catch in 30 turns?

1. Send one spy to a rival city with a Campus. Note the success odds for Steal Tech Boost.
2. Instead of starting it, run Gain Sources first, then check the odds again.
3. Put your second spy on Counterspy in your own Campus and note how often rival spies are caught over 30 turns.

Measure: success odds before and after Gain Sources; enemy missions caught against missions that hurt you.

What you should see: preparation shifts the odds by a large margin; a counterspy turns your Campus from an easy target into a costly one.

If your result differs: an enemy counterspy in or next to the target Campus lowers your odds. If the rival knows no tech you lack, Steal Tech Boost is not possible. Your counterspy guards only its district and the ones next to it, so missions against other districts slip past.

In the world: before buying a used phone, check the seller's ratings or ask to test it. That time is the price of closing an information gap, the same job a delegation or Listening Post does in the game.

Check yourself

1. You plan to steal a tech boost from a rival's Campus. How long does Gain Sources last, what does it do, and why run it first?
2. An AI offers a deal, and you can't see its hidden agenda. Which concept describes your position, and how can you close the gap in the game?
3. You are buying a used bike from a stranger and can't judge its condition. Using Akerlof, what happens to a market full of buyers like you, and what can you do?

In the game: spies earn most against the leader in your victory race. Aim them at the district that powers that lead.

In the world: whoever knows more can set the terms, which is why both sides pay to close the gap.

Climate and Disasters

Your Coal plant warms the whole planet, and the flood lands on someone else's coast. That is the classic market failure, and the bill is hard to split.

The rule VI (Gathering Storm)

Turn 260. Phase II: the sea is up 1.0 m, and a 1 m tile by your port is pillaged. Your share of the CO₂ is small. The water does not check.

CO₂. Climate is tracked for the whole world. Most late buildings, from the Factory on, need Power to work at full strength, and Power Plants burn fuel to make it. Coal Power Plants emit the most CO₂ per unit of Power, Oil less, Nuclear far less (but nuclear plants risk accidents). Units that burn fuel and new Railroads also emit. Clearing Woods, Rainforest and Marsh across the world raises the effective CO₂ level.

Seven phases. On a Standard map, each 1,000 on the climate screen's CO₂ counter (which hides the last three digits) adds 0.5°C and one Climate Change point. The phases can't be reversed.

Phase	Sea level	Coastal lowlands	Storm and flood fertility
I	+0.5 m	none	yes
II	+1.0 m	1 m tiles flooded	yes
III	+1.5 m	2 m tiles flooded	yes
IV	+2.0 m	1 m tiles submerged	no
V	+2.5 m	3 m tiles flooded	no; storms and droughts start stripping yields
VI	+3.0 m	2 m tiles submerged	no
VII	+3.5 m	3 m tiles submerged	no

Sea level. Coastal lowland tiles carry a rating of 1, 2 or 3 meters. A flooded tile is pillaged, along with any district (a specialized city tile that holds buildings) on it, until its city builds a Flood Barrier. A submerged tile turns into Coast for good. City Centers (the tiles cities were founded on) never go under.

Disasters. Floods hit river Floodplains, droughts hit open Plains and Grassland, storms roam the map, and volcanoes erupt over nearby tiles. Their base rate is a setup option (Disaster Intensity 0 to 4); warming makes them more frequent and severe. They pillage, damage and can kill citizens. Most also *fertilize* land: a flood or storm can leave affected tiles with lasting extra ● Food or ● Production (the yield that builds units and buildings), and an eruption can leave Volcanic Soil. A Dam on the river stops flood damage but roughly halves the fertility gains. Droughts give nothing back.

The Congress response. The World Congress (the game's recurring global vote) can pass a Global Energy Treaty (from the Modern Era) that discounts or bans a type of power building, and a Deforestation Treaty (Atomic and Information Eras). From the Atomic Era it can hold Climate Accords, a competition that scores each civ for emitting less than the worst polluter; first place earns 2 Diplomatic Victory points. The Carbon Recapture project (Industrial Zone, Global Warming Mitigation tech) removes 50 of your lifetime CO₂ and earns 30 Favor (a currency spent in the World Congress) each time.

Source: Climate change (Civ6), Disasters (Civ6), Flood (Civ6), Climate Accords (Civ6), Carbon Recapture (Civ6), fandom

Tip Settle by rivers and volcanoes for the fertile soil, but keep districts off Floodplains and the tiles around a volcano, where repeat damage lands.

ECONOMICS

Externalities

For decades sulfur dioxide from American coal plants fell as acid rain far downwind. In 1990 Congress voted to cap power plants' sulfur dioxide at 8.95 million tons a year, with tradable permits. In 1991 the Energy Department valued a permit for one ton at \$665 to \$736. At auction in March 1993, they sold for \$122 to \$450. Once the harm had a price, cutting it was far cheaper than forecast.

Externality: a cost or benefit of an action that falls on people who had no part in it and is not priced. Pigou's fix is to tax the harm and subsidize the benefit.

HOW THE GAME MAPS IT

In the game	In the world
Your Coal plant's Production is yours; its sea-level rise is everyone's	Private gain, shared cost
Losing Favor for emitting above the world average	A Pigouvian tax

WHERE THE MAP BREAKS

- ✗ A Pigouvian tax is set by the damage. The Favor (a currency spent in the World Congress) penalty is a fixed formula unrelated to the floods.
- ✗ Coase argued in 1960 that clear property rights let parties bargain an externality away without a tax. Civ has no way to bargain over emissions.

READ NEXT

- Primary: Pigou 1920, Part II, chapter IX

Arthur C. Pigou, *The Economics of Welfare* (1920)

ECONOMICS AND POLITICS

Tragedy of the commons, and governing the commons

Every Thursday, in a public square in Valencia, nine people judge their neighbors: the Tribunal de les Aigües, one representative from each of nine irrigation communities sharing the river Turia's canals. A farmer accused of taking water out of turn is heard in Valencian, and nothing is written down. The court's roots go back to the tenth century. The river's users wrote the rules and police each other.

The commons: each user of an open resource keeps the gain of taking more but shares the cost, so it is overused (Hardin). Communities often prevent this with boundaries, local rules, monitoring and graduated sanctions (Ostrom).

HOW THE GAME MAPS IT

In the game	In the world
One world CO ₂ level; a clean civ floods along with the dirty ones	Open access, where restraint alone does not pay
Climate Accords and energy treaties voted in the Congress	Rules a community writes for itself

WHERE THE MAP BREAKS

- ✗ Hardin conceded in 1998 that his argument covers *unmanaged* commons. The Congress can manage, though rarely well.
- ✗ Ostrom's cases are small communities built on talk and trust. Civ AIs can't be talked into a quota.

READ NEXT

- Accessible: Ostrom, "Beyond Markets and States", Nobel lecture (2009)
- Primary: Hardin 1968; Ostrom 1990, chapter 3

Garrett Hardin, "The Tragedy of the Commons", *Science* (1968); Elinor Ostrom, *Governing the Commons* (1990)

The hard question: who should pay for a shared sky?

In the game a fixed formula docks Favor from heavy emitters. Real nations argue about who emitted first. Since 1751 the world has put more than 1.5 trillion tonnes of CO₂ into the air. The United States is responsible for 25% of it and the 28 countries of the European Union for 22%, and until 1882 more than half the total had come from Britain alone. Most African countries account for less than 0.01% each. Today China emits more than a quarter of each year's total. In many of the poorest countries of sub-Saharan Africa the average person emits about 0.1 tonnes a year, around 150 times less than an American. The 1992 climate treaty says developed countries "should take the lead", in line with their "common but differentiated responsibilities and respective capabilities".

The case for the rich paying: they built their wealth on the emissions that cause the damage, they can afford the bill, and the poor did not create the problem.

The case against: nobody alive chose the emissions of 1882. A bill for past generations asks the living to pay for the dead, and cuts that spare today's biggest emitters cool little.

Your call: *should responsibility follow what was emitted, what is emitted now, or who can pay?*

LAB · Lab: Does one Coal plant matter?

Predict first: write your share of world CO₂ now and your guess for 20 turns later, and say whether your Favor per turn will drop.

1. In the Industrial Era, note the World Climate screen's global CO₂ and your share.
2. Build one Coal Power Plant and play 20 turns.
3. Note your contribution, the world total and your Favor per turn again.

Measure: your share of the world total, and your Favor.

What you should see: your own change moves the global number very little, while the Favor penalty lands on you directly. That gap is the whole lesson.

If your result differs: Favor drops only once you emit well above the world average, at -1 per 3 points over. Other civs' plants, units and Railroads, and clearing of Woods and Rainforest anywhere, raise the world total too, so your share can shrink even as you emit more.

In the world: look at a shared office fridge or a student kitchen. Each person's mess barely shows, so nobody cleans until someone posts rules. That sign on the door is a climate treaty in miniature.

Check yourself

1. Your coastal city has 1 m and 3 m lowland tiles. In which climate phases does each kind flood, and when is it lost for good?
2. You stop building Coal plants, but the world keeps warming and your coast floods anyway. Which concept explains why your restraint alone did not save you?
3. A factory upstream dumps waste into a river, and a fishing village downstream loses its catch. What is this, and what did Pigou propose?

In the game: early disasters usually pay in yields; late warming you can't stop alone, so build where the water won't reach.

In the world: when a cost lands on everyone, each actor's own cut barely shows, so fixes need rules, prices or shared agreements.

Barbarians

Raiders, warlords and states are closer relatives than they look. The difference is mostly how long each plans to stay.

The rule VI

Turn 12. A barbarian Scout (a fast unit for exploring) steps out of the fog, sees your capital and turns for home. If it gets back, 3 to 6 raiders will follow. You have a few turns.

Outposts. Barbarians (hostile raiders from camps) live in **outposts** (camps). New outposts can appear on any land tile in unclaimed territory that has no revealed resource and that no unit can currently see. Each outpost starts with a fortified anti-cavalry unit (a Spearman early, later Pikemen) as its guard and a Scout. Outposts near Horses send mounted units; coastal outposts send ships.

Scouts and raids. The barbarian Scout wanders until it spots a city. If it gets back to its outpost, the outpost starts building a raiding party of 3 to 6 units, depending on difficulty. Raiders pillage, plunder trade routes and capture civilians; from Emperor up they attack cities too. Barbarians raze any city they take, but they can't capture an original capital. **Kill the Scout before it gets home and the raid never starts.**

Clearing an outpost. Defeat the guard, then move any land unit onto the tile. You get a ● **Gold** reward that scales with difficulty and game speed (it is smaller on harder levels), and in some eras a historic moment worth Era Score (points for historic moments that set your next era). Founding a city that claims the tile also removes it. Barbarians learn any tech half the civs know, so camps grow stronger.

Source: Barbarian (Civ6), fandom

Optional rule: Barbarian Clans mode VI

Barbarian Clans, a free game mode since the February 2021 update (tick it in Advanced Setup), makes each outpost a named clan. Its banner lets you **Bribe** it (Gold for 20 turns without attacks on your cities), **Hire** a unit, **Incite** it against a neighbor, or **Ransom** a captured civilian. When you defeat a clan you choose to **Disperse** it (the camp goes, but in this mode you get XP instead of Gold) or **Raid** it for Gold and leave it standing. Clans earn progress toward civilization every turn, faster when you bribe or hire them and slower when you incite or raid them. A clan that gets there becomes a new city-state (a minor power that cannot win), unless it sits within 3 tiles of another city.

Source: Barbarian Clans (Civ6), fandom

POLITICAL ECONOMY

Stationary vs roving bandit

In the 1920s much of China was ruled by warlords who taxed their people heavily and pocketed much of the money. Mancur Olson, an economist, noticed something odd about one, Feng Yu-hsiang, who "was noted for the exceptional extent to which he used his army for suppressing bandits". Feng's subjects were still robbed, by a thief who stayed. Yet "most people in Feng's domain found him much preferable to the roving bandits".

Stationary bandit: a roving bandit takes everything and moves on, so nobody invests. A bandit who settles gains from his subjects' prosperity, so he taxes instead of looting and keeps other thieves out.

HOW THE GAME MAPS IT

In the game	In the world
Barbarian raiders pillage, plunder and capture civilians	The roving bandit
Barbarian Clans: a bribed clan can become a city-state	Raiders settling into rulers

WHERE THE MAP BREAKS

- ✗ Olson's stationary bandit still rules others. In Civ you are ruler and ruled at once, so their conflict vanishes.
- ✗ In standard games barbarians never settle; only the Clans mode shows anything like Olson's transition.

READ NEXT

- Accessible: Olson, *Power and Prosperity* (2000), chapters 1–2
- Primary: Olson 1993

Mancur Olson, "Dictatorship, Democracy, and Development", *American Political Science Review* (1993)

POLITICAL SOCIOLOGY

Monopoly of legitimate violence

On 28 January 1919, with Bavaria in revolution, Max Weber told students in Munich that a state is the human community that successfully claims the monopoly of the legitimate use of physical force within a territory. On 21 February Kurt Eisner, who had proclaimed the Bavarian republic, was shot dead on his way to resign. The elected government fled Munich, and a short-lived Soviet republic took its place.

Monopoly of legitimate violence: Weber defines the state as the community that successfully claims the sole right to use physical force in a territory, a right resting on tradition, charisma or legal rules.

HOW THE GAME MAPS IT

In the game	In the world
A new city whose land covers a camp removes it	Territory where only the state may use force
Free Cities: armed, hostile, belonging to no one	A broken monopoly

WHERE THE MAP BREAKS

- ✗ Weber's monopoly is a claim others must accept. In Civ it is a hard rule of movement.
- ✗ Legitimacy has no mechanic. Loyalty (how firmly a city stays yours) counts nearby citizens, not their consent.

READ NEXT

- Accessible: "World Wide Weber", *History Today*
- Primary: Weber, "Politics as a Vocation" (any translation)

Max Weber, "Politik als Beruf" ("Politics as a Vocation"), lecture of 1919

The hard question: when is force legitimate?

In the game you clear a camp and nobody asks by what right. In 67 BC pirates ran the Mediterranean: Plutarch counts more than a thousand pirate ships and 400 captured cities, and Rome feared for its food. The tribune Aulus Gabinius proposed giving Pompey command of the whole sea and the land 50 miles inland for three years, with, Plutarch says, 200 ships and the treasury. The Senate balked, since Sulla had made himself dictator fifteen years before, but the people passed the law. Pompey cleared the western seas in forty days and all piracy in under three months. He spared more than 20,000 who surrendered and settled them on farmland in half-empty towns such as Dyme in Greece, reasoning, in Bernadotte Perrin's translation, that a man "may be softened by new customs and a change of place and life".

The case for the law: the pirates were starving Rome, and only one commander with sweeping power could clear a whole sea. The result was humane as well as fast: raiders became farmers.

The case against: a republic that hands one man an army and a treasury has already changed what it is. The law later served as a precedent for the powers of Augustus, Rome's first emperor.

Your call: *would you accept an emergency power you know will outlive the emergency?*

LAB · Lab: Bribe the raiders or rob them?

Predict first: which clan becomes a city-state first, and will bribing or raiding leave you with more Gold after 40 turns?

1. Start a game with Barbarian Clans on. Find two clans at similar distances from your cities.
2. Bribe the first one whenever its bribe runs out. Raid the second one whenever you can.
3. Record for 40 turns: Gold spent and earned, improvements pillaged, and each clan's progress toward civilization.

Measure: net Gold and damage per clan, and which one civilizes first.

What you should see: the bribed clan edges toward becoming a city-state; the raided clan pays now and keeps raiding.

If your result differs: a bribe only stops attacks on your cities, so the bribed clan can still hit your units. You can raid a clan only once every 10 turns. Other civs act too: their bribes and hires speed a clan, their incites and raids slow it. A clan within 3 tiles of a city never civilizes.

In the world: ask a few renters whether their landlord plans to keep the building for years or sell soon. Olson's logic predicts long-term owners fix the roof while quick sellers patch and go.

Check yourself

1. A barbarian Scout spots your second city and turns back toward its outpost, 4 tiles away. What happens if it gets home, and what should you do this turn?
2. In Clans mode you keep bribing a clan until it becomes a city-state (a minor power that cannot win). Which concept describes that change, and where does the game's version break?
3. Residents hire private guards who start fining people for littering. Even if the streets get cleaner, why would the city government object, in Weber's terms?

In the game: barbarians are a timer that starts when their Scout sees you. Kill the Scout and you control the clock.

In the world: order begins when one group can promise protection over a territory for a long time, and that promise usually rests on force.

PART 4

War and Power

War in Civ VI is a list of prices: Grievances to declare, hit points to fight, Gold to upgrade. Learn to read them here, and you will see them in real wars.

Why Wars Start (and How to Avoid One)

A surprise war costs 150 Grievances (a running record of who wronged whom), and the AI still declares them. States that want only safety fall into wars too, through the trap that armed Europe before 1914.

The rule: every war has a stated reason VI

Turn 45. Your neighbor's Warriors have loitered at your border. Then the notice arrives: Surprise War. You now hold 150 Grievances against him, and none of them fade while the war lasts.

A **casus belli** (a justification for war) (Latin for "case for war") is the official reason you give when you declare war, and it sets how angry the world gets. The anger is counted in **Grievances**, a score that each pair of civs keeps against each other (Gathering Storm). They make other leaders like you less, usually after the war ends. At peace they fade by 10 per turn in the Ancient Era, one less each later era, down to 2 in the Future Era.

Casus belli	When you can use it	Grievances for declaring
Surprise War	Any time, no conditions	150
Formal War	You denounced them (or they denounced you) at least 5 turns ago	100
War of Territorial Expansion	Mobilization civic; two of your cities within 10 tiles of two of theirs	75
Holy War	They converted one of your cities to their religion	50
War of Retribution	They broke a promise to you in the last 30 turns	50
Colonial War	Nationalism civic; they are two or more eras behind you	50
Ideological War	You both run Tier 3 governments, and they differ	50
Golden Age War	You chose the To Arms! dedication in a Golden Age	25
Liberation, Reconquest, Protectorate War	They took a friend's city, took your city, or attacked a city-state you lead	0

Most casus belli also need a particular civic.

Capturing a city adds up to 50 Grievances, keeping it in the peace deal adds the same again, razing it costs three times the capture cost, and taking a civ's last city costs 150 with every civ still in the game. Allies of your victim pick up 50% of the victim's Grievances against you, and declared friends pick up 25%. The one action that lowers Grievances during a war is **liberating** a city: handing a captured city back to the civ that founded it.

Long wars also cause **war weariness** (unhappiness that grows the longer you fight): battles add points (double outside your borders), and every 400 points cost 1 **Amenity**, the contentment that keeps cities growing.

Sources: Casus Belli (Civ6), Grievances (Civ6), War weariness (Civ6), civilization.fandom.com.

Why the AI attacks weak neighbors VI

Community consensus on CivFanatics is that a Deity (the hardest difficulty) AI often rushes its nearest neighbor between turns 20 and 35, sends a second wave of Horsemen or Knights later, and refuses friendship once it has decided to attack. Agendas, the likes and dislikes that drive each AI leader, point the same way: Cleopatra "dislikes civilizations with weak militaries". The AI also gets +1 to +4 combat strength (how hard a unit fights) from King to Deity (see [How the AI Thinks and Cheats](#)), so it often wins even fights.

Sources: CivFanatics, "Getting Rolled on Deity" (2018); List of agendas in Civ6.

Defending without fighting VI

- **Look expensive.** Build Ancient Walls (Masonry). They give your city a ranged attack and a 100 HP outer wall that melee units can barely scratch (see [Combat](#)).
- **Keep units at home.** A melee unit fortified on a hill gets +3 for the hill and up to +6 for fortifying (staying put to dig in). Community consensus for Deity is 4 to 5 Archers once a rush is coming.
- **Declare friendship.** A declared friend cannot declare war on you while the friendship lasts (30 turns on Standard speed). Send a delegation early: it adds +3 to the relationship.
- **Keep your promises.** If an AI asks you to move troops away from its border and you agree, then break the promise, that alone is 100 Grievances.

INTERNATIONAL RELATIONS

Anarchy and the security dilemma

In 1898 Alfred von Tirpitz, who ran Germany's navy office, got the Reichstag to fund eleven battleships. He never expected to beat the Royal Navy, only to make Britain offer concessions. London read a threat. In 1906 Britain's First Sea Lord, Jacky Fisher, called Germany the "only probable enemy", while Berlin grew nervous of a surprise British strike on its fleet. In 1908 Wilhelm II insisted the ships were aimed at Japan. By 1914 Britain had 20 dreadnoughts to Germany's 15. Each side's insurance was the other's reason to arm.

The security dilemma: with no authority above states, each arms to feel safe. Neighbors cannot tell defense from attack, so they arm too, and all end up less safe.

HOW THE GAME MAPS IT

In the game	In the world
No one enforces peace between civs; only Grievances and agendas push back.	Anarchy: no authority above states.
Units parked near a border earn a "move your troops" request.	Troops near a border look like an attack being prepared.

WHERE THE MAP BREAKS

- ✗ The AI's fear is a few if-then rules, and some agendas admire strength. Real fear runs on history and pride.
- ✗ Civ shows every rival's units. Britain had to guess what Germany's fleet was for, and that guessing is the dilemma.

READ NEXT

- Accessible: Joseph S. Nye Jr. and David A. Welch, *Understanding Global Conflict and Cooperation*.
- Primary: Jervis (1978), below.

John H. Herz, "Idealist Internationalism and the Security Dilemma," *World Politics* 2(2) (1950); Robert Jervis, "Cooperation under the Security Dilemma," *World Politics* 30(2) (1978).

INTERNATIONAL RELATIONS / STRATEGY

Deterrence and compellence

On 16 October 1962 John F. Kennedy was shown photographs of Soviet missile sites in Cuba. His Joint Chiefs wanted an attack and an invasion. He chose a naval "quarantine", since a blockade is an act of war. The missiles were already there, so this was compellence, the harder job: making a rival undo something. On 28 October Khrushchev said the missiles would go, for a public American promise not to invade Cuba and a secret one to pull American missiles out of Turkey.

Deterrence and compellence: deterrence is a threat that stops someone starting something; compellence makes them stop or act. Both work only if the other side believes you.

HOW THE GAME MAPS IT

In the game	In the world
Walls, a hill garrison and Archers make your city a bad trade.	Deterrence by denial: make the attack fail.
Siege units beside a city you demand in a peace deal.	Compellence: the AI cedes cities it expects to lose.

WHERE THE MAP BREAKS

- ✗ Schelling wrote about threats under the shadow of shared catastrophe, and Civ wars are recoverable.
- ✗ An AI that backs down pays nothing at home. Khrushchev fell two years after Cuba, partly over his concessions.

READ NEXT

- Accessible: Thomas C. Schelling, *Arms and Influence* (1966), chapter 2, "The Art of Commitment."
- Primary: Schelling, *The Strategy of Conflict* (1960).

Thomas C. Schelling, *The Strategy of Conflict* (1960) and *Arms and Influence* (1966).

The hard question: fight now or buy time?

In the game you postpone a war you cannot win yet, and build walls. In September 1938 Germany demanded the Sudetenland, the mountainous Czechoslovak border region that held its fortifications. On 30 September, in Munich, Neville Chamberlain, Édouard Daladier, Mussolini and Hitler agreed to hand it over. Czechoslovakia was not invited. Chamberlain told the crowd in Downing Street, "I believe it is peace for our time". In March 1939 Germany took the rest of the country.

The case for buying time: Britain's Chiefs of Staff reported that it could not stop Germany conquering Czechoslovakia, and the Dominions signalled their help was not assured. The first Spitfires reached a squadron only that August, and Britain's radar chain was not fully working until 3 September 1939. After Munich, Chamberlain told his Cabinet it "would be madness for the country to stop rearming".

The case against: Churchill told the Commons on 5 October, "we have sustained a total and unmitigated defeat". After inspecting the Czech fortifications, Hitler privately told Joseph Goebbels, his propaganda minister, that "we would have shed a lot of blood" (in translation). By Hitler's count, the 1939 occupation gave Germany 469 tanks and 43,000 machine guns. The year Britain bought, Germany bought too.

Your call: *when you cannot win today, how do you tell buying time from feeding the appetite you fear?*

LAB · Lab: Does a wall buy peace?

Predict first: how many turns later will the first war declaration come in the walled game than in the open one? Write a number, or "never".

1. Start a King game and note the Map Seed and Game Seed in Advanced Setup. Start a second King game with the same leader and both seeds.
2. Game A: Ancient Walls and three units in your border city. Game B: no walls, one unit. Play both to turn 60 with the same other choices.

Measure: the turn of the first war declaration against you, and how many cities you hold at turn 60.

What you should see: the walled game is attacked later or not at all. If war does come, the walled city survives it.

If your result differs: a leader whose agenda favors surprise wars, such as Cyrus (Opportunist), may attack whatever you build. A broken promise to move troops costs 100 Grievances and opens a War of Retribution. And if war came in both games, compare cities held: walls that fail to deter can still deny.

In the world: a burglar picks the easier door. Walk down any street and note which houses show alarms, lights or high gates. Each one is deterrence by denial: it makes an attack look likely to fail, so it is less likely to be tried.

DO

- Denounce 5 turns before a war you plan, to unlock Formal War.

AVOID

- Surprise wars after the early game: 150 Grievances before a shot is fired.
- Razing cities you could keep or return.

Check yourself

1. You denounced a neighbor 6 turns ago and have Mobilization, but only one city within 10 tiles of theirs. You meet no other condition. Which casus belli is cheapest, and at what cost?
2. Your neighbor builds walls and three Archers. You read it as preparation for war and build too. Name the concept, and say what Civ shows you that real states lack.
3. Two neighboring countries share a tense border. One wants to feel safer without alarming the other. Using this lesson, what kind of build-up should it favor?

In the game: before you declare, find the cheapest casus belli you qualify for; before you settle a border city, budget for walls.

In the world: your defense is someone else's threat, so the cheapest security is the kind that cannot be used to attack.

Combat

Your Warrior attacks a Warrior dug in on a hill, deals 21 damage and takes 43. One formula decides every Civ VI fight, and strategy is the art of tilting it before you strike.

The damage formula VI

Every military unit has 100 **hit points** (HP), its health, and a **combat strength** (CS), one number for how hard it fights. Ranged units also have a **ranged strength** for attacking from a distance, and siege units have a **bombard strength**. In an attack the game subtracts the defender's strength from the attacker's. Call that difference Δ (delta). The damage is:

damage = $30 \times e^{0.04 \times \Delta}$, then multiplied by a random factor between 80% and 120%.

($e \approx 2.718$.) An even fight deals 30 damage, and each point of advantage multiplies your damage by about 1.04. Only the *difference* matters: 30 against 20 plays out exactly like 110 against 100. $\Delta +10$ deals 45, $\Delta +17$ deals 59, and $\Delta +30$ deals about 100, which kills a healthy unit in one hit. A melee attacker takes damage back, worked out the same way; a ranged attacker takes none.

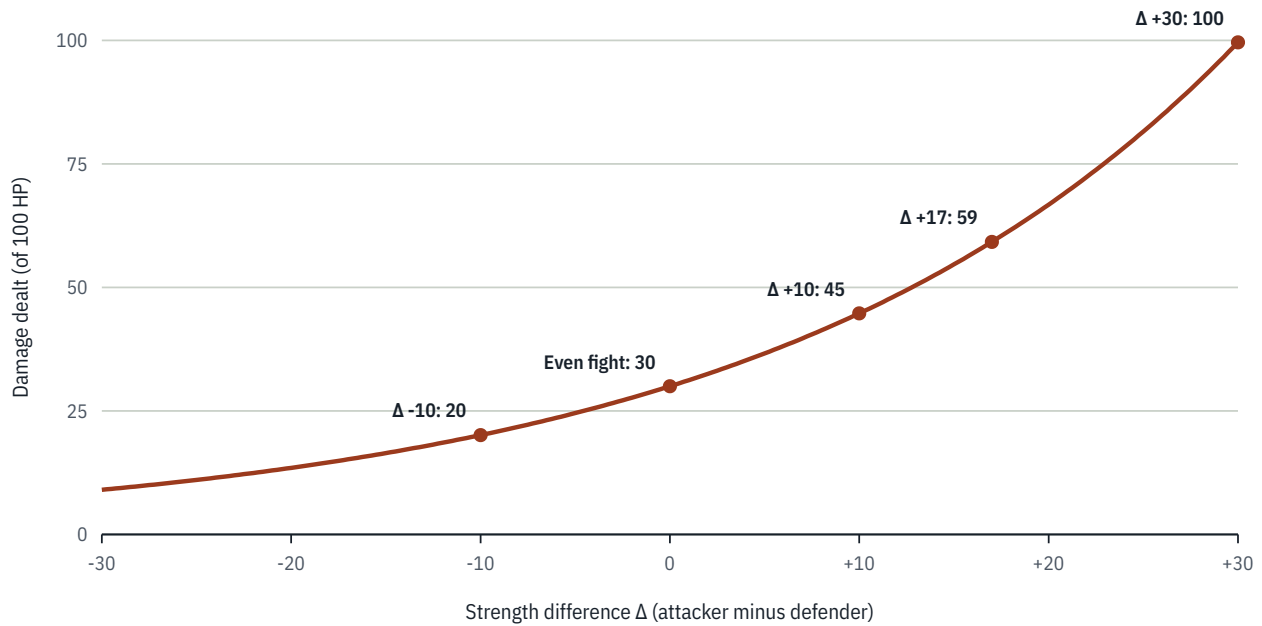


Figure: expected damage by strength difference in Civ VI. $\Delta -10$ deals 20, an even fight 30, $\Delta +10$ deals 45, $\Delta +17$ deals 59, $\Delta +30$ about 100. Source: Combat (Civ6), civilization.fandom.com.

Damaged units fight worse. A unit loses 1 strength for every 10 HP it is missing, up to -10 , so a unit at 50 HP fights at -5 . In a focused attack, the first hit makes every later hit stronger.

Source: Combat (Civ6), civilization.fandom.com (formula from player research cited there).

Modifiers that change Δ VI

Situation	Strength change	Applies to
Hills	+3	Unit standing there
Woods or Rainforest	+3	Unit standing there (Hills plus Woods = +6)
Marsh or Floodplains	-2	Unit standing there
River between attacker and defender	+5	Defender, against melee attacks only
Attacking from the water (amphibious)	-10	Attacker
Fortified 1 turn / 2 or more turns	+3 / +6	Defending land unit that has not moved
Flanking: each other friendly unit next to the target	+2 each	Melee attacker
Support: each friendly unit next to the defender	+2 each	Defender, against melee attacks only
Anti-cavalry unit fighting cavalry	+10	Spearman line
Ranged attack on a city, district or ship	-17	Land ranged attacker
Bombard attack on a land unit	-17	Siege attacker
Each 10 HP missing	-1	Either side, up to -10

Flanking and support switch on with the **Military Tradition** (a step on the culture tree) civic. Neither helps ranged attacks, and you get no flanking bonus when you attack a City Center (the tile the city was founded on) or Encampment (the military district).

Careful An older beginners' guide got the river and fortify bonuses wrong; this table is right. Its advice to "bring 3× its force" means nothing in Civ VI, because combat compares two strength numbers, never army sizes.

Sources: Combat (Civ6); Flanking and Support (Civ6).

Tip The web edition has a live combat calculator for this lesson. Change the numbers and watch what happens.

Moving, shooting, healing and promotions VI

Zone of control (the tiles next to a unit, where enemies must stop) (ZOC): land melee units, City Centers, Encampments and most ships block the tiles next to them, so an enemy that steps into one must stop for the turn. Cavalry and naval raiders ignore ZOC, and it does not cross rivers.

Melee units (Warrior, Swordsman, and also Spearmen and cavalry) walk into the target's tile, take damage back, and are the only land units that can capture a city. **Ranged units** (Slinger, Archer) shoot without taking damage back but are weak when attacked: an Archer has 25 ranged strength and only 15 combat strength. Woods and Hills block a ranged shot unless the shooter stands higher.

Healing: a unit that does nothing for a turn heals 5 HP in enemy territory, 10 in neutral land, 15 in your own territory and 20 on a district (a specialized city tile that holds buildings) or improvement in your own territory. Ships heal only in friendly territory. **Promotions:** a unit levels up after 15, then 30, then 45 more experience points (XP), and so on. A fight between two units gives at most 8 XP. Taking a promotion heals 50 HP and ends the unit's turn.

Sources: Zone of control (Civ6); Promotion (Civ6); Combat (Civ6); Archer (Civ6).

Cities, walls and siege VI

A city has 200 HP. Its defending strength is the strength of the best unit you have built, minus 10 (or the garrison's own strength, if higher), plus 2 for each district, +3 on a hill, +3 for the capital and +3 for each level of walls. Without walls a city cannot shoot. Walls give it a ranged attack with a range of 2 tiles and add an outer layer of HP: 100 for Ancient Walls, plus 100 each for Medieval and Renaissance Walls, and 400 once Steel (a technology) brings Urban Defenses (Gathering Storm values). While the walls stand, melee units deal 85% less damage to them and ranged units 50% less.

- **Battering Ram** (Masonry): next to the city, your melee and anti-cavalry attacks do full damage to Ancient Walls. Useless against Medieval Walls and up.
- **Siege Tower:** next to the city, your melee and anti-cavalry attacks skip the walls and hit the city itself. Works on Ancient and Medieval Walls.
- **Siege units** (Catapult, Bombard, Artillery) attack with bombard strength and do full damage to walls. They cannot move and shoot in one turn without the Expert Crew promotion, and take -17 against units, so guard them.

A city heals 20 HP each turn. If your units' zones of control cover every passable tile around it, the city is **besieged** and stops healing. Damaged walls never heal on their own; the owner must run a repair project.

Sources: City combat (Civ6); Ancient Walls (Civ6); Battering Ram (Civ6); Siege Tower (Civ6).

Tip Worked example. Your Warrior (20) attacks an enemy Warrior fortified for two turns on a hill ($20 + 3 + 6 = 29$). Δ is -9: you deal about 21 and take about 43 back. A Swordsman (35) has $\Delta +6$ and deals about 38. Shooting first with Archers helps more: every 10 HP they remove is another point in your favor.

MILITARY STRATEGY

Fog of war, friction and the culminating point

In 1812 Carl von Clausewitz, a Prussian officer, quit his army rather than fight for Napoleon, and joined the Russians. That June more than 450,000 invaders crossed into Russia. In the first two weeks of July, sickness and desertion alone cost them 100,000 men. About 100,000 reached Moscow on 14 September and found it deserted and burning. Five weeks later they turned for home. Napoleon lost about 380,000 men, half of them to disease. In *On War*, Clausewitz named the point where an attack has spent its strength.

Fog, friction and the culminating point: most information in war is uncertain; small problems make simple plans hard; and every attack weakens as it advances, until pressing on invites defeat.

HOW THE GAME MAPS IT

In the game	In the world
Unseen tiles hide enemy units.	Fog: partial information.
The 80–120% damage roll; a unit stuck in a zone of control.	Friction: small obstacles add up.
Units heal 5 HP a turn in enemy land; fighting abroad doubles war weariness.	Culminating point: each step costs more.

WHERE THE MAP BREAKS

- ✗ Civ's fog is clear or blank, and what you see is true. Real fog includes false reports.
- ✗ A healed Civ unit forgets its culminating point. Most of Napoleon's army never reached Moscow.

READ NEXT

- Accessible: Michael Howard, *Clausewitz: A Very Short Introduction*.
- Primary: *On War*, trans. Michael Howard and Peter Paret (Princeton, 1976).

Carl von Clausewitz, *On War* (*Vom Kriege*, 1832–34).

MILITARY STRATEGY

Sun Tzu, *The Art of War*

In spring 1944 the Allies gave the Germans an army to fear. The First United States Army Group existed on paper, with many divisions that did not. Its commander was George Patton, the Allied general the Germans rated highest, and it had dummy landing craft, fake radio traffic and a double agent, Juan Pujol García, reporting from 27 invented agents. The real invasion hit Normandy on 6 June, and most German reserves waited for an attack on the Pas-de-Calais that never came. As Sun Tzu wrote, "All warfare is based on deception."

Sun Tzu's teaching: the best victories come with the least fighting. Know yourself and the enemy, shape the situation before battle, strike weakness, and use terrain and deception.

HOW THE GAME MAPS IT

In the game	In the world
Hills and Woods give +3 each; a river gives +5 against melee attacks.	Ground decides battles before they start.
Hitting units the AI has left outside its walls.	Attack where the enemy is weak.

WHERE THE MAP BREAKS

- ✗ The maxims fit almost any plan after the fact, so they predict nothing.
- ✗ Civ's Domination victory means taking capitals. Sun Tzu called besieging walled cities "the worst policy of all".

READ NEXT

- Accessible: Sun Tzu, *The Art of War*, trans. Lionel Giles (1910), free online.
- Primary: *The Art of War*, trans. Samuel B. Griffith (1963), with notes.

Sunzi bingfa (*The Art of War*), attributed to Sun Wu (China, Warring States period; date and authorship debated).

MILITARY OPERATIONS RESEARCH

Lanchester's laws

On 21 October 1805 Horatio Nelson met a Franco-Spanish fleet of 33 ships of the line with 27 of his own. Orthodoxy said to form a single line and trade broadsides in parallel. Nelson sailed at the enemy in two columns, split their line in three and surrounded the middle, so that part of his fleet fought part of theirs. Eighteen enemy ships were captured or destroyed, and Britain lost none. In 1916 Frederick Lanchester, an engineer, used the battle to illustrate his square law.

Lanchester's laws: equations for how fast two forces wear each other down. When all can fire at once, strength grows with the square of numbers.

HOW THE GAME MAPS IT

In the game	In the world
Damaged units lose strength, so hitting first and together keeps you hitting harder.	Losses cut the enemy's fire, which cuts your losses.
A one-tile pass lets only a few units fight.	The linear law: when few can engage, numbers matter less.

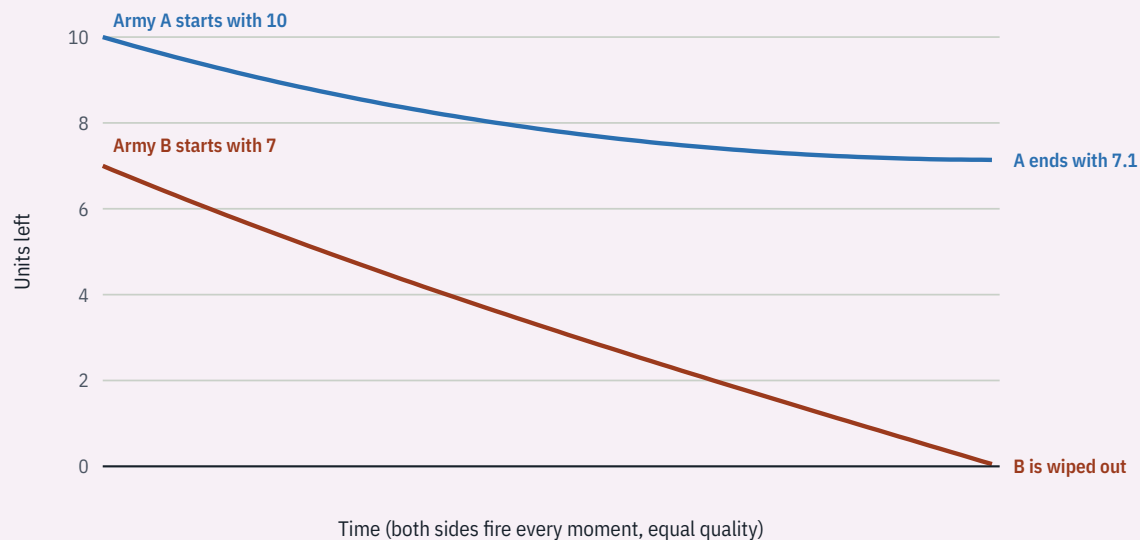


Figure: Lanchester square law, equal-quality units. Army A (10) beats Army B (7) with about 7.1 left: $10^2 - 7^2 = 51$, and $\sqrt{51} \approx 7.1$. Source: Lanchester (1916).

WHERE THE MAP BREAKS

- ✗ Lucas and Türkeş (2004) fitted the laws to daily data from Kursk and the Ardennes, and none fitted well.
- ✗ Civ's damage formula rewards quality (the strength difference) more than numbers.

READ NEXT

- Accessible: The Dupuy Institute, "Lanchester equations have been weighed" (2016).
- Primary: Lanchester (1916), chapters V and VI.

Frederick W. Lanchester, *Aircraft in Warfare: The Dawn of the Fourth Arm* (1916), collecting his 1914 articles in *Engineering*.

LAB · Lab: Concentrate or trickle?

Predict first: which run destroys the enemy group in fewer turns, and how much more total HP will the winner keep? Write the run and the HP gap.

1. Save the game when your 4 Archers and 2 Warriors face 4 similar enemy units.
2. Run A: focus every attack on one enemy unit until it dies, then the next. Run B (reload): spread one hit onto each enemy unit per turn.

Measure: turns until the enemy group is gone, and your total HP left.

What you should see: Run A wins faster with more HP left. Dead units stop hitting back, and wounded units hit weaker. That is the square law in hexes.

If your result differs: the 80–120% damage roll can flip a close fight, so run each version twice. An enemy that fortifies or stands in Woods or on Hills gains +3 to +6, so hit the same targets in both runs. A wounded unit that pulls back heals 5 to 20 HP a turn, which wastes spread-out hits.

In the world: watch a game of dodgeball. A team that targets one player at a time removes throwers fast, and every player out means fewer balls coming back. Count the throws each side makes as players go out.

DO

- Read the combat preview before every attack.
- Soften with ranged units, finish with melee.
- Bring a Ram or Tower, or siege units, to any walled city.

AVOID

- Leaving Archers or Catapults in front of your melee line.

Check yourself

1. Your Swordsman (35) attacks an Archer that has just moved into Woods. What is Δ , and about how much damage do you deal before the random roll?
2. Army A has 10 equal units and Army B has 7, and every unit can fire at once. Under Lanchester's square law, about how many does A have left when B is gone?
3. A café has two staff, a long queue and a jammed coffee machine, and waiting customers leave. Using this lesson, should each fix one problem or both work on one first?

In the game: win the strength difference. Stack terrain, fortify, flanking and focused fire until Δ is in your favor, then strike.

In the world: when losses compound, concentrating effort early beats spreading it thin.

Timing Pushes

Iron Working lands next turn. Your four Warriors could be Swordsmen before your neighbor builds walls. Every edge in war is a window, and the skill is leaving before it shuts.

Upgrades, corps and armies VI

When you research a new military tech, older units can be **upgraded** to the new type for Gold. The unit must be in your own territory with movement left, and you also need the strategic resource the new unit uses (Iron for Swordsmen, for example). Upgraded units keep their promotions but do not heal. The **Professional Army** policy card (a swappable bonus slotted into your government) (Mercenaries civic) halves the Gold cost.

Build cheap units early, bank Gold, then upgrade them all in a turn or two when the new tech lands. A Warrior (20 strength) upgraded to a Swordsman (35) gains 15 points, so against the same target it deals about 1.8 times as much damage.

Formation	Made from	Unlocked by	Strength bonus	Upkeep
Corps (Fleet at sea)	2 identical units	Nationalism civic	+10	3/4 of two units
Army (Armada at sea)	3 identical units	Mobilization civic	+17	2/3 of three units

Upgrading a Corps (two or three units merged into one) costs twice as much as a single unit, and an Army three times.

Sources: Unit (Civ6); Professional Army (Civ6); Warrior and Swordsman (Civ6).

Windows players use VI

These are community consensus from CivFanatics and shift with patches.

- **Early Archer push.** Several Archers with a melee screen can take an unwallled neighbor. Players say the window closes when "the first couple xbows" (Crossbowmen, 40 ranged strength) appear.
- **Renaissance push.** One player describes a push around turns 120 to 140 (Standard speed) with about 3 Musketmen, 3 Crossbowmen, 2 Bombards and 3 to 5 cavalry, mostly upgraded older units, with about 1,000 Gold saved for half-price upgrades. It works, they write, "as long as the AI doesn't have renaissance walls or field cannons."

A window is open only if scouting shows the enemy still lacks the counter.

Source: CivFanatics, "Power Windows".

Ending a war VI

Peace is negotiated like a trade: Gold, resources and cities at full HP can all go on the table. A city you captured stays **occupied**, with weak output and falling Loyalty (how firmly a city stays yours) unless garrisoned, until the old owner **cedes** it in a deal. Keeping it costs the same Grievances (a running record of who wronged whom) as capturing it. Returning it removes those Grievances.

Sources: City combat (Civ6); Grievances (Civ6); Diplomacy (Civ6).

Concept lens: every push has a culminating point, so pick your cities and your stop turn before you march. **Clausewitz**

MILITARY STRATEGY

The OODA loop

John Boyd flew F-86 Sabres in Korea in 1953: 22 missions, no kills. The MiG-15 out-climbed and out-accelerated the early Sabres, yet American pilots were credited with ten MiGs for each Sabre lost. Boyd credited two details. The bubble canopy let the pilot see more, and hydraulic controls let him change maneuvers faster, so he could observe, orient, decide and act first. Later research cut that ratio, some of it to about two to one.

The OODA loop: observe, orient, decide, act, repeat. Whoever cycles faster and orients better acts inside the rival's loop, so the rival keeps reacting to a situation that has changed.

HOW THE GAME MAPS IT

In the game	In the world
Scouting their walls and units, and judging if your window is open.	Observe and orient, Boyd's key steps.
Upgrading the whole army in one turn and attacking the next.	Decide and act faster than they can respond.

WHERE THE MAP BREAKS

- ✗ Civ is turn-based, so both sides get the same tempo, and speed comes from preparation.
- ✗ Boyd never published a tested theory, and Odinga argues the "faster loop wins" reading skips his stress on orientation.

READ NEXT

- Accessible: Robert Coram, *Boyd: The Fighter Pilot Who Changed the Art of War* (2002).
 - Primary: Boyd, "Patterns of Conflict" (1986); Frans P. B. Odinga, *Science, Strategy and War* (2007).
- John R. Boyd, "Destruction and Creation" (essay, 1976) and "Patterns of Conflict" (briefing, final version 1986).

MILITARY STRATEGY / TECHNOLOGY

Revolution in military affairs

On 10 May 1940 Germany attacked France with 2,445 tanks. France alone had 3,383 to 4,071, better armored and armed, though slower. France signed an armistice six weeks later. The French spread most of their tanks along the front in tiny formations. The Germans massed theirs in Panzer divisions, fitted radio receivers so command tanks could direct them, and struck at one point: on 13 May they forced three crossings of the Meuse near Sedan. The same machines, organized differently, made a different weapon.

Revolution in military affairs (RMA): a jump in how war is fought, when new technology combines with new organization and doctrine so that older forces become obsolete almost at once.

HOW THE GAME MAPS IT

In the game	In the world
Steel's Urban Defenses jump wall HP to 400.	A technology that makes a class of weapon obsolete.
Nationalism and Mobilization add +10 and +17 to the same units.	Organization multiplying old technology.

WHERE THE MAP BREAKS

- ✗ Civ's tech tree is fixed and known. Real armies adopt new methods unevenly, and in 1940 the side with better tanks lost.
- ✗ In Civ, doctrine comes free with the tech. No amount of Production (the yield that builds units and buildings) buys an idea.

READ NEXT

- Accessible: Max Boot, *War Made New* (2006).
- Primary: Krepinevich (1994), below.

Andrew F. Krepinevich, "Cavalry to Computer: The Pattern of Military Revolutions," *The National Interest*, no. 37 (Fall 1994).

LAB · Lab: Bank, upgrade, strike

Predict first: in each run, how many turns from first attack to first captured city, and how many units lost? Write two numbers per run.

1. In a King game, have 4 Warriors and 2 Slingers (early ranged units) by turn 40 and research Iron Working and Archery. You need Iron to upgrade Warriors to Swordsmen.
2. Run A: upgrade one unit at a time as Gold allows. Run B (same save): bank Gold, upgrade everything within 2 turns, attack the turn after.

Measure: turns from first attack to first captured city, and units lost.

What you should see: Run B takes its city faster with fewer losses, because the AI has less time to build a counter.

If your result differs: without Iron, Warriors cannot upgrade, so Run B has no Swordsmen. If the target has Ancient Walls, melee units deal 85% less to them until you bring a Battering Ram. And upgraded units do not heal, so upgrading a damaged army hands the AI easy kills.

In the world: a rival can answer one change at a time more easily than many at once. When a shop or app you use relaunches, note whether it changed one thing or many on the same day, and how long its competitors took to respond.

DO

- Name the target city and the stop turn before you build.
- Slot Professional Army for the turns you upgrade, then swap it out.

AVOID

- Starting a war you cannot finish before their counters arrive.

Check yourself

1. You have 4 Warriors, Iron and Iron Working. What does each Warrior-to-Swordsman upgrade add, and why upgrade all four in one turn?
2. You attack the turn after a mass upgrade, while the AI is still reacting to your old army. Which idea is this, and where does Civ's version break?
3. Two rival bakeries buy the same new oven. One keeps its old routine; the other reorganizes its shifts around the oven. Using the RMA idea, which gains more, and for how long?

In the game: a push is a window. Bank Gold, upgrade all at once, strike, and make peace before the window shuts.

In the world: new tools change outcomes only once people reorganize around them, and the edge lasts until rivals catch up.

Navies, Air and the Map

Your Archers chip at a walled port for turns; two ships offshore would do it faster. Geography sets what an army is worth, and two theorists mapped world power on that idea.

Ships and harbors VI

A city founded on the coast can build ships. An inland city can too, once it builds a **Harbor** district (a specialized city tile that holds buildings) (Celestial Navigation tech), which must sit on a coast or lake tile next to land. Early ships stay on coast tiles until you research Cartography.

Class	Line	Job
Naval melee	Galley, Caravel, Ironclad, Destroyer	Fight ships; can capture coastal cities
Naval ranged	Quadrireme, Frigate, Battleship, Missile Cruiser	Bombard cities and units from the sea
Naval raider	Privateer, Submarine, Nuclear Submarine	Invisible; ignore zone of control; raid coasts
Carrier	Aircraft Carrier	Floating base for aircraft

Naval ranged and raider ships do *not* take the -17 penalty to combat strength that land archers take against cities, which makes them the best tool for a coastal siege. They still deal 50% less to walls. A naval raider can make a **coastal raid**, pillaging an adjacent land tile from the water. Land units **embark** to cross water; embarked, they cannot attack at sea, and attacking land from water costs -10.

Sources: Harbor (Civ6); Combat (Civ6); City combat (Civ6); List of units in Civ6 by class.

Air units, the basics VI

Planes need the Flight tech and an **Aerodrome** (the air force district) district, and each needs a base: a City Center (the tile the city was founded on) holds 1, an Aerodrome 2 (4 with its buildings), an Aircraft Carrier 2. **Fighters** attack units and planes and can patrol to intercept. **Bombers** use bombard strength, so they hit cities and ships hard. Air attacks take no damage back unless an anti-air ship or an **Anti-Air Gun** (covering its tile and the tiles next to it) is there.

Sources: Air combat (Civ6); Anti-Air Gun (Civ6).

Chokepoints and canals VI

A **chokepoint** is a narrow place every army or fleet must pass: a land bridge, a mountain pass, a strait. One fortified unit on a hill in a pass faces only a few attackers at once, and its zone of control (the tiles next to a unit, where enemies must stop), which makes any enemy stepping next to it stop, blocks most units (cavalry ignore it).

In Gathering Storm (the second Civ VI expansion) you can build your own sea route with a **Canal** district (Steam Power tech). It goes on flat land with water on one side and a City Center or more water on the other, and ships and maritime trade routes can pass through. A pillaged canal blocks ships until it is repaired, so guard it.

Sources: Canal (Civ6); Zone of control (Civ6).

GEOPOLITICS

Sea power

In 1890 Alfred Thayer Mahan, a US Navy captain who had run the Naval War College, published a history arguing that Britain grew great by commanding the sea. Only a battle fleet that could destroy the enemy's could win command; raiding merchant ships never would. Britain's rivals read it closest. Kaiser Wilhelm II ordered his officers to read Mahan. In 1898 Tirpitz had the book translated and 8,000 copies given away to win votes for a navy bill. Japan's navy used it as a textbook.

Sea power: greatness rests on a navy, merchant shipping, bases and sea lanes, and a navy wins command of the sea by beating the enemy's battle fleet.

HOW THE GAME MAPS IT

In the game	In the world
Harbors add Gold and can add a trade route.	Commerce and navies feed each other.
Ranged ships besiege any coastal city without the -17 penalty.	Command of the sea lets you strike where you choose.

WHERE THE MAP BREAKS

- ✗ Civ VI has no blockade, the core of real command of the sea.
- ✗ In 1914–18 Germany's Mahan-style battle fleet fought one major battle, at Jutland, while its submarines, the commerce raiders Mahan dismissed, threatened Britain's imports all war.

READ NEXT

- Accessible: Paul Kennedy, *The Rise and Fall of British Naval Mastery* (1976).
- Primary: Mahan (1890), chapter 1.

Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660–1783* (1890).

GEOPOLITICS

Heartland and rimland

In 1904 Halford Mackinder, a British geographer, argued that railways were shifting power from sea to land: trains could now move armies across inner Eurasia, beyond the reach of any fleet. He meant it as a warning that Britain's reliance on sea power would become a weakness. In 1919, writing for the peacemakers in Paris, he boiled it down: "Who rules East Europe commands the Heartland; Who rules the Heartland commands the World Island; Who rules the World Island commands the World."

Heartland and rimland: Mackinder argued that whoever holds inner Eurasia, safe from sea power, can rule the world. Spykman replied that the prize is the coastal belt around it, with most people and industry.

HOW THE GAME MAPS IT

In the game	In the world
An inland empire on Pangaea can be reached only by land, through chokepoints.	The Heartland, out of reach of fleets.
Coastal cities get Harbors and trade, and are open to naval sieges.	The Rimland: rich, connected and contested.

WHERE THE MAP BREAKS

- ✗ Civ maps are random, and Mackinder's theory is about one real continent.
- ✗ Neither theory was tested. Cold War planners drew on Spykman, which shows influence and proves nothing.

READ NEXT

- Accessible: Robert D. Kaplan, *The Revenge of Geography* (2012).
- Primary: H. J. Mackinder, "The Geographical Pivot of History" (1904, short).

Halford J. Mackinder, "The Geographical Pivot of History" (1904) and *Democratic Ideals and Reality* (1919); Nicholas J. Spykman, *America's Strategy in World Politics* (1942) and *The Geography of the Peace* (1944).

The hard question: is it right to kill many to end a war sooner?

In the game a nuke can set off a Nuclear Emergency against you. Only two have been used in war. On 6 and 9 August 1945 the United States dropped them on Hiroshima and Nagasaki. By the end of 1945 they had killed an estimated 90,000 to 166,000 in Hiroshima and 60,000 to 80,000 in Nagasaki. About 90% of Hiroshima's dead were civilians. The Soviet Union declared war on 8 August; Japan announced its surrender on 15 August.

The case for the bombs: Japan had ignored the Allies' ultimatum. One study expected an invasion to cost 132,500 to 220,000 American casualties; another put Japanese deaths at 5 to 10 million. Truman said the bomb was used "to shorten the agony of war". The historian Richard Frank says intercepts show Japan's forces "were determined to fight a final Armageddon battle in the homeland".

The case against: Admiral William Leahy, Truman's chief of staff, wrote that the bombs were "of no material assistance in our war against Japan" and that "wars cannot be won by destroying women and children". A 1946 US survey judged Japan would have surrendered before 1946 anyway; historians dispute it. The historian Tsuyoshi Hasegawa argues the Soviet entry mattered more.

Your call: *if killing civilians might save more lives, how sure must you be?*

LAB · Lab: Land or sea siege?

Predict first: how many turns will each run take to capture the city, and which run will lose more units?

1. Save next to a walled AI coastal city, with a melee unit ready to take it.
2. Run A: land units only. Run B (reload): add 2 or 3 Quadriremes (early ranged warships) or Frigates firing from the sea.

Measure: turns to capture and units lost.

What you should see: Run B is faster and cheaper, because naval ranged units skip the -17 city penalty and the city must split its fire.

If your result differs: ships deal 50% less to walls, as Archers do, so high walls (100 HP per level) slow both runs. Before Cartography, ships cannot cross open ocean to reach a distant city. And ranged ships cannot capture: without a melee unit beside the city, neither run finishes.

In the world: a defender watching two directions spreads thin. In a two-on-one drill in football or basketball, watch the lone defender commit to one attacker and leave the other free. A city facing land and sea has the same problem.

DO

- Escort embarked units with warships.
- Add an Anti-Air Gun once enemies have planes.

AVOID

- Attacking from boats: each attack is at -10.

Check yourself

1. You besiege a walled coastal city. Should your ranged damage come from Archers on land or Quadriremes at sea, and what finishes the job?
2. A rival raids your coast with Privateers (naval raiding units) but never takes a city. Which theorist warned that commerce raiding alone does not win, and what core tool of sea power does Civ VI lack?
3. A landlocked country and its coastal neighbor both export grain. Using heartland and rimland, which has more trade options, and which is easier to attack from the sea?

In the game: look at the map before the army. Coastal targets fall to ships; inland ones fall at chokepoints.

In the world: geography sets the price of every option a state has.

PART 5

Grand Strategy: How to Win

Civ VI has five ways to win, plus a score win at the turn limit. Each needs a different empire, so the first decision is which to chase.

Choosing Your Victory

Five finish lines, one empire, and every Campus (the science district) you build is a Holy Site (the faith district) you did not. Winning starts with a goal that fits your means, which strategists call grand strategy.

The six ways a game ends VI

The first player to meet any **victory condition** (the finish line for one kind of win) wins. The World Rankings panel at the top right shows everyone's progress toward each.

Victory	You win when
Science	Your exoplanet ship arrives after four space projects (Gathering Storm)
Culture	Your visiting tourists outnumber every other civ's domestic tourists
Domination	You hold the original capital of every other civ
Religious	Your religion is the majority in every civ still in the game
Diplomatic	You reach 20 Diplomatic Victory Points (Gathering Storm only)
Score	Nobody has won when the turn limit hits, and you have the highest score

The turn limit is 2050 AD, which is 500 turns at Standard speed and 250 at Online. Under Rise & Fall and Gathering Storm (the second Civ VI expansion) rules, score counts 15 points per Wonder (a one-of-a-kind building only one civ can own), 10 for founding a religion, 5 per city and per Great Person (a famous figure you recruit for one big effect), 3 per civic, 2 per tech and per district (a specialized city tile that holds buildings), 1 per building and per citizen, plus your **Era Score**. You can switch Score Victory off in Advanced Setup.

Sources: Victory (Civ6); Speed (Civ6)



Figure: The five ways to win Civ VI, each as three stages. Read left to right. Source: Victory (Civ6), civilization.fandom.com.

Read three things before turn 10

1. **Your civ.** Most leader and civ abilities point at one victory. The wiki's beginner list suggests Korea for Science, Greece for Culture, Russia for Religious, Mongolia for Domination and America for Diplomatic.
2. **Your map.** Mountains and reefs feed Campuses, so they favor Science (**Districts**). Unspoiled land around mountains or a natural wonder favors Culture through National Parks. Few neighbors favor any peaceful victory.
3. **Your neighbors.** A close, weak neighbor is an early Domination chance. A close, strong one means your victory must survive a war. An early Holy Site next door means a religion race.

Commit, but keep a backup

Pick a **primary** victory and a **secondary** one that uses the same buildings and yields. Science pairs with Diplomatic, because the Future Era tech Seasteads and civic Global Warming Mitigation each give 1 Diplomatic Victory Point, and science players reach them first. Culture pairs with Religious, because ● **Faith** (the yield spent on religion) buys Rock Bands (units that perform for Tourism). Domination pairs with Religious, because removing a civ's unconverted cities raises your religion's share there.

Tip Pivot rules for any victory. Switch when (1) a rival's World Rankings lead in your victory grows at every check, (2) a hard gate shuts, such as every religion being founded, or (3) a war will cost more than the victory it protects. Switch to the backup that reuses most of what you built.

STRATEGY

Grand strategy (ends, ways, means)

Britain fought Napoleon with a great navy, deep pockets and a small army, and it picked ways to fit those means: a naval blockade, a modest force in Spain, and cash for allies who had the soldiers. In March 1814 at Chaumont, in France, the foreign secretary Lord Castlereagh wrote most of a treaty in which the four allies each promised 150,000 soldiers, and Britain paid to keep the other armies in the field. By the end of the month the allies were in Paris.

Grand strategy: a state's plan for using all its resources, military and civilian, to reach its biggest goals. Ends are the goals, means the resources, and ways how one becomes the other.

HOW THE GAME MAPS IT

In the game	In the world
Your chosen victory	Ends: the national goal
Districts, units, Gold, Faith, Favor	Means: the economy, the armed forces, allies
Build order, wars, treaties, policy cards	Ways: the concrete plan

WHERE THE MAP BREAKS

- ✗ Civ hands you five fixed goals. Real states argue about what their ends even are, and the argument never stops.
- ✗ You are one mind. Real grand strategy runs through ministries, parliaments and generals, each pulling its own way.

READ NEXT

- Accessible: Lykke, "Defining Military Strategy" (1989), a short article.
- Primary: Liddell Hart, *Strategy* (1967), chapter XXII.

B. H. Liddell Hart, *Strategy* (2nd rev. ed., New York: Praeger, 1967; first ed. 1954); ends, ways and means from Arthur F. Lykke Jr., "Defining Military Strategy," *Military Review* 69(5) (1989).

Check yourself

1. You play Korea, with mountains near your capital. Which primary and secondary victory does this lesson point to, and why does that pair work?
2. Your goal is a Culture victory, your resources are Faith and Wonders, and your plan is to buy Rock Bands. Name the concept and match each part.
3. A small football club with little money wants promotion. Using ends, ways and means, what should it decide first, and what kind of plan should it avoid?

In the game: name your primary and secondary victory before turn 10, and write them down.

In the world: a strategy is a choice of goal plus a plan that fits your resources.

Science Victory

Your scientists can lead all game and still lose the space race. The four launch projects cost 6,300 Production (the yield that builds units and buildings), so the finish goes to the factories.

The win condition VI

Every step happens in a **Spaceport** (the district that builds space projects), a **district** (a specialized city tile that holds buildings) you unlock with the Rocketry tech. It costs 1,800 ● **Production** and cannot go on Hills. Each project must finish before the next one starts. Costs below are for Standard speed.

Step	Tech needed	Production	Effect
1. Launch Earth Satellite	Rocketry	900	Reveals the whole map
2. Launch Moon Landing	Satellites	1,500	One-time ● Culture equal to 10 times your Science per turn
3. Launch Mars Colony	Nanotechnology	1,800	Unlocks step 4
4. Exoplanet Expedition	Smart Materials	2,100	Launches a ship that must fly 50 light-years

The ship flies 1 light-year per turn, so 50 turns on its own. After the Offworld Mission (a technology) tech, two repeatable projects each add 1 light-year per turn: the Lagrange Laser Station (600 Production plus 30 Aluminum) and the Terrestrial Laser Station (600 Production, city must stay powered).

In the base game and Rise & Fall, step 3 is three separate Mars projects (Reactor, Hydroponics, Habitation), and finishing all three wins. Enemy spies can shut a Spaceport down with the Disrupt Rocketry mission (**Espionage**).

Sources: Spaceport (Civ6); Exoplanet Expedition (Civ6); Lagrange Laser Station (Civ6); Terrestrial Laser Station (Civ6)

The plan

Ancient– Classical	Expand. More cities means more Campuses (science districts). Put each Campus next to Mountains, Reefs or other districts for adjacency (extra yield from what sits next door) (+1 per Mountain, +2 per Reef, +0.5 per district).
Medieval– Renaissance	Libraries, then Universities. Take Great Scientists (famous scientists you recruit for one-time boosts) when you can. Rough target: a Campus in every city that has room for a district.
Industrial– Modern	Industrial Zones (production districts) in your best Production cities. The endgame needs Production more than Science.
Atomic	Rocketry. Spaceports in your two or three highest-Production cities, each guarded by a spy.
Information– Future	Run the four projects back to back, then laser stations in every Spaceport city until the ship lands.

Concept lens: in Romer's **endogenous growth**, ideas never run out, so a knowledge lead feeds itself. Clustered Campuses (science districts) are **agglomeration** on a map.

Tip Pivot rule: if a rival finishes Launch Earth Satellite before you have Rocketry, you will not win the race by building faster. Send spies to Disrupt Rocketry in their Spaceport cities, and switch to your Diplomatic secondary.

The hard question: should you hire your enemy's scientists to win the race?

In the game a Great Scientist (a famous scientist you recruit for a one-time boost) arrives with no past. From 1945 to 1959 the United States brought over 1,600 German scientists and engineers, several of them former Nazi Party or SS members. Wernher von Braun, technical director of the army's rocket center at Peenemünde, had joined the Party in 1937 and the SS in 1940. His V-2 killed an estimated 9,000 people, and some 12,000 forced laborers and camp prisoners died building it. In America he became chief architect of the Saturn V Moon rocket.

The case for hiring them: the aim was to keep German expertise from the Soviets, who in one night in October 1946 shipped over 2,000 specialists east. Truman later said that, because of the Soviets, "this had to be done and was done". Only one recruit was ever tried for a crime, and he was acquitted.

The case against: von Braun admitted 12 to 15 visits to the underground factory where prisoners built his rockets, and called its conditions "repulsive". Hiring such men told the world that skill could buy forgiveness. In 1984 Arthur Rudolph, who had managed Saturn V development, gave up his US citizenship and left after a war-crimes investigation.

Your call: *if a crime is already done, does using what its makers know make you part of it?*

Check yourself

1. Your Exoplanet Expedition has launched, and two cities each finish one laser station. How fast does the ship now fly, and about how many turns will 50 light-years take?
2. You lead in Science, and each new tech seems to come faster than the last. Which idea explains why the lead feeds itself, and what does this lesson say limits you at the end?
3. Two neighboring towns each fund small research labs. One puts its labs side by side near the university; the other scatters them. Using this lesson's lens, which gains more?

In the game: Science wins on Production at the end, so build your Industrial Zones before you need them.

In the world: a lead in knowledge compounds, but turning knowledge into hardware still takes factories.

Culture Victory

Culture victory means making foreigners want what you have, with no army and no bribe. Real governments chase that power and find they cannot control it.

The win condition VI

Every civ has **domestic tourists**, its defense. That number is all the ● **Culture** it has made all game, divided by 100. **Visiting tourists** are your offense. Under Rise & Fall and Gathering Storm (the second Civ VI expansion) rules, you gain 1 from a civ for every $(200 \times \text{number of civs})$ Tourism (cultural pull that wins a Culture victory) you send it over the game. In an 8-civ game that is 1,600 Tourism per tourist. The base game uses 150 instead of 200.

You are **culturally dominant** over a civ when your total visiting tourists exceed its domestic tourists. Dominate every civ and you win. Fewer civs in the game makes this easier.

WHERE TOURISM COMES FROM

- Great Works from Great Writers (famous writers whose works earn Tourism), Artists and Musicians, plus Relics and Artifacts. Each needs a slot in a building.
- Wonders (one-of-a-kind buildings only one civ can own).
- National Parks. A Naturalist (a unit that creates National Parks) (Conservation civic) makes one on four tiles whose Appeal (how attractive a tile is), a tile's attractiveness score from Disgusting up to Breathtaking, is Charming or better. It gives Tourism equal to their total Appeal.
- After Flight, improvements that make Culture also make Tourism. Seaside and Ski Resorts add more.
- Rock Bands (units that perform for Tourism) (Gathering Storm), bought with ● Faith (the yield spent on religion) after the Cold War (a step on the culture tree) civic, from 600 Faith and rising. Each concert drops a burst of Tourism on the civ whose land it plays in.

Trade routes to a civ and sharing its government raise the Tourism you send it.

Sources: Victory (Civ6); National Park (Civ6); Rock Band (Civ6)

The plan

Ancient– Classical	Build early Wonders you can finish. Keep districts (specialized city tiles that hold buildings) off future National Park tiles.
Medieval– Renaissance	A Theater Square (the culture district) in most cities, with Amphitheatres and Art Museums for Great Work slots. Recruit Great Writers and Artists.
Industrial– Modern	Naturalists, National Parks, Archaeologists (units that dig up artifacts).
Atomic onward	Rock Bands and trade routes aimed at the civ you are furthest behind. Resorts on high-Appeal tiles.

INTERNATIONAL RELATIONS

Soft power

In 1956 the State Department sent Dizzy Gillespie and his integrated band on an eight-week tour abroad. Soviet propaganda pointed to the injustice Black Americans faced, and Black bandleaders and mixed bands were the answer. In 1957, after the Little Rock school crisis, Louis Armstrong said he would cancel a planned State Department tour of the Soviet Union: "The way they're treating my people in the South, the government can go to hell." A government can send its music abroad. It cannot own its musicians.

Soft power: getting others to want what you want through the appeal of your culture, values and policies, instead of through force or payment.

HOW THE GAME MAPS IT

In the game	In the world
Tourism from Great Works and Wonders	The pull of a country's art, film and heritage
Rock Bands touring foreign cities	Cultural diplomacy
Bonus Tourism to civs with the same government	Shared values make influence easier

WHERE THE MAP BREAKS

- ✗ In Civ, Tourism (cultural pull that wins a Culture victory) is a number you push. Nye stresses that a government does not control its own culture.
- ✗ In the game attraction never backfires. A war or a scandal can wipe out decades of goodwill.
- ✗ Civ's Culture victory only counts tourists; no one changes their mind.

READ NEXT

- Accessible: Nye, *Soft Power: The Means to Success in World Politics* (2004), chapter 1.
- Primary: Nye (1990), below.

Joseph S. Nye Jr., *Bound to Lead: The Changing Nature of American Power* (1990); "Soft Power," *Foreign Policy*, no. 80 (Autumn 1990), pp. 153–171.

Tip Pivot rule: if one civ's domestic tourists keep pulling away as the turn limit nears, switch to Score. A Culture empire is full of Wonders (15 points each) and Great People (a famous figure you recruit for one big effect) (5 each), so leave Score Victory on.

Check yourself

1. In an 8-civ Gathering Storm game, how much Tourism must you send a civ over the game to gain one visiting tourist from it, and why is a smaller game easier?
2. A rival switches to your government, and the Tourism you send it rises. What real concept does that bonus model, and name one way the game's version breaks.
3. A small city has a famous festival and wants more visitors. Using soft power, what builds its pull, and what could undo years of work quickly?

In the game: find the civ with the most domestic tourists and aim everything at it.

In the world: attraction is real power, but it is slow to build and fast to lose.

Domination Victory

To win by conquest you must hold every original capital at once. Each one makes you stronger and more resented, and real empires have broken on that sum.

The win condition VI

You must control the **original capital** of every other civ in the game, including civs already knocked out. An original capital is the first city a civ founded. You do not have to take any other city.

WHAT IT COSTS

- **Grievances** (a running record of who wronged whom) (Gathering Storm): a running score of how much each civ resents you, raised by war declarations, captures and razing. A **casus belli**, a recognized reason for war, reduces it.
- **Diplomatic Favor** (a currency spent in the World Congress): you lose 5 Favor per turn for each original capital you occupy, and more for high grievances.
- **Military Emergency** (a temporary pact against a rule-breaker): conquering another civ's city can unite rivals in an emergency to liberate it.
- **War weariness** (unhappiness that grows the longer you fight): a growing Amenity loss while you fight.

Sources: Victory (Civ6); Grievances (Civ6); Diplomatic Favor (Civ6); Emergency (Civ6)

The plan

Ancient– Classical	Find the nearest capital. An early rush works best against a neighbor with few units and no walls. Bring siege support (Combat).
Medieval– Renaissance	Take one capital per campaign, then rest, heal and let grievances decay.
Industrial onward	Time pushes to your unit upgrades (Timing pushes). Bring ships for coastal capitals (Navies).
Throughout	Keep captured cities loyal (Loyalty).

HISTORICAL SOCIOLOGY

"War made the state"

In 1690 the French navy beat the Royal Navy off Beachy Head, and William III's government wanted £1.5 million to rebuild the fleet. Its credit was so poor it could not borrow the money. In 1694 Parliament let a company of lenders raise £1.2 million for the government at 8% a year, "towards the carrying on the Warr against France". Subscribers put up the sum in 12 days. The company was the Bank of England. The war ended in 1697, and the bank is still there.

"War made the state": modern states were built to fight wars. Rulers who wanted armies had to tax, borrow and count their people, and the offices that did it became the state.

HOW THE GAME MAPS IT

In the game	In the world
Encampments, Barracks, Gold spent on armies	Standing armies paid from taxes
Captured cities adding to your yields	Conquest funding the next war
Governments with military policy slots	Institutions shaped by the needs of war

WHERE THE MAP BREAKS

- ✗ In Civ your state exists on turn 1, and you never bargain with taxpayers or bankers. In Tilly's account that bargaining built the state.
- ✗ Tilly wrote about early modern Europe. Jeffrey Herbst argues it fits poorly in Africa, where land was plentiful and people scarce.

READ NEXT

- Accessible: the review essay "Testing Tilly: Does War Really Make States?"
- Primary: Tilly (1990), chapters 1 and 3.

Charles Tilly, "Reflections on the History of European State-Making," in *The Formation of National States in Western Europe* (1975); *Coercion, Capital, and European States, AD 990–1990* (1990).

HISTORY / IR

Imperial overstretch

Philip II of Spain ruled an empire fed by treasure from the Americas, and he fought the Ottomans, the English and the Dutch rebels, often at once. His treasury defaulted on its loans in 1557, 1560, 1575 and 1596. After the 1575 default his bankers stalled, and his army in the Netherlands went unpaid. On 4 November 1576 the unpaid soldiers mutinied and sacked Antwerp, the region's financial center. At least 7,000 people died. Four days later the provinces united to drive Spanish troops out. Spain defaulted six more times in the next 65 years.

Imperial overstretch: when a great power's military and territorial commitments grow faster than the economy that pays for them, the power declines.

HOW THE GAME MAPS IT

In the game	In the world
Unit maintenance eating your Gold	Military spending crowding out investment
Conquered cities losing Loyalty	Holding distant, hostile territory
Grievances and Emergencies gathering against you	Rivals balancing against the leading power

WHERE THE MAP BREAKS

- ✗ Kennedy predicted relative decline for the United States in 1987. Critics point out that it stayed the leading power for decades after.
- ✗ In Civ, captured cities usually turn a profit. Many real conquests never paid for their garrisons.

READ NEXT

- Accessible: the *New York Review of Books* retrospective "What Makes the World Go Round?" (2001).
- Primary: Kennedy (1987), introduction and chapter 8.

Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (1987).

Concept lens: every attack has a **culminating point** past which you get weaker as you advance. Stop there, not at the next city.

Tip Pivot rule: if your army stalls two campaigns in a row, make peace and keep what you hold. Each city is worth 5 Score. Switch your secondary to Score or Religious.

The hard question: can conquest be justified by what it builds?

In the game a conquered city simply adds to your yields. From 58 to 50 BC Julius Caesar conquered Gaul, today's France, Belgium and Switzerland. He claimed to have killed over a million Gauls, a figure historians call implausible. In 55 BC he attacked the camp of two migrating peoples, the Usipetes and Tencteri, and slaughtered the men, women and children. His enemies in the Senate wanted to try him for war crimes.

The case for judging by results: Caesar presented the war as preemptive and defensive, and the historian Kurt Raaflaub argues it was not exceptionally brutal for its day. Gaul became Roman. Its towns grew into Lyon, Paris and Bordeaux, and its Latin became French. In AD 48 the emperor Claudius, born in Lyon, asked the Senate to admit wealthy Gallic citizens. In 212 every free person in the empire became a citizen.

The case against: historians agree Caesar fought mainly to boost his career and pay his debts. The historian Ben Kiernan calls the slaughter of the Usipetes and Tencteri a genocide. The benefits went to the survivors' descendants, centuries later, and the dead were never asked.

Your call: *can benefits that arrive centuries later ever pay for a conquest's victims?*

Check yourself

1. You occupy the original capitals of two rivals. How much Diplomatic Favor does that cost you each turn, before any loss from grievances?
2. Your empire doubles, but unit upkeep eats your Gold, conquered cities lose Loyalty (how firmly a city stays yours) and Emergencies form against you. Name the concept and its central claim.
3. A café chain opens five branches in one year, and each needs a manager and stock before it earns money. Using this lesson, what warning sign should the owner watch?

In the game: one capital per campaign, then rest; the bill for war arrives in Favor, grievances and Amenities (city contentment from luxuries and entertainment).

In the world: conquest is paid for by an economy, and empires fail when the bill outruns the income.

Religious Victory

Your religion must win a majority in every civ, including yours, and the window to found one shuts early. Faith (the yield spent on religion) spreads like real ideas, along roads and friendships.

The win condition VI

Your religion must be **predominant** in every civ still in the game, including your own. Predominant means it is the majority religion in more than half of that civ's cities.

GETTING A RELIGION

- First adopt a **pantheon**, a small faith bonus, for 25 ● **Faith**.
- Then earn a **Great Prophet** (a famous prophet who founds a religion) with Great Prophet points. Each Holy Site (the faith district) gives 1 point per turn, plus 1 per building in it. Stonehenge gives a free Prophet.
- Only a limited number of religions can exist: 4 on a Small map, 5 on Standard, 6 on Large. When they are gone, nobody else can found one.

SPREADING IT

- Cities spread their religions a little to cities within 10 tiles.
- **Missionaries** (units that spread religion) convert cities with no religion yet. **Apostles** (religious units that spread and defend a faith) convert better and fight rival religious units in **theological combat**. **Inquisitors** (units that remove rival religions) clean your own cities.

You cannot win while a **Religious Emergency** (a temporary pact against a rule-breaker) is active. One starts when you convert another religion's Holy City. Once you convert a civ, it may declare a Holy War on you.

Sources: Victory (Civ6); Religion (Civ6); Great Prophet (Civ6)

The plan

Ancient	Holy Site early, Shrine next, then a pantheon.
Classical–Medieval	Found the religion. Pick beliefs that help spread it (Religion). Convert your own cities and nearest neighbor first.
Medieval–Renaissance	Apostles in groups against rival religions, Missionaries into cities with no religion. Convert rivals' Holy Site cities; religious units can only be bought there.
Later	Escort religious units if you are at war; enemy soldiers can kill them outright with Condemn Heretic. Keep Inquisitors at home.

Concept lens: Rodney Stark argued that early Christianity grew mainly through ties among family, friends and trade partners. That is **network diffusion**, and in Civ trade routes carry religious pressure too.

Tip Pivot rule: if every religion is founded before you get a Great Prophet, drop Religious that turn. Your Holy Sites still make Faith, and Faith buys Rock Bands (units that perform for Tourism), so pivot to Culture.

Check yourself

1. On a Standard map, four religions are founded and you still have no Great Prophet. What is at stake, and what does the pivot rule say if a rival founds the fifth first?
2. Your religion keeps reaching cities tied to yours by nearness and trade routes, with no Missionary (a unit that spreads religion) sent. Which concept explains this, and whose study of early Christianity does the lesson cite?
3. A school club wants more members and can afford either posters or a bring-a-friend event. Using network diffusion, which should it try first, and why?

In the game: the religion race is decided early; an early Holy Site with a Shrine is the ticket in.

In the world: ideas spread along relationships, so map who talks to whom before you spend on persuasion.

Diplomatic Victory

You need 20 points to win, and the AI gangs up to take two away as you near them. Helping others can help you win, here and in real diplomacy.

The win condition VI

This victory exists only in Gathering Storm (the second Civ VI expansion). The first player to reach 20 **Diplomatic Victory Points** (DVP) on standard settings wins. Points can also be lost.

Source	DVP
Voting for the winning outcome and target of a World Congress resolution	+1
Building the Statue of Liberty	+4
Building the Mahabodhi Temple	+2
Building the Potala Palace	+1
Researching Seasteads (Future Era tech)	+1
Completing Global Warming Mitigation (Future Era civic)	+1
Top score in an Aid Request or Military Aid Request	+2
First place in another scored competition (not an Emergency)	+1
Diplomatic Victory resolution, from the Modern Era	+2 or -2

Wonder (a one-of-a-kind building only one civ can own) points go to the builder; capturing the Wonder later gives none.

HOW THE WORLD CONGRESS WORKS

- It first meets once the world reaches the Medieval Era, then every 30 turns at Standard speed.
- Votes cost **Diplomatic Favor** (a currency spent in the World Congress), a currency you earn each turn. Your first vote on each item is free. Each extra vote costs 10 Favor more than the last: 10, then 20, then 30.

- Favor comes from your government (1 per turn per tier, so Democracy gives 3), each city-state (a minor power that cannot win) you are suzerain (the player who controls a city-state) of (+1), alliances, competitions and kept promises. You lose it for grievances, carbon emissions and occupied original capitals.

Sources: Victory (Civ6); World Congress (Civ6); Diplomatic Favor (Civ6); Statue of Liberty (Civ6)

The plan

Ancient– Classical	Meet everyone. Become suzerain of city-states (City-States). Try for Mahabodhi.
Medieval– Renaissance	Stay at peace, make alliances, and vote with the likely winner for a steady +1 per resolution.
Industrial– Modern	Build the Statue of Liberty and Potala Palace. Keep Gold for Aid Requests, which pay +2.
Modern onward	Spend Favor on the Diplomatic Victory vote. Pick up Seasteads and Global Warming Mitigation.

Careful When you are 1 or 2 points from winning, AI leaders spend their Favor to take 2 points away. Vote prices rise steeply, so several civs pooling votes beat one rich civ. The wiki suggests a counter: when you will lose that vote anyway, vote "take away 2" on yourself. You lose 2 but gain 1 for backing the winner.

Concept lens: the Congress votes by plurality on an agenda you do not set, and Arrow showed that no ranked voting rule with three or more options passes every fairness test (**Arrow's impossibility**). Your steady +1 a session comes from cooperating again and again: **repeated games** at work.

Tip Pivot rule: if a war breaks out on your border and costs you Favor every turn, your diplomatic lead will shrink. Defend, liberate cities if you can (it earns Favor and lowers grievances), and lean on Science as the backup.

The hard question: does a good deed count if it also serves you?

In the game, aid is a contest you enter for Diplomatic Victory Points. On 5 June 1947, at Harvard, Secretary of State George Marshall offered to help rebuild Europe: "Our policy is directed not against any country or doctrine but against hunger, poverty, desperation and chaos." From April 1948 the United States sent \$13.3 billion to 17 European countries over four years. By 1952 every participant's economy had passed its pre-war level.

The case for counting it: the same offer went to the Soviet Union and its allies, and it was Moscow that refused. The recipients planned the aid together in a new body, the OEEC, which lives on as the OECD. A deed that serves both giver and receiver may be the kind that lasts.

The case against: the motives were mixed. Washington feared the strong communist parties in France and Italy and wanted to contain Soviet influence, and 83% of the money was spent in the United States. Some economists also find the direct boost modest: the aid came to about 3% of the recipients' national income.

Your call: *does a good deed count for less when it also serves the giver?*

Check yourself

1. Your first vote on a resolution is free. What do your second, third and fourth votes cost in total, and why do several AIs pooling votes beat one rich civ?
2. The World Congress (the game's recurring global vote) decides by plurality, on an agenda you do not set. Which theorem says no ranked voting rule with three or more options passes every basic fairness test?
3. A seven-member city council votes every month. A new member wants influence over the coming years. What does the idea of repeated games suggest she do?

In the game: bank Wonder points early, then vote with the winning side every session.

In the world: in any body that votes, the agenda and the counting rule matter as much as the votes.

Write Your Grand Strategy Memo

Before turn 1, write down how you will win and what would make you switch. One university course in world politics asks students for exactly that.

Where this comes from IV

Jeffrey Berejikian's University of Georgia course INTL 4265, "Global Simulation," runs Civilization IV as a multiplayer model of world politics. Before play, each team writes a **national security doctrine**: the values its country will defend, its main challenges, its central objectives, and the policies to reach them. Teams weight their goals with 500 points (150 domestic, 350 foreign), log each decision, and afterward analyze why they succeeded or failed. The memo below is a one-page solo version.

Source: Berejikian, INTL 4265 syllabus (UGA, Fall 2018)

The template

Heading	What to write (one or two lines each)
Ends	Primary victory, secondary victory, and why each fits this civ and map.
Weights	Split 100 points across your goals, for example growth, security, the victory engine.
Means	What you have: civ abilities, terrain, luxuries, nearby city-states.
Ways	Three concrete moves, one per phase: early, middle, late.
Threats	The neighbor or rival most likely to stop you, and how.
Trigger to pivot	One observable event that makes you switch to the secondary.
Check-ins	The eras when you will reread this memo.

A filled example

- **Ends:** Science primary, Diplomatic secondary. Korea's Seowon (Korea's own Campus) replaces the Campus (the science district), and the start has a mountain range to the east.
- **Weights:** Science engine 50, expansion 25, defense 15, city-state (a minor power that cannot win) relations 10.
- **Means:** two Reefs, a Scientific city-state nearby.
- **Ways:** early, Seowons by the mountains; middle, Universities and two Industrial Zones (production districts); late, two guarded Spaceports (districts that build space projects).
- **Threats:** the warlike neighbor near my second city. Walls there by the Medieval era.
- **Trigger to pivot:** a rival launches its Earth Satellite before I have Rocketry. Then Diplomatic becomes primary.
- **Check-ins:** Medieval, Industrial and Atomic eras.

LAB · Lab: Does your plan survive the game?

Predict first: how many of your check-ins will say "on track", and will your pivot trigger fire? Write both guesses on the memo before turn 1.

1. Write the memo before turn 1 of your next game.
2. At each check-in, write one line: on track, behind, or pivot.
3. After the game, write three sentences on why the plan worked or failed. Write as a policy analyst explaining causes, without defending your choices.

Measure: how many check-ins said "on track," and whether your trigger fired.

What you should see: each check-in forces a decision while switching is still cheap.

If your result differs: an early rush can wreck any plan, and Deity (the hardest difficulty) players report them between turns 20 and 35. Every religion may be founded before your Great Prophet (a famous prophet who founds a religion) arrives, shutting a hard gate. A rival's Earth Satellite before your Rocketry (a technology) fires the Science trigger. Each shows why a trigger must be an event you can see.

In the world: before your next month of spending, write what you expect to spend and one sign that means "cut back now". Check halfway through. A written trigger makes changing course easier, because you decided before you were committed.

In the game: write your ends, means, ways, threats and pivot trigger on one page before you press Start.

In the world: a plan with a written trigger to change course is easier to abandon when it fails.

PART 6

Climbing the Difficulty Ladder

What the eight Civ VI difficulty levels really change, how AI leaders pick friends and targets, and how to practice from Prince to Deity.

How the AI Thinks and Cheats

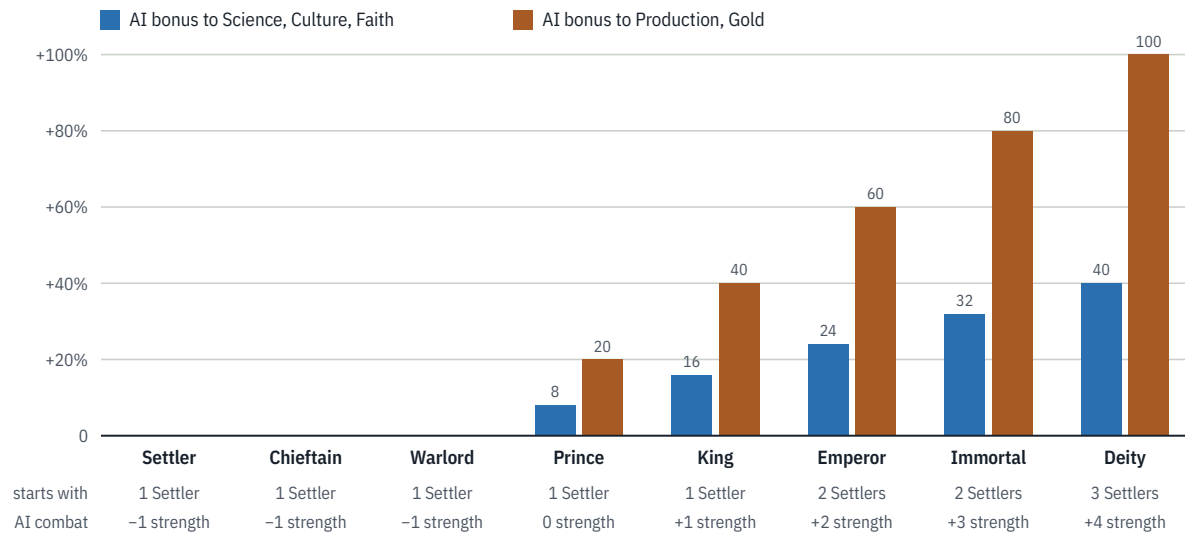
On Deity (the hardest difficulty) the computer is no smarter than on Prince (the default difficulty). It is richer, and like many real states it fears whoever is strong and preys on whoever is weak.

The rule: difficulty means AI bonuses VI

Turn 1 on Deity. Each AI rival starts with 3 Settlers (the units that found cities), 5 Warriors and 2 Builders (units that build farms, mines and the like), against your one Settler and one Warrior. It plays from the same long list of if-then rules as on Prince; the game makes it harder by handing it extra yields, units and combat strength. Below Prince, you get the help instead.

Level	AI Science, Culture, Faith	AI Production, Gold	AI starting Settlers	AI combat strength	Your combat strength	AI free boosts
Settler	+0%	+0%	1	-1	+3	0
Chieftain	+0%	+0%	1	-1	+2	0
Warlord	+0%	+0%	1	-1	+1	0
Prince	+8%	+20%	1	0	0	1
King	+16%	+40%	1	+1	0	2
Emperor	+24%	+60%	2	+2	0	3
Immortal	+32%	+80%	2	+3	0	4
Deity	+40%	+100%	3	+4	0	5

Forum data-miners disagree on whether Prince already gets the first +8%/+20% step, so treat Prince as roughly even. "Free boosts" are free Eureka (40% research discounts for related tasks) and Inspirations (40% civic discounts for related tasks), which each cut 40% off a tech's or civic's cost (since Rise & Fall). The AI also starts with more Warriors (1 on Prince, 5 on Deity), extra Builders from King up (2 on Immortal (the second-hardest difficulty) and Deity), and earns 10% to 50% more combat experience from Prince to Deity. Below Prince you earn 15% to 45% more. In Gathering Storm (the second Civ VI expansion), city-states (minor powers that cannot win) start with Ancient Walls on Immortal and Deity.



Civ VI. On Settler, Chieftain and Warlord the player also gets +3 / +2 / +1 combat strength.

Figure: Civ VI AI bonuses by level. Science, Culture and Faith rise 8 points per level from Prince; Production and Gold rise 20 points. Source: Difficulty level (Civ6), civilization.fandom.com, from the game's XML via CivFanatics.

Careful An older beginners' guide gave a single "+80%" Deity bonus. That is wrong for Civ VI, where +80% is only the Immortal bonus to Production (the yield that builds units and buildings) and Gold. (VII) Civ VII's Deity does give the AI +80% Gold, Science, Culture and Happiness patch 1.5.0; see [How Civ VII Is Different](#).)

The yield bonuses grow steadily, but the big jumps are in the opening: 2 Settlers on Emperor and Immortal, 3 on Deity. Most of what makes Deity hard is that head start compounding. Combat strength is the other edge. On the damage curve, +4 multiplies the AI's damage by about 1.17 in every fight.

Sources: Difficulty level (Civ6), civilization.fandom.com; CivFanatics, "Which file governs AI difficulty bonuses".

Agendas: the AI's likes and dislikes VI

Each AI leader has a **leader agenda**, fixed and shown when you meet them, and in Gathering Storm two **hidden agendas**, chosen at random, one for the early game and one for the late game. You uncover hidden agendas by raising your **diplomatic visibility**, how much you know about a civ, through delegations, embassies, gossip and spies. An AI likes you more when you match its agendas and less when you break them.

- **Trajan** (Optimus Princeps) likes civs with lots of territory.
- **Cyrus** (Opportunist) often declares surprise wars and dislikes civs that never do.
- **Gorgo** dislikes civs that have never gone to war, and never gives up items in a peace deal.
- **Montezuma** wants every luxury and dislikes civs that hold one he lacks.

Sources: Agenda (Civ6); List of agendas in Civ6; Diplomacy (Civ6).

Handling the AI in practice VI

Community consensus (CivFanatics, Steam forums):

- **Sell spare luxuries.** Each luxury type gives +1 **Amenity** (the contentment that keeps cities growing) to up to 4 of your cities, and a second copy adds nothing, so sell spares to the AI for Gold. Use "What would you give me?" to see its best offer.

- **Expect an early rush and prepare cheaply.** Deity players commonly report AI rushes between turns 20 and 35; common advice is walls in frontline cities and 4 to 5 Archers. See [Why Wars Start](#).
- **Make the AI fight your walls.** The AI is widely reported to be weak at taking walled cities; one CivFanatics poster writes that it never has "enough siege to take Renaissance walls or Urban Defenses down."

Sources: Amenities (Civ6); Steam, "Trading Luxury Resources?" (2023); CivFanatics, "Getting Rolled on Deity" (2018) and "My Yearly 'Is the AI Any Good Yet' Thread" (2020).

INTERNATIONAL RELATIONS

Structural realism and the balance of power

On 2 March 1969 Chinese troops ambushed Soviet border guards on Zhenbao Island, in the Ussuri River. By October the Soviets were weighing a massive nuclear strike on China, and Beijing's government and military evacuated the city. To balance the Soviet threat, China reached out to the United States. In February 1972 Richard Nixon, who had made his name as a strong anti-communist, flew to Beijing and met Mao Zedong. Shared ideology had not held the two communist giants together. Fear of the Soviet Union brought the anti-communist and the communist to the same table.

Structural realism: with no world government above them, states respond mainly to how power is spread among them, more than to ideology or leaders. To survive, they balance against whoever grows too strong.

HOW THE GAME MAPS IT

In the game	In the world
Difficulty changes who has what: a Deity AI starts with 3 Settlers and +4 combat strength.	The distribution of capabilities, which Waltz says explains most behavior.
Paranoid dislikes strong militaries; Cleopatra seeks allies among the strong.	Balancing versus bandwagoning (Walt).

WHERE THE MAP BREAKS

- ✗ Civ AIs follow written personality agendas, the very thing Waltz says matters little.
- ✗ Waltz explains broad patterns among great powers. One AI declaring war on you tests nothing.

READ NEXT

- Accessible: Stephen M. Walt, "International Relations: One World, Many Theories," *Foreign Policy* (1998).
 - Primary: Kenneth N. Waltz, *Theory of International Politics* (1979), chapters 5 and 6.
- Kenneth N. Waltz, *Theory of International Politics* (Addison-Wesley, 1979)

INTERNATIONAL RELATIONS

Offensive realism

In April 1802 Thomas Jefferson wrote to Robert Livingston, his envoy in Paris, about Spain's cession of Louisiana to France. France had been, he wrote, "our natural friend". Yet "there is on the globe one single spot, the possessor of which is our natural and habitual enemy. It is New Orleans." If France took it, "we must marry ourselves to the British fleet and nation." Livingston had been sent to buy New Orleans. In 1803 Napoleon sold all of Louisiana instead: 828,000 square miles for \$15 million. Jefferson, a strict reader of the Constitution who thought of amending it to justify the deal, nearly doubled the country on paper anyway.

Offensive realism: because no state can be sure what others intend, great powers try to gain as much power as they can, ideally becoming the only great power in their region. Only the strongest are safe.

HOW THE GAME MAPS IT

In the game	In the world
Deity AIs expand fast and rush the nearest weak neighbor.	Grab power while the chance exists.
Your best Deity defense is to look too costly to attack.	Weak states invite predation.

WHERE THE MAP BREAKS

- ✗ Civ has one winner, so every game is zero-sum. Real states can all survive and prosper together.
- ✗ Mearsheimer says states seek regional dominance because crossing oceans is hard. Civ VI armies cross oceans easily late in the game.
- ✗ Defensive realists such as Waltz answer that grabbing too much power provokes balancing and backfires.

READ NEXT

- Accessible: John J. Mearsheimer, "Anarchy and the Struggle for Power," chapter 2 of *The Tragedy of Great Power Politics*.
- Primary: John J. Mearsheimer, *The Tragedy of Great Power Politics* (W. W. Norton, 2001).

John J. Mearsheimer, *The Tragedy of Great Power Politics* (W. W. Norton, 2001)

Concept lens: you can shape how the AI sees you, because its fear and its appetite both respond to your strength. **Security dilemma** and **deterrence**.

The hard question: is it right to crush the weak so the strong look strong?

On Deity the AI rushes its weakest neighbor, and the game pays it in cities. In 416 BC, during a truce with Sparta, Athens sent 38 ships and over 3,000 troops to Melos, a Spartan colony, hostile since Athenian raids. Thucydides, an exiled Athenian historian, wrote the talks as a debate. His Athenians say right counts only between equals in power, "while the strong do what they can and the weak suffer what they must" (Richard Crawley's translation). Melos refused to submit. After a siege Athens killed all the grown men it took, sold the women and children as slaves and settled 500 colonists.

The case for Athens: an empire held together by fear cannot let one island defy it. The Athenians said Melos's friendship would look like weakness to their other subjects, and its hostility like strength. Mercy could invite revolts, and more deaths.

The case against: the Melians warned that fair dealing protects the strong too, since Athens' fall "would be a signal for the heaviest vengeance". When Athens later lost its fleet, Xenophon wrote, no one slept, picturing the fate "they themselves had inflicted upon the men of Melos" (H. G. Dakyns's translation).

Your call: *when you are strong, which serves you better: a name for ruthlessness, or for restraint?*

LAB · Lab: How much richer is the AI on Deity?

Predict first: how many cities will the nearest AI have at turn 50 on Prince, on Emperor and on Deity? Write three numbers.

1. Start a game on Prince with a fixed leader, and note the Map Seed and Game Seed in Advanced Setup. Play to turn 50 and save.
2. Start games with the same leader and seeds on Emperor and on Deity. Make the same first 50 turns of choices as closely as you can.

Measure: at turn 50, the number of AI cities, the AI's score, and whether anyone declared war on you.

What you should see: the most visible gap is the AI's city count, from the extra Settlers. On Deity the nearest AI is the most likely to attack.

If your result differs: your guess probably underrated the Settler gap (1 on Prince, 2 on Emperor, 3 on Deity) or the AI's bonus Production (+60% on Emperor, +100% on Deity), which speeds everything its cities build. And a leader whose agenda favors surprise wars, such as Cyrus (Opportunist), may attack you on any level.

In the world: a head start compounds. Two friends save the same amount each month, but one starts with a gift of savings. After a year, compare the interest each earned. The gap comes from the starting position alone.

DO

- Check each AI's agendas when you meet them.
- Build walls before you think you need them on Emperor and up.

AVOID

- Believing the AI is smarter on Deity.

Check yourself

1. On Deity, what bonus does the AI get to Production and to Science, and how many Settlers does it start with? Where does the older guide's "+80%" fit?
2. Across many games, rivals keep lining up against whichever civ grows strongest, whatever its leader's personality. Which theory predicts this, and who wrote it?
3. A small country borders a much stronger, expanding neighbor. Using offensive realism, what does the strong neighbor want, and what is the small country's best protection?

In the game: the AI's edge is a head start in cities and units, so survive the first 50 turns and the gap starts to close.

In the world: to predict a rival, look at its position before its personality.

Climbing the Ladder

Game after game is a slow way to get better. Practice aimed at one weakness, checked against a number, is faster, and this four-stage ladder is built on it.

The four stages (this book's framework, not the game's)

Stage	Levels	What you are learning	Move on when
Initiate	Settler to Prince	The rules: growth, districts, combat, one victory type	You win on Prince without the AI declaring a war you cannot handle
Strategist	King and Emperor	Planning: expansion pace, a victory plan from turn 1, defense on a budget	You win on Emperor with two different victory types
Champion	Immortal and Deity	Efficiency: fast expansion, surviving rushes, turning AI weaknesses into wins	You win on Deity most of the time
Multiplayer	Human opponents	Reading people: bluffs, alliances, speed	See Multiplayer

Rough targets VI

Rough targets from CivFanatics players, for Standard speed; map size and civ change them a lot. City *quality* (population and districts) matters as much as count.

Benchmark	Rough target	Who says so
Cities at turn 100, King	About 6; 10 is a strong start	Victoria, "Milestones and Yardsticks"
Cities at turn 100, Deity	About 10 ("a common goal")	Several players, same thread; BTSeven7, "Benchmarks"
Science per turn at turn 100	About 100 for an average start	Lily_Lancer, "Milestones and Yardsticks"
Industrialization researched	Turn 100 at best; about turn 115 in science games	elitetroops, same thread
Science victory on Deity	Around turns 260 to 280	BTSeven7, "Benchmarks"

Careful The older guide's "6+ cities by T100" is a fair King target but too low to judge Deity (the hardest difficulty) play. One Deity player puts it this way: "If I only have 5 I will struggle, if I have 10 I have it made."

Sources: CivFanatics, "Milestones and Yardsticks" and "Benchmarks".

LEARNING SCIENCE

Deliberate practice

For a 1993 study, K. Anders Ericsson and two colleagues asked professors at the Music Academy of West Berlin to pick violin students. Ten had the potential for careers as international soloists, ten were good, and ten were future music teachers. Each estimated their weekly hours of practice alone, year by year. By age 18 the best averaged 7,410 hours, the good 5,301 and the future teachers 3,420. Skill lined up exactly with solitary practice. A double-blind replication in 2019 found a smaller effect, and the clean step from group to group did not reappear.

Deliberate practice: effortful practice aimed at one specific weakness, just beyond your current ability, with fast feedback and usually a teacher's design.

HOW THE GAME MAPS IT

In the game	In the world
Replaying turns 1 to 60 from one save, changing one choice.	Repeat one task with one variable changed.
Benchmarks at turn 100 (cities, Science).	A clear measure of performance.

WHERE THE MAP BREAKS

- ✗ A 2014 meta-analysis (Macnamara, Hambrick and Oswald) found practice explained about 26% of the differences in performance in games, 21% in music and 18% in sports. It matters, but far less than claimed.
- ✗ The popular "10,000 hours" rule is not a finding of the paper; it comes from Malcolm Gladwell's retelling.
- ✗ Ericsson required a teacher who designs the practice. Most Civ players coach themselves.

READ NEXT

- Accessible: K. Anders Ericsson and Robert Pool, *Peak: Secrets from the New Science of Expertise* (2016).
- Primary: Ericsson, Krampe and Tesch-Römer, *Psychological Review* 100(3): 363–406, 1993; then Macnamara, Hambrick and Oswald, *Psychological Science* 25(8), 2014.

K. Anders Ericsson, Ralf T. Krampe and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* 100(3) (1993)

A practice plan

Week 1	Pick one skill from your last loss, such as early defense, expansion pace or district (a specialized city tile that holds buildings) timing .
Week 1	Play the same map seed to turn 60 three times, changing only that one skill. Note cities, Science and Culture per turn at turn 60.
Week 2	Play a full game at your current level. At turns 50, 100 and 150, write the numbers from the rough targets table.
Week 3	Compare with the targets. Pick the biggest gap as your next skill. Move up one level only after two wins in a row.
Always	After a loss, reload 20 turns earlier and replay the moment it went wrong.

LAB · Lab: Do more cities mean more Science?

Predict first: with 2 more cities at turn 100, will your Science per turn rise, fall or stay level? Guess the change as a number.

1. Play a King game, Standard speed, and save at turn 100.
2. Count your cities, their total population and how many have two or more districts.
3. Replay from turn 1 aiming for 2 more cities by turn 100, keeping everything else the same.

Measure: Science and Culture per turn at turn 100 in each run.

What you should see: more cities usually means more Science and Culture by turn 100, unless the extra cities are too small to build districts.

If your result differs: cities squeezed onto poor land stay too small for districts, so they add little. Each luxury gives an Amenity to only 4 cities, so more cities can mean unhappy ones that grow slowly. And Settlers (the units that found cities) built instead of defenders can invite an AI attack that costs more than the cities add.

In the world: more branches do not always mean more output. Compare a chain with many small shops and one large store in your town: count staff and opening hours as well as doors. Size and quality both matter, as with Civ cities.

DO

- Practice one skill at a time, from a save.
- Track the same three numbers every game.

AVOID

- Jumping from Prince (the default difficulty) straight to Deity.
- Judging a game by city count alone.

Check yourself

1. Your Deity game has 6 cities at turn 100. Using the rough targets, are you on track, and what does the practice plan say to do next?
2. You replay turns 1 to 60 three times from one seed, changing only your expansion pace and noting the numbers. Name the concept and one limit the lesson gives.
3. A student plays her favorite piano pieces for an hour a day and has stopped improving. What change does deliberate practice suggest?

In the game: pick one weakness, replay it from a save, and measure it at turn 100.

In the world: skill grows fastest from focused, measured practice on your weakest point.

PART 7

Civilization VII

Civ VII keeps the hex map and turn-by-turn empire building but changes the shape of a game. This part teaches the rules as of patch 1.5.0 and its 30 September 2026 hotfix, and the two ideas the game leans on hardest, collapse and creative destruction.

What's Different From Civ VI

Your Civ VI reflexes will cost you here. There are no Builders (units that build farms, mines and the like) or Eureka's (40% research discounts for related tasks), settling everywhere has a price, and every age the game pulls the leader back toward the pack.

The big changes VI VII

As in Civ VI, settlements on a hex map turn tiles into yields such as Food, Production (the yield that builds units and buildings), Gold, Science and Culture. Civ VII adds Influence, which pays for diplomacy, and Happiness, which keeps settlements working.

Feature	Civ VI VI	Civ VII VII
Shape of a game	One long game through eras.	Three ages: Antiquity, Exploration, Modern. Tech and civic trees start fresh in each.
Your civilization	One civ, one leader, all game.	Your leader stays. Each age you pick a new civ or keep yours patch 1.4.0 .
Improving land	Builders, a unit with 3 build charges.	No Builders. Each time a settlement grows, you choose a tile to improve.
New settlements	Every settlement is a city.	Only the capital starts as a city. Others are towns, which turn Production into Gold until you pay to upgrade them.
How many settlements	No cap.	A limit of 3, 8 and 16 by age. Each settlement over it costs 5 Happiness in every settlement you own, uncapped patch 1.4.0 .
Building space	Specialty districts, one per tile, with adjacency bonuses.	Buildings sit on urban tiles, two per tile. Two buildings from the current age make a Quarter.
Armies	Units move one at a time.	Commanders carry up to 4 units, earn experience and keep it from age to age.
Diplomacy currency	Separate systems: Diplomatic Favor, Envoys, spies, trade route limits.	One yield, Influence, pays for nearly all of it.
Research shortcuts	Eureka's and Inspirations cut 40% of a tech or civic when you do a task.	No Eureka's. Masteries: an optional second research of a tech or civic, at about 80% of its cost, for extra bonuses.
Goals inside an age	Era Score from Historic Moments (Rise & Fall onward).	Triumphs: about 30 goals per age in six themes. Major ones unlock Dedications for the next age patch 1.4.0 .
Winning	Five victory types with fixed finish lines, such as 20 Diplomatic Victory Points.	Lead second place by a set multiple for 5 turns (Military, Cultural, Economic), or race to 100 points (Science). Otherwise top score wins patch 1.4.0 .

Sources: Patch 1.4.0 notes; Settlement (Civ7); Influence (Civ7); Builder (Civ6); Boost (Civ6).

The ages matter most. A bigger empire makes more and spends it on growing, so a lead feeds itself. The Civ VII wiki calls age transitions a way back in for players who fall behind.

Concept lens: path dependence says early choices lock in later ones. Civ VII's age resets try to loosen that lock. **Full lesson**

The hard question: should the rules stop a winner from winning too much?

Civ VII pulls the leader back every age. In 1911 America did it to a company. John D. Rockefeller's Standard Oil controlled 91% of American oil refining by 1904, helped by secret railroad rebates. On 15 May 1911 the Supreme Court ruled it an unreasonable monopoly and split it into more than thirty companies. Each shareholder got a slice of each one. Within ten years their combined value rose fivefold, and Rockefeller's fortune reached about \$900 million, 2.3% of American output in 1913.

The case for the breakup: a firm that refines nine tenths of a necessity can set its price and choose which rivals survive. Ida Tarbell's 1904 history laid out its methods. The government charged that where competition was active, Standard cut prices "to a point which leaves even the Standard little or no profit", and charged "altogether excessive prices" where it met none.

The case against: customers did well. Kerosene fell in price by nearly 80% over the company's life, and defenders said Standard was simply the better competitor. By 1911 at least 147 refiners competed with it, Gulf, Texaco and Shell among them. And the breakup left the same owners holding the oil.

Your call: *at what size does winning the game become a reason to change its rules?*

LAB · Lab: Feel the brake at an age change

Predict first: write down whether your Science per turn will rise, hold or fall on the first turn of the new age, and by roughly how much.

1. Play an Antiquity (Civ VII's first age) game until the end-of-age countdown starts (10 turns before the end by default, since [patch 1.2.3](#)), or load a save from that point.
2. On the last turn of Antiquity, write down your Science and Culture per turn from the top of the screen.
3. Make your transition choices. On the first turn of Exploration, before you build anything, write the same two numbers.
4. Play 10 more turns, overbuild one outdated Quarter (see [Quarters and Overbuilding](#)), and write them again.

Measure: Science and Culture per turn at the three points.

What you should see: a dip on the first turn of Exploration. Every Antiquity building that is not ageless turns outdated and loses its adjacency (extra yield from what sits next door) bonuses and special effects, though it keeps its base yields. Overbuilding (replacing an old building with a newer one) starts to win the loss back.

If your result differs: no dip means most of your yields came from base yields, which outdated buildings keep, or from wonders and other ageless buildings, or your new civ and Dedications (bonuses picked when a new age or era begins) added more than you lost. A big dip means you had stacked adjacency, which is exactly what goes out of date.

In the world: in the US National Football League, barring trades, the team with the worst record picks first in every round of the next draft. Compare this year's draft order with last season's standings to see a brake on a runaway leader.

Check yourself

1. In Antiquity you own 4 settlements and nothing has raised your settlement limit (how many settlements you can hold before penalties). How much Happiness does each settlement lose, and which Civ VI habit led you here?
2. A friend says Civ VII's ages make early choices meaningless. Using path dependence, say what the age resets loosen and what still carries over.
3. A sports league gives its weakest team the first pick of new players each year. What does that rule share with Civ VII's age transitions?

In the game: drop three Civ VI reflexes on day one: building Builders, settling cities everywhere, and waiting for Eureka's.

In the world: when the rules of a system change, ask which of your habits were answers to the old rules.

Ages and Crises

At 70% of Antiquity or Exploration the game turns on you. Plague, revolt or invasion arrives, with policies that mostly hurt. Rome met its crises with more officials, soldiers and taxes. Its fall may have left many better off.

Age progress and the transition VII

Every age has an **Age Progress** meter, shown as a percentage. Each turn adds a little. Researching Future Techs or Future Civics adds more, and so does eliminating a civilization (except in Modern). At 100% the age ends for every player at once, in the **age transition**.

At the transition you choose your civ for the next age, may swap your Mementos (small leader bonuses you unlock by playing), and pick 3 Dedications (bonuses picked when a new age or era begins). New tech and civic trees appear, new resources fill the map, and the playable map grows. Your leader, relationships, Traditions (policies from a civ's own civic tree), wonders, Unique Quarters (Civ VII tiles holding two buildings), ageless buildings and Commanders (Civ VII units that lead armies)' experience carry over. So do the yield bonuses of settlements you captured, while conquest penalties end with the age patch 1.4.0. Older buildings keep weaker yields until you build over them (see Quarters and Overbuilding).

CONTINUITY OR REGROUP PATCH 1.2.3

A setup option decides how much survives a transition. **Continuity**, the default, keeps most of your empire, units and alliances. **Regroup**, the launch rules, leaves you fewer units and less Gold and Influence (a diplomacy currency), and ends alliances.

CHOOSING YOUR NEXT CIV, OR KEEPING IT **PATCH 1.4.0**

Your options come from a historical or geographic link (Egypt to the Abbasids), from your leader (Himiko always unlocks Meiji Japan), or from what you did in the game, and you can also keep your civ. A civ is at full strength in its **Apex** age, with its unique units, buildings and civic tree. In other ages it is **Time-Tested**, with a smaller civic tree, though its unique ability works in every age.

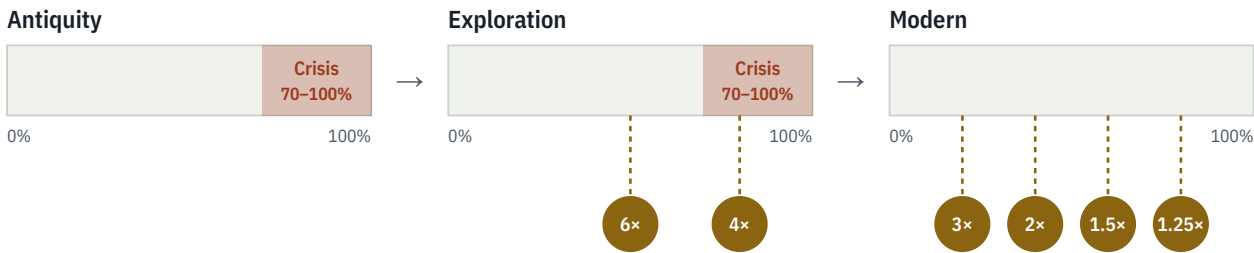
Crises **VII**

Antiquity (Civ VII's first age), 70% Age Progress. A **Crisis** (a Civ VII late-age challenge) begins, and the game makes you slot a **Crisis Policy**. Most of the choices hurt. Exploration ends the same way; the Modern Age (Civ VII's third age) has no Crisis. Each game picks one theme at random: Invasion, Plague or Revolts in Antiquity, Plague or Religious Revolts in Exploration (Revolutions was removed in **patch 1.4.1**). Bad events hit settlements, and more slots open as the meter climbs.

Age Progress	Crisis policies you must slot	Events
70%		1 Light
80%		2 More frequent
90%		3–4 Severe
100%		0 Crisis ends; the next age begins

Crisis policies grow harsher as your empire grows.

Sources: Age (Civ7); Patch 1.1.1 notes; Crisis (Civ7); Starting a new game (Civ7); Patch 1.4.0 notes; Patch 1.4.1 notes.



Gold circles: how far ahead of 2nd place you must be to start a 5-turn victory countdown (patch 1.4.0+). Crises hit Antiquity and Exploration from 70% age progress. Figures from the official patch notes.

Figure: the three ages. Crises run from 70% to 100% of Antiquity and Exploration. Gold circles show the lead over second place that starts a 5-turn victory countdown, from 6x to 1.25x. Source: patch 1.4.0 notes; Crisis (Civ7).

HISTORY / SYSTEMS

Collapse of complex societies

Diocletian became Roman emperor in 284, after fifty years of near-collapse. His answer was more of everything. He shared rule among four emperors, doubled the provinces from fifty to almost a hundred, and enlarged the army and the civil service. Taxes rose to pay for it. Lactantius, a hostile writer who had taught rhetoric at his court, wrote that "there began to be fewer men who paid taxes than there were who received wages" (in William Fletcher's translation). Joseph Tainter, an anthropologist, argues that each layer bought less than the last, and that when the west broke into kingdoms, many ordinary people were better off.

Collapse: a society solves its problems by adding complexity, each new layer costing more and returning less, until it suddenly sheds much of that complexity at once.

HOW THE GAME MAPS IT

In the game	In the world
Crisis policies get harsher as your empire grows	A bigger, more complex state carries higher fixed costs when a shock hits
Each settlement over the limit costs 5 Happiness in every settlement, with no cap	Each added unit of complexity pays back less than the one before
Regroup strips units, Gold and alliances at the transition	Collapse as simplification: smaller units, less central control

WHERE THE MAP BREAKS

- ✗ The game schedules the crisis at 70% on a meter. Tainter's collapses had no calendar. They came from inside, when complexity stopped paying.
- ✗ Every player faces the crisis at once and survives it. Real collapses hit some societies and spared their neighbors.
- ✗ Tainter's thesis is contested. Patricia McAnany and Norman Yoffee argue that many "collapses" were long transformations in which people adapted and endured.

READ NEXT

- Accessible: Patricia A. McAnany and Norman Yoffee (eds.), *Questioning Collapse* (Cambridge University Press, 2010), the critics' case.
- Primary: Tainter (1988).

Joseph A. Tainter, *The Collapse of Complex Societies* (1988).

LAB · Lab: Can a bigger empire ride out the crisis?

Predict first: write down what share of your yields per turn you will lose between 65% and 95% Age Progress, and whether a bigger empire loses a bigger share.

1. At 65% Age Progress in Antiquity, save and note your yields per turn from the top of the screen. Note them again at 75%, 85% and 95%.
2. Replay from the save. This time found one more settlement (build or buy a Settler) before 70%, staying within your settlement limit (how many settlements you can hold before penalties), and note the same numbers.

Measure: the drop in yields from 65% to 95% in each run.

What you should see: yields stall as crisis policies stack up. Compare how much each run lost. Crisis policies scale with empire size, so the run with the extra settlement should feel harsher policies.

If your result differs: crisis events are random, so one destroyed building or a settlement in Unrest can swing a run. If no crisis came at all, Crises may be switched off in Advanced Setup, where since [patch 1.2.2](#) you can pick which ones run. Growth finished before 70% also cushions the fall.

In the world: find a business news story about a firm closing a division in a downturn. Ask which layers it added in good years and what they cost to keep once revenue fell. That is Tainter's question in miniature.

Check yourself

1. Exploration's Age Progress reaches 80%. How many Crisis Policies must you slot now, and what changes at 90%?
2. Crisis policies get harsher as your empire grows. Which part of Tainter's theory of collapse does that match, and where does the game's version break?
3. A town council has added a new department every year. Then a recession cuts its revenue. Using Tainter's idea, what should the council ask about each department?

In the game: treat 70% Age Progress as a deadline. Finish your growth push before it, then play for stability.

In the world: every new layer of an organization needs upkeep, so price it for the bad years as well as the good.

Towns, Cities and the Settlement Limit

Antiquity allows 3 settlements without penalty. Your fourth brings good land and costs 5 Happiness in every settlement you own, itself included. A fifth makes it 10 in each, with no ceiling.

Towns and cities VII

Your capital is founded as a **city**. Every other settlement you found starts as a **town**.

- A city has a production queue. It builds units, buildings and wonders, and it can hold **Specialists**.
- A town has no production queue. All its **Production** (the yield that builds units and buildings) turns into **Gold**. It can buy some buildings with Gold, and it cannot hold Specialists (citizens working buildings instead of tiles).

A new town starts on the **Growing Town** focus, which gives +50% growth. At 7 population you can pick a different focus. A focused town sends its **Food** to connected cities and gets the focus bonus, such as Farming Town, Mining Town, Trade Outpost or Fort Town. The choice is locked for the age, except that you can switch back to Growing Town. Since **patch 1.4.0** focus bonuses no longer grow by age, and focused towns can buy more kinds of buildings.

CONVERTING A TOWN TO A CITY

A town can pay Gold to become a city. The price rises with every city you already own, including your capital, and falls by 50 Gold for each point of the town's population.

Cost part	Antiquity	Exploration	Modern
Base cost	400	700	800
Added per city you own	+300	+700	+1,000
Off per point of town population	-50	-50	-50
Minimum	200	200	200
Maximum	1,000	3,000	5,000

Example: in Antiquity (Civ VII's first age) you own only your capital, and a town has 5 population. The price is $400 + 300 - 250 = 450$ Gold. A town you captured costs double, up to the cap.

The settlement limit VII

The **settlement limit** (how many settlements you can hold before penalties) is how many settlements you can own without a penalty. It starts each age at 3 (Antiquity), 8 (Exploration) and 16 (Modern), or higher if you ended the last age above that. Every settlement over the limit costs **-5 Happiness** in each of your settlements, so two over the limit means **-10** in every one. Since **patch 1.4.0** there is no cap on this penalty. The techs Irrigation, Feudalism, Urbanization and Mass Production raise it, as do some civics, leader attribute nodes, city-state (a minor power that cannot win) bonuses and civ or leader abilities. The Memento Corona Civica adds +1 per age but makes converting towns to cities 50% dearer.

Sources: Town (Civ7); Settlement (Civ7); Patch 1.4.0 notes.

Each conversion costs more than the last, so convert your best-placed town first.

Concept lens: the uncapped over-limit penalty is imperial overstretch in miniature: each extra holding adds a cost every other holding pays, until the costs outrun the gains. [Full lesson](#)

LAB · Lab: Cross the settlement limit on purpose

Predict first: write down how much Happiness each of your settlements, the new one included, will lose when you found one settlement over your limit.

1. In Antiquity, own exactly as many settlements as your limit: 3, unless a tech such as Irrigation or another bonus has raised it. Save the game.
2. Open each settlement and write down its Happiness per turn.
3. Build or buy a Settler (the unit that founds a city) and found one more settlement. Next turn, write each settlement's Happiness again.
4. Reload the save afterward if you want the settlement back off your books.

Measure: each settlement's Happiness per turn before and after.

What you should see: every settlement, the new one too, loses 5 Happiness to the over-limit penalty. A second settlement over the limit would make it 10 in each.

If your result differs: no change means your limit was higher than you thought, from Irrigation, a leader attribute node or a city-state's Hegemon bonus. A bigger change means something else moved Happiness that turn, such as a new building's upkeep, a Specialist or war weariness (unhappiness that grows the longer you fight).

In the world: a shop owner who opens a branch also adds head-office work that every branch shares. Ask anyone who opened a second location what happened to the first one.

Check yourself

1. In Antiquity you own only your capital and a town with 6 population. What will converting the town to a city cost?
2. Your Exploration empire sits at its limit of 8. A ninth settlement would add good tiles. What does imperial overstretch tell you to count before founding it?
3. A café owner runs 3 shops well. Each new branch takes some of the owner's time, which every branch shares. Why might shop 5 add less than shop 2 did?

In the game: treat the settlement limit as a budget. Going over is allowed, but each step costs 5 Happiness in every settlement.

In the world: growth that adds a fixed upkeep each time needs a different test than growth that pays for itself.

Quarters and Overbuilding

Kodak built the first digital camera in 1975 and filed for bankruptcy in 2012 as film faded. Every Civ VII age change does the same to your buildings, and you still pay their upkeep.

Districts and Quarters VII

When a city builds its first building on a tile, that tile becomes an urban **district** (a specialized city tile that holds buildings). Each urban tile has room for 2 buildings (walls do not count). When the second building goes up, the tile becomes a **Quarter** (a Civ VII tile holding two buildings). Some Modern buildings, such as the

Rail Station, fill a whole tile and make a Quarter alone. Many bonuses apply only to Quarters, so fill tiles in pairs. A **Unique Quarter**, two of a civ's unique buildings on one tile, is ageless and can last the whole game.

Adjacency (extra yield from what sits next door) is the bonus a building gets from its neighbors, +1 for each. The wiki's rule of thumb:

- **Culture** and Happiness buildings like Mountains and Natural Wonders.
- **Gold** and **Food** buildings like Coast and Navigable Rivers.
- **Science** and **Production** (the yield that builds units and buildings) buildings like resources.
- Every building likes Wonders (one-of-a-kind buildings only one civ can own).

Overbuilding VII

The first turn of Exploration. Your capital's best Quarter has lost every adjacency bonus, yet nothing was destroyed. Its buildings are **outdated**. At an age change, every building from the old age that is not ageless goes outdated. It loses its adjacency bonuses and special effects, stops counting toward a Quarter, and keeps its full maintenance. The tile drops back to a district. The fix is to **overbuild**. A new building on the tile replaces the old one with the lowest Production cost. Wonders, unique buildings and Warehouse buildings such as the Granary are ageless and never go out of date.

Sources: Quarter (Civ7); Building (Civ7); Patch 1.4.0 notes.

Plan your best tiles twice, putting this age's buildings where next age's will also want to be.

ECONOMICS

Creative destruction

In 1975 Steven Sasson, an electronics engineer at Kodak, built a camera that used no film. It weighed 3.6 kilograms, took pictures of 100 by 100 pixels, and needed 23 seconds to record each one to a cassette tape. Kodak executives watched it work and said they saw no market for it. Sasson was granted a patent in 1978, and the camera never went into production. Film stayed Kodak's core business. As digital photography replaced film, that business shrank, and in January 2012 Kodak filed for bankruptcy protection. It had invented its own replacement.

Creative destruction: capitalism grows by replacing old products, methods and firms with new ones, so the new makes the old worthless and growth and destruction are one process.

HOW THE GAME MAPS IT

In the game	In the world
Age change makes old buildings outdated	A new technology makes old capital obsolete
Outdated buildings keep full maintenance and lose their bonuses	Old plant still costs money to run after it stops earning

WHERE THE MAP BREAKS

- ✗ In the game a calendar triggers the destruction. In Schumpeter, rivals trigger it by innovating, and the new usually comes from outsiders.
- ✗ You own both the old building and its replacement. Kodak owned both too, and kept betting on the old one.
- ✗ Your new building always beats the old one. Real innovations often fail, and the losses fall hardest on workers tied to the old trade.

READ NEXT

- Accessible: Philippe Aghion, Céline Antonin and Simon Bunel, *The Power of Creative Destruction* (Harvard University Press, 2021).
- Primary: Schumpeter (1942), chapter 7, "The Process of Creative Destruction."

Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (1942).

The hard question: who pays for progress?

When you overbuild, nobody loses a job. In March 1811 framework knitters in Nottinghamshire, soon called Luddites, began smashing wide knitting frames that produced cheap, inferior work with fewer hands. In March 1812 Parliament made frame-breaking a capital crime. Lord Byron opposed it in his first speech in the Lords: "These men never destroyed their looms till they were become useless, worse than useless." About 12,000 troops were sent, more, the historian Eric Hobsbawm wrote, than Wellington led into Portugal in 1808. At York in January 1813, 17 men were hanged, three for murdering a mill owner.

The case for the owners: the frames were lawful property, and cheaper goods served every buyer. Lord Liverpool, Secretary for War, argued that frame-breakers were hard to catch, so "the terror of the law" would often work where lesser punishments would not. Britain grew rich. From 1840 to 1900 output per worker rose 90% and real wages 123%.

The case against: the knitters struck only after their trade was gone, and death for a broken machine priced a frame above a life. The riches came late. From 1780 to 1840 output per head rose about 46% and working-class wages 12%, a lag now called Engels' pause.

Your call: when a new method makes a whole trade worthless, who should carry the loss, and for how long?

LAB · Lab: Count adjacency before you build

Predict first: pick the tile for your first Library. Write down how much Science adjacency it will get there.

1. In Antiquity (Civ VII's first age), research Writing, which unlocks the Library, a Science building that gets +1 Science for each adjacent resource and each adjacent Wonder.
2. In your capital, find two tiles where the Library can go. For each, count the touching tiles with a resource or a Wonder.
3. Pick the Library in the Production menu and note the base Science it lists.
4. When the game asks where to place it, hover each of your two tiles and note the Science gain the placement view shows. Place it on the better one.

Measure: for each tile, the Science gain the placement view shows minus the Library's base Science.

What you should see: +1 Science for each adjacent resource or Wonder you counted.

If your result differs: a lower number usually means you counted a tile two hexes away, or a feature such as a Mountain, which feeds Culture buildings. A higher one can come from a leader ability or Wonder that adds Science; the placement view's detailed breakdown itemizes the gain.

In the world: shops cluster for the same reason. A café beside a busy station earns more than the same café on a quiet street. Walk any high street and note which businesses sit next to which.

Check yourself

1. A Quarter holds two Antiquity buildings, neither ageless, when Exploration begins. What happens to that tile, and what fixes it?
2. In Civ VII you overbuild your own outdated buildings. In Schumpeter's creative destruction, who usually brings the new, and who loses?
3. A print shop's old press still costs money to maintain after most customers have moved to digital printing. What does this lesson tell the owner to count?

In the game: after each age change, overbuild your outdated Quarters first; they pay full upkeep without their adjacency bonuses.

In the world: when something new makes your assets obsolete, keeping them running is a cost, so count it.

Growth, Specialists and Happiness

Your capital just grew. Improve a tile, or make the citizen a Specialist (a citizen working a building instead of a tile)? The Specialist looks richer, but it costs Food and Happiness, and each one adds less than the last.

Growth VII

● **Food** fills a growth bar. Each bar needs more Food than the last, and since [patch 1.2.0](#) that cost rises along a gentle quadratic curve. Each time the bar fills, the settlement grows and you make one choice:

- **Improve a tile.** You pick a tile and the right improvement (farm, mine and so on) appears on it. This can also claim unowned tiles within 3 hexes.
- **Add a Specialist** (cities only). The citizen works inside an urban tile instead.

Specialists changed in [patch 1.4.0](#). A Specialist has no base yield. It adds 100% of its tile's adjacency (extra yield from what sits next door) yields. Each one costs upkeep in both Food and Happiness.

Specialist placed on	Antiquity	Exploration	Modern
Current-age or unique ageless buildings (Food and Happiness each)	2	4	6
Warehouse or outdated buildings (Food and Happiness each)	1	1	1

Happiness after the 1.4.1 rework VII patch 1.4.1

Each settlement has its own **local Happiness**. Buildings and other sources add it; Specialists, war weariness (unhappiness that grows the longer you fight) and being over the settlement limit (how many settlements you can hold before penalties) take it away. Each point below zero cuts that settlement's yields by 5%, down to a limit of -80%. Unhappiness does not cut Food patch 1.4.0. Patch 1.4.1 sorted local Happiness into five stages. The positive stages scale up in later ages.

Stage	Local Happiness
Ecstatic	40 or more per age
Joyous	20 to 39 per age
Happy	0 to 19 per age
Unhappy	-1 to -19
Angry	-20 or lower

The stages do nothing alone; government abilities and other effects check them. Classical Republic, for example, gives +1 Culture in settlements that are Happy or better.

Excess Happiness across your empire builds toward a **Celebration** (a Civ VII bonus period from surplus Happiness). Each Celebration needs more than the last, lasts 6 turns at Standard speed, and gives +1 social policy slot plus one of two bonuses your government offers.

Each age you adopt one of three governments (in Antiquity: Classical Republic, Despotism or Oligarchy). Each now has a passive effect, two Celebration options and two Traditions only it can unlock.

Sources: Patch 1.4.1 notes; Patch 1.4.0 notes; Celebration (Civ7); Borders (Civ7); Patch 1.2.0 notes.

A citizen on an improved tile costs no upkeep. A Specialist on a strong Quarter can add more, at a price in Food and Happiness. Your first Specialist takes your best tile; each later one takes a weaker tile and pushes Happiness lower, so each is worth less than the last.

Concept lens: stacking Specialists is diminishing returns at work. Look at the next one, not the average.
 Full lesson · Marginal analysis

LAB · Lab: Watch the growth bar stretch

Predict first: write down whether each growth will need more, the same or less Food than the one before, and whether the jumps between them will grow.

1. Start a game. Open your capital and note the Food it needs for its next growth and its Food per turn.
2. Each time it grows, improve a tile, then note the turn and the new Food needed.
3. Repeat for three growths without adding Specialists.

Measure: the Food needed for each growth, and the turns between growths.

What you should see: each growth needs more Food than the last, and each jump is a little bigger than the one before, the quadratic curve. With steady Food per turn, the gaps between growths stretch slowly.

If your result differs: faster growth usually means a new improved tile or building raised your Food per turn. A smaller Food requirement means a Growth Rate bonus arrived mid-run; some wonders and policies give one, and it cuts the Food needed instead of adding Food.

In the world: many apps and loyalty schemes make each new level cost more than the last. Write down the points needed for three levels of one you use, and check whether the gaps grow.

Check yourself

1. A city at -4 Happiness makes 20 Science and 10 Food. What does it actually produce, and what should you fix before adding a Specialist?
2. In Antiquity your first Specialist adds 6 Science on a full Quarter. The next spot would add 3. Which idea says to judge the second by its own numbers, and what are they?
3. A café's first barista serves 40 customers an hour. A second at the same machine would add 15 more. How should the owner decide?

In the game: keep every city at Happy or better before adding Specialists; each point below zero costs 5% of everything it makes.

In the world: a hire that needs upkeep and support from the rest of the team is worth less than its own output suggests.

Influence, Independent Powers and Diplomacy

A neutral Independent Power (a Civ VII minor faction you can befriend or fight) sits 4 hexes from your best site. Settle there and it turns hostile. Befriend it first, and in 15 turns it can be your city-state (a minor power that cannot win).

Influence VII

Influence (a diplomacy currency) is a yield your whole empire pools and spends on **diplomatic actions**. These are Treaties (such as Open Borders), Endeavors (deals that raise yields for both sides), Sanctions (penalties on a rival), Espionage, War Support (see **Commanders and War**) and befriend Independent Powers. Improve Trade Relations raises your trade route limit with a civ, and each use costs 25% more than the last [patch 1.4.0](#).

Your **relationship** with each leader is a score. Good relationships make leaders accept and propose deals; poor ones make them refuse, and every refusal hurts the score more.

Relationship	Score	What it allows
Helpful	above +60	Alliances
Friendly	+20 to +60	
Neutral	-20 to +20	
Unfriendly	-60 to -20	
Hostile	below -60	Formal war without a War Support penalty

Allies are pulled into each other's wars. Since [patch 1.5.0](#) you can pay Influence to stay neutral and keep the alliance, renewed every 10 turns on Standard speed. You cannot stay neutral if two of your allies fight each other.

Independent Powers VII

Independent Powers are small factions that appear on turn 2 of each age, roughly Civ VI's barbarians, and the seeds of city-states. Each is hostile or neutral, and each has one of six types (Militaristic, Economic, Cultural, Scientific, Diplomatic, Expansionist) that sets its rewards. Since [patch 1.5.0](#) they no longer spawn inside your borders.

- **Befriend:** start the project for 2 Befriend points per turn. The first player to 60 points becomes its **suzerain** (the player who controls a city-state) and it becomes a city-state. A neutral power starts at 30 points. A hostile one turns neutral at 30. Add Support spends Influence for +1 point per turn. Each befriend you have running, and each city-state you already lead, raises the cost by 20% [patch 1.4.0](#).
- **Disperse:** beat its central unit and disperse it for 125 yields per age of its type, plus 25 experience for an adjacent Commander (a Civ VII unit that leads an army).
- **Watch out:** founding a town within 5 hexes of a neutral power turns it hostile, unless you already started befriend it.

As suzerain you pick one bonus from the city-state's list, such as +1 settlement limit (how many settlements you can hold before penalties) (Hegemon) or a free civic. A city-state works like a town, and declaring war on one means declaring war on its suzerain.

Sources: Influence (Civ7); Diplomacy (Civ7); Independent Power (Civ7); City-State (Civ7); 1.5.0 notes.

You need a steady flow of Influence more than a stockpile, most of all when a war is coming.

Concept lens: relationships that improve with each accepted deal and sour with each refusal are a repeated game, where cooperation pays because you will meet again. [Full lesson](#) · Endeavors are a small case of [complex interdependence](#).

LAB · Lab: How fast can you win a city-state?

Predict first: write down how many turns it will take to become suzerain of a neutral Independent Power, first with no Add Support, then with one.

1. Early in Antiquity (Civ VII's first age), find a neutral Independent Power with your Scout (a fast unit for exploring). Do not found a town within 5 hexes of it.
2. Start the Befriend action on it. Note the turn and its Befriend points.
3. Note its points each turn. Once they pass 45, spend Influence on Add Support once.
4. Note the turn it becomes your city-state.

Measure: Befriend points per turn before and after Add Support, and turns from start to suzerain.

What you should see: it starts at 30 points and gains 2 a turn, then 3 after Add Support, so it takes about 13 turns instead of 15. A small yield reward arrives at 45 points.

If your result differs: it started at 0 because the power was hostile, or turned hostile when you settled within 5 hexes. You lost it because a rival reached 60 first; since [patch 1.4.1](#) the game shows which leaders are befriend a power and whether they are ahead of you.

In the world: trust with a new neighbor or client grows the same way, through small steady contacts, and extra effort speeds it up. Count how many small favors pass before a new neighbor starts offering favors back.

Check yourself

1. You start befriending a neutral Independent Power and add no support. How many turns until you become suzerain, if no rival gets there first? How many with Add Support from the start?
2. A neighbor has accepted three of your Endeavors. You are tempted to reject their next proposal to save Influence. What does repeated-game thinking say?
3. Two neighboring countries trade grain every year. One bans exports for a season to force a better price. What risk does the repeated-game view point to?

In the game: start a Befriend on the nearest neutral Independent Power in your first 20 turns, before you settle near it.

In the world: goodwill is built in small, repeated deals, and one public refusal can cost more than the deal was worth.

Commanders and War

In Antiquity you declare a surprise war on a Neutral neighbor. Before a shot is fired, your units lose 3 Combat Strength and your capital 9 Happiness. Your own people's support is a combat stat.

Declaring war VII

- **Formal war** needs a Hostile relationship and carries no War Support penalty.
- **Surprise war** can target anyone, but costs War Support: -5 against a Helpful leader, -4 Friendly, -3 Neutral, -2 Unfriendly.
- **Joint war**, joining an ally's war, costs no War Support.

The moment war starts, Endeavors between you are cancelled, trade stops, city-states (minor powers that cannot win) join their suzerain (the player who controls a city-state), and allies must choose a side. Neither side can offer peace for 10 turns.

WAR SUPPORT AND WAR WEARINESS

War Support measures how far your people back the war. You can raise it by spending Influence (a diplomacy currency), and other leaders can back or oppose your war once each. If you have less War Support than your enemy, the gap becomes **war weariness** (unhappiness that grows the longer you fight). Each point costs your military units 1 Combat Strength, up to -20, and costs Happiness in every settlement:

Happiness lost per point, by who founded the settlement	Antiquity	Exploration	Modern
You	3	5	7
A power you are not at war with	5	7	9
A power you are at war with	7	9	11

Commanders VII

A **Commander** (a Civ VII unit that leads an army) is a support unit that cannot attack. It can **Assemble** up to 4 military units and 1 civilian into its army (more with promotions), move them as one stack, and **Deploy** them on arrival. Its commands boost units within its command radius. Commanders are the only units that gain experience and promotions, and they keep both from age to age. A defeated Commander returns after 20 turns. Fleet Commanders arrive in Exploration.

Fortified districts and capture VII

Building walls or another fortification turns a district (a specialized city tile that holds buildings) into a **fortified district**. Its strength equals the strongest unit you have trained, it strikes back at melee attackers, and it repairs itself. To capture a settlement you must take and hold the city center and every fortified district. Then you choose:

- **Keep it.** It is in Unrest for 10 turns (no buying buildings, no growth, no focus change), and you lose 4 Influence per turn per age for the rest of the age. "Per age" means the number grows in later ages.
- **Raze it.** It loses 1 district per age per turn patch 1.4.0. You lose 4 Influence per turn per age while it burns, then 8 per turn per age for the rest of the age.

Sources: War (Civ7); Commander (Civ7); Combat (Civ7); Settlement (Civ7); Patch 1.4.0 notes.

A war plan

Before	Declare formally on a Hostile leader or join an ally's war, to avoid a War Support penalty. Bank Influence.
Build	Group melee, ranged and siege units under one leveled Commander. Check your settlement limit (how many settlements you can hold before penalties) has room.
Strike	Take every fortified district of a target near your border fast; a slow siege bleeds Happiness.
Stop	Make peace once you hold what you came for.

Concept lens: your neighbor's walls look like a threat to you, and yours to them: the security dilemma. A Commander's stack of 4 beating units sent in one at a time is Lanchester's square law. War weariness (unhappiness that grows the longer you fight) pushes you toward Clausewitz's culminating point, past which advancing weakens you, so pick your stop turn before you march.

LAB · Lab: Price a surprise war

Predict first: write down the War Support gap and your capital's Happiness change after a surprise war on a Neutral leader.

1. In Antiquity (Civ VII's first age), find a leader whose relationship with you is Neutral. Save the game.
2. Note your capital's Happiness per turn.
3. Declare a surprise war on that leader. Open that leader's diplomacy menu and note the War Support for this war. If the screen shows only the balance between you, note the balance.
4. Next turn, note your capital's Happiness again. Then reload the save.

Measure: the War Support numbers or balance the screen shows, and the change in your capital's Happiness per turn.

What you should see: you start 3 War Support behind. That gap is war weariness: your capital, which you founded, loses $3 \times 3 = 9$ Happiness, and your units fight at -3 Combat Strength.

If your result differs: other leaders may back or oppose the war once each, and either side can buy War Support with Influence, so the gap moves. A Militaristic attribute point gives +1 War Support on all wars. Some leaders change it too: Harriet Tubman gets +5 on wars declared against her.

In the world: when a government starts a military operation, follow the polls on it for a few weeks. Ask whether the way it began, by surprise or after a long public dispute, shaped support. That is the real version of War Support.

Check yourself

1. In Antiquity you declare a surprise war on a Friendly leader. Their War Support stays at 0 and nothing else changes yours. What do your units and your own settlements lose?
2. Your army has taken two cities, but war weariness grows every turn. Which idea from Clausewitz warns you, and what should you do?
3. A government starts a war its voters did not back. Six months in, protests grow. Why does Civ VII treat a problem like this as military as well as political?

In the game: prefer formal or joint wars. A surprise war on a Helpful leader starts you 5 War Support behind.

In the world: public support is part of military power, and a war that loses it weakens every week.

Triumphs, Dedications and Winning

Halfway through Exploration you lead the world in Tourism (cultural pull that wins a Culture victory) and are nowhere near winning, because a Cultural victory needs six times second place. Late in Modern, 1.25 times will do.

Triumphs and Dedications VII patch 1.4.0

Triumphs (Civ VII goals within an age) replaced the old Legacy Paths in patch 1.4.0. They are goals in six themes: Militaristic, Cultural, Scientific, Economic, Diplomatic and Expansionist. The Default set has about 30 per age.

- **Minor Triumphs** are easier and give an instant bonus for the rest of the age, such as a promotion for all Commanders (Civ VII units that lead armies) or extra War Support. In the Modern Age (Civ VII's third age) they also add victory points.
- **Major Triumphs** take more work and unlock Dedications (bonuses picked when a new age or era begins) for the next age. They exist in Antiquity (Civ VII's first age) and Exploration only. Examples: Wonders (one-of-a-kind buildings only one civ can own) of the Ancient World (7 wonders) and Four Corners of the World (8 settlements) in Antiquity, and in Exploration Treasure Fleet (800 GDP from Treasure Convoys, the units that carry treasure from your settlements across the ocean back to your home continent).

Dedications are bonuses you pick at each age transition, 3 at a time. Five are always available. More unlock from Major Triumphs, leader level-ups and handling the last crisis well.

Victories VII patch 1.4.0

Each victory type has a score, and you can build it from Antiquity on.

Victory	Score	How you win
Military	Dominion	Lead second place by the multiple below, then hold it for a 5-turn countdown
Cultural	Tourism	
Economic	GDP (Treasure Convoys add to it)	
Science	Innovation	Reach 100 points, then keep an active Launch Pad for 5 turns. No comparison with rivals.
Domination	none	Eliminate every rival
Score	overall	If no one has won when Modern reaches 100%, the highest score wins

Window (Age Progress)	Tier	Lead over 2nd place
Exploration 50–80%	Transcendent	6×
Exploration 80% to Modern 20%	Crushing	4×
Modern 20–40%	Decisive	3×
Modern 40–60%	Momentous	2×
Modern 60–80%	Substantive	1.5×
Modern 80–100%	Narrow	1.25×

If a rival pushes you below the threshold during the countdown, it pauses. It does not reset, and it resumes when you regain the lead. A score win is decided first by countdown turns, then by placing across victories, then by Major Triumphs completed. These rules are unchanged in patch 1.5.0.

Sources: Patch 1.4.0 notes; Triumph (Civ7); Victory (Civ7); List of triumphs in Civ7.

The table rewards a huge early lead and accepts a small late one. Pick one or two scores by the end of Antiquity, feed them through Exploration, and be ready to close when the multiple comes within reach.

Concept lens: choosing a victory score and lining up every age behind it is grand strategy: ends, ways and means. **Full lesson** · Cultural victory scored in Tourism is soft power counted in points. **Soft power**

LAB · Lab: Can you move one victory score in 15 turns?

Predict first: write down which score, Dominion, Tourism or GDP, you can raise most against second place in 15 turns.

1. Open the Victory screen from the Trophy / Age Progress button. For Dominion, Tourism and GDP, write your score and second place's. If the screen shows only your standing, write your rank and how far the bar shows you ahead or behind.
2. Pick one score to feed. Dominion comes from the settlements you control. Tourism comes from Wonders, Natural Wonders and Celebrations (Civ VII bonus periods from surplus Happiness), among other things. GDP comes each turn from slotted Resources and Gold buildings in your cities.
3. Play 15 turns feeding that score, for example by founding a settlement or finishing a Wonder.
4. Read the Victory screen again.

Measure: for each score, your total divided by second place's, before and after.

What you should see: the ratio for the score you fed should have climbed more than the others. Compare it with the 6× bar that applies from 50% of Exploration to see how far off an early win is.

If your result differs: second place fed the same score, so your ratio held still. Some ways to earn points open only in later ages, so a score can be slow to move in Antiquity. A captured Wonder built by another leader is worth less Tourism.

In the world: market share works the same way, since a firm's sales mean little without its rivals'. Next time a news story gives two rival brands' sales, divide one by the other and ask what one big launch would do to the ratio.

Check yourself

1. At 50% of the Modern Age your Tourism is 300 and second place has 140. Does a Cultural countdown start, and what would pause it?
2. Halfway through Antiquity you lead in Dominion, are third in Tourism and last in GDP. How does grand strategy (ends, ways, means) shape your next two ages?
3. Two shops compete for the same customers. Shop A sells 1,000 a week and Shop B 900. Why should A's owner worry more than the totals suggest?

In the game: at the start of each age, open the Victory screen, find your closest race with second place, and pick Triumphs that feed it.

In the world: in a contest judged against a rival, the size of your lead matters more than your raw total.

Your First Civ VII Game

Turn 3 of your first game, and you have spent twenty minutes comparing first builds. Firaxis wrote a script for this moment. Follow it, accept good enough, and save your attention for learning.

Firaxis's recommended setup VII

Setting	Choice
Leader and civ	Hatshepsut, Egypt
Starting age	Antiquity
Difficulty	Scribe (the lowest)
Speed	Standard
Map	Continents Plus, Small
Tutorials	On

Firaxis's opening, from its launch-era beginner's guide:

T1	Found your capital where your Founder stands.
First build	A Scout (a fast unit for exploring), before the Medjay (Egypt's unique unit). Explore and use the Scout's Search action.
First tech	Sailing.

First building	A Granary on a tile next to a Navigable River if you can. Queue a Medjay after it.
By T10	The civic Arrival of Hapi, which boosts Food on Navigable Rivers.
Government	Oligarchy.

Then spread your towns along Navigable Rivers. Patches have changed many numbers since launch, so treat this as a learning script.

Source: Civilization VII beginner's guide (2K).

Beginner picks after patch 1.4

Community consensus (CivFanatics thread, May–June 2026, after the 1.4.0 update):

- **Easy to start with:** Hatshepsut with Egypt; Tecumseh, with whom Independent Powers (Civ VII minor factions you can befriend or fight) start friendly; Harriet Tubman with the Maya; Trung Trac; Augustus; Himiko; Benjamin Franklin.
- **Leave for later:** Alexander, Napoleon, Ibn Battuta and Confucius as leaders; Carthage and Aksum as civs. Posters cite constant wars (Napoleon), Specialist (a citizen working a building instead of a tile) upkeep that can cripple a careless player (Confucius) and a low settlement limit (how many settlements you can hold before penalties) (Aksum).

Source: CivFanatics: most and least beginner-friendly civs and leaders.

DO

- Start a Befriend on a nearby neutral Independent Power early.
- Stay at or under your settlement limit of 3 until you see what Happiness can bear.

AVOID

- Founding towns within 5 hexes of neutral Independent Powers.
- Surprise wars on Friendly or Helpful leaders.

Difficulty and mods

VII Since [patch 1.2.2](#) you can set a custom AI difficulty, and mods install through the Steam Workshop. Play your first game unmodded so what you learn matches this book.

Concept lens: a first game has more choices than you can weigh. Following a fixed opening and accepting "good enough" is satisficing, Herbert Simon's answer to bounded rationality. [Full lesson](#) · To improve after it, see [deliberate practice](#).

LAB · Lab: Does the script beat improvising?

Predict first: write down which run will have more Science plus Culture per turn at turn 30, the scripted one or the free one, and which will take more real minutes.

1. Start the recommended setup and save on turn 1.
2. Play to turn 30 following the opening above exactly. Note your Science and Culture per turn, your number of settlements, and the real minutes you spent.
3. Reload the turn 1 save and play to turn 30 choosing freely. Note the same numbers.

Measure: Science and Culture per turn, settlements and real minutes, for each run.

What you should see: satisficing predicts in-game numbers that are close and a scripted run that is quicker to play. A good-enough plan gets most of the result for much less effort.

If your result differs: a clearly better free run may mean your Civ VI patterns still apply, or the map favored another opening. A lagging scripted run may reflect patches since launch, which changed costs, so a timing such as Arrival of Hapi by turn 10 may no longer hold.

In the world: cook a new dish once from a recipe and once freely, and time both. Then ask whether each result was good enough, and what the recipe freed you to notice.

Check yourself

1. You play Hatshepsut on Scribe and own 2 settlements in Antiquity (Civ VII's first age). A neutral Independent Power sits 4 hexes from your best town site. What do you do first?
2. On turn 3 you spend twenty minutes comparing every possible first build. What would Herbert Simon suggest, and why?
3. A new university student faces dozens of course, club and schedule choices in the first week. How does satisficing help?

In the game: play Hatshepsut on Scribe with tutorials on, and finish one full Antiquity age before you change anything.

In the world: when everything is new, a script you trust frees your attention to learn what matters.

What's Coming

About half of Civ VII's Steam reviewers recommend it, and Civ VI still draws about three times as many players. A fourth age and a space expansion are due in 2027.

Announced for 2027 VII

- **Earthrise**, the first paid expansion, announced 5 September 2026 for 2027. It adds orbital missions in the Modern Age (Civ VII's third age), a space agency in the Atomic Age, units and technologies that change terrain, disasters that worsen as temperatures rise, and tools to reverse the warming.
- **Arc of Tomorrow**, a free update, also due in 2027. It adds a fourth age, the **Atomic Age**, covering roughly the 1950s to the 2050s.
- Patch 1.4.1's notes also mention a planned harder "Collapse Mode" age transition, with no details or date.

Once Arc of Tomorrow is out, check the patch notes before relying on any number in this part.

Where the game stands in October 2026 VII VI

Civ VII launched on 11 February 2025 to a Metacritic score of 79. On Steam about 51% of its roughly 30,000 English-language user reviews are positive (Mixed). In September 2026 it averaged about 10,500 players at once on Steam. Civ VI, released in 2016, averaged about 28,000–33,000, with monthly peaks of 48,000–54,000. Many players have stayed with Civ VI, one reason this book teaches both.

Sources: CivFanatics: Earthrise announcement; Patch 1.4.1 notes; Steam store page; SteamCharts Civ VII; SteamCharts Civ VI; Wikipedia: Civilization VII.

Concept lens: players who stay with the game they already know, and its mods and friends, show how an installed base can hold a market. **Path dependence**

In the game: read the patch notes before each new game; Civ VII's rules are still moving.

In the world: a better product also has to beat the cost of switching to it.

PART 8

Multiplayer: Game Theory for Real

Against people, every promise can be a bluff and every border a standoff. This part covers how online Civ works and the four ideas from game theory that explain it.

Playing Against People

Your friend promises peace in chat, then parks three Knights on your border. People bluff, remember and plan around you, and game theory was built to explain them.

Turn modes VI

The host picks one of two turn modes in the lobby.

- **Simultaneous.** All human players move at the same time. AI players still move one after another.
- **Dynamic.** Players at peace move at the same time. Players at war with each other take turns in order, so each sees the other's moves before replying.

Under Simultaneous turns, whoever clicks first acts first. The classic trick is the **double move**. You move units at the very end of one turn, then attack at the very start of the next, before the defender can react. The community's competitive league, the Civilization Players League (CPL), plays free-for-all on Simultaneous at Online speed, which ends at turn 250.

Sources: CivFanatics: Simultaneous/Dynamic turn mode; GameSkinny: Civ 6 multiplayer details; Better Multiplayer Turn Modes (Steam Workshop); CivFanatics: double turning; CPL in-game rules

Lobbies, mods and hotseat VI

- **Internet and LAN** games happen live in a lobby. **Play By Cloud** is turn-by-turn: you get a notice when it is your turn, play it, and submit. **Hotseat** means several players share one PC and take turns at it.
- **Better Balanced Game (BBG)** is the community balance mod for competitive play. Versions change often. It is on the Steam Workshop and CivFanatics.
- **Etiquette, community consensus (CPL rules and forums).** Do not quit without the host's agreement. Do not throw the game by letting yourself be conquered. CPL free-for-all also ban trading Gold and strategic resources and ban military alliances. A **relobby**, restarting from a save after a crash, needs at least two-thirds of the other players to agree, and everyone must repeat their important moves.

Sources: CPL in-game rules; Steam: Play By Cloud; Co-Optimus: Civ VI (PC hotseat)

Civ VII multiplayer VII

Civ VII has crossplay across PC and consoles if you link a 2K account. Since patch [patch 1.2.1](#), every age allows the same number of human players: 4 on a Tiny map, 6 on Small and 8 on Standard. A multiplayer game holds at most 8 players, AI included. The original Switch supports only Tiny and Small maps, so crossplay games with its players use those sizes. A match can cover a single age instead of all three. Hotseat arrived in [patch 1.4.1](#) on 23 June 2026.

Sources: Civilization VII: Crossplay and Progression; launch press release; Patch 1.2.1 notes; Patch 1.2.2 notes; CivFanatics: update 1.4.1

GAME THEORY

Nash equilibrium

Until 1967 Swedes drove on the left, though every neighbor drove on the right. In a 1955 referendum, 83% voted to keep it that way. Parliament switched anyway. On 3 September 1967 every vehicle on the road had to stop at 4:50 a.m., cross to the right, stop again and wait for 5:00. No driver could switch alone: among cars on the left, the left is the only safe side. The whole country moved at once.

Nash equilibrium: a set of choices, one per player, where no player can do better by changing only their own choice.

HOW THE GAME MAPS IT

In the game	In the world
Two neighbors who both keep a defensive army and never attack	A stable standoff between rivals
A lobby's "standard" settings and banned civs	Conventions everyone follows because others do

WHERE THE MAP BREAKS

- ✗ An equilibrium can be bad for everyone, yet no one gains by leaving it alone.
- ✗ Many games have several equilibria. Left and right both work for driving, and the theory cannot say which one a country lands on.

READ NEXT

- Accessible: the INFORMS biographical profile of John F. Nash Jr.
- Primary: Nash (1950), two pages long.

John F. Nash Jr., "Equilibrium Points in n-Person Games," *Proceedings of the National Academy of Sciences* 36(1) (1950); "Non-Cooperative Games," *Annals of Mathematics* 54(2) (1951).

GAME THEORY

Prisoner's dilemma

In 1950 two mathematicians at the RAND Corporation, Merrill Flood and Melvin Dresher, built a simple game. Whatever the other player did, each did better by betraying, yet two betrayers ended up worse off than two cooperators. They asked two colleagues, the economist Armen Alchian and the mathematician John Williams, to play it 100 times. The pair often cooperated. Albert Tucker, a Princeton mathematician, later told the game as a story about two prisoners, and the name stuck.

Prisoner's dilemma: a game where each player does better by betraying, whatever the other does, yet both end up worse off than if both had cooperated.

HOW THE GAME MAPS IT

In the game	In the world
Two players who both build armies instead of Campuses	An arms race
Everyone burning Coal for Production while sea levels rise (Gathering Storm)	Carbon emissions and climate change

WHERE THE MAP BREAKS

- ✗ The textbook dilemma is played once. A Civ game lasts hundreds of turns, and repetition makes cooperation pay (**repeated games**).
- ✗ Civ has more than two players and only one winner, so helping a partner can still lose you the game.

READ NEXT

- Accessible: William Poundstone, *Prisoner's Dilemma* (1992).
- Reference: the Stanford Encyclopedia of Philosophy entry "Prisoner's Dilemma."

Merrill Flood and Melvin Dresher, experiments at RAND (1950); the prisoners story and name credited to Albert W. Tucker (1950).

GAME THEORY

Credible commitment and cheap talk

In February 1519 Hernán Cortés sailed from Cuba for Mexico with about 11 ships and 500 men, defying a governor who had cancelled his expedition. That summer, on the coast at Veracruz, he scuttled his ships. Now no one could sail home, and retreat was off the table. Thomas Schelling, an economist who studied bargaining, later put the logic in a line: "to burn bridges behind one may suffice to undo an opponent".

Credible commitment and cheap talk: a promise or threat works only if others believe it. Talk that costs nothing is cheap talk; a commitment is credible when backing out would cost you.

HOW THE GAME MAPS IT

In the game	In the world
"I won't attack you" in chat	Cheap talk
Units parked on a border you said you would defend	A tripwire force that makes a threat believable

WHERE THE MAP BREAKS

- ✗ In Civ, the rules enforce some deals for you. Between real states, nobody enforces anything.
- ✗ Your lobby reputation lasts a few games. A state's reputation can last generations.

READ NEXT

- Primary and readable: Schelling, *The Strategy of Conflict* (1960), chapters 2 and 3.

Thomas C. Schelling, *The Strategy of Conflict* (1960).

DECISION SCIENCE

Expected value and risk

In 1713 the mathematician Nicolas Bernoulli posed a puzzle in a letter. Toss a coin until it lands heads; the prize doubles with every tails. Each possible run adds the same amount to the average prize, and the runs never end, so the expected value is infinite. Yet in 1738 his cousin Daniel wrote that "any fairly reasonable man would sell his chance, with great pleasure, for twenty ducats" (in translation). His answer was that each extra ducat matters less the more you have.

Expected value and risk: expected value is each outcome's value times its probability, added up: the average payoff over many tries. Risk is how widely outcomes spread around it.

HOW THE GAME MAPS IT

In the game	In the world
An attack with a 60% chance to take a capital	A risky investment
Keeping Gold to buy units in an emergency	Insurance: paying a little to avoid ruin

WHERE THE MAP BREAKS

- ✗ Civ shows you predicted combat results. Real probabilities are guesses.
- ✗ In a game you can play again. Real ruin is final, so people rightly avoid bets with a good average and a small chance of disaster.

READ NEXT

- Accessible: Peter Bernstein, *Against the Gods* (1996), chapter 6.
- Primary: Bernoulli (1738), in the 1954 English translation.

Daniel Bernoulli, "Specimen theoriae novae de mensura sortis" (1738); John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (1944).

LAB · Lab: Can you trust a promise in chat?

Predict first: before turn 1, each player writes down whose Science per turn will be higher at turn 50, and whether each turn-50 promise will be kept by turn 100.

1. Play a two-player Civ VI game with a friend on a small map, Simultaneous turns.
2. Before turn 1, each of you writes down privately: "army" or "economy" for the first 50 turns. Reveal at turn 50.
3. At turn 50, each makes one promise in chat. Write down whether you believe it, and why.

Measure: both players' Science per turn at turn 50, and whether each promise was kept by turn 100.

What you should see: if both chose "army," both have less Science than if both had chosen "economy." Promises backed by units on the border are kept more often than promises in chat.

If your result differs: one "army" player may have taken a city early, which turns a military lead into Science. A promise broken despite units on the border may mean the other player gambled that a double move under Simultaneous turns would land before you could react.

In the world: watch two rival petrol stations on one road for a week. Do their prices move together, and does either one break the pattern alone? That is an equilibrium you can see from the pavement.

DO

- End every turn as if your opponent moves first next turn.
- Ask for the lobby's mods, speed and rules before you join.
- Back promises with something that costs you to break.

AVOID

- Trusting chat promises from strangers.
- Quitting a game you are losing without the host's agreement.
- Fighting a neighbor while the leader runs away with the game.

Check yourself

1. Under Simultaneous turns you end a turn with a damaged unit two tiles from an enemy army. What can happen before you can react, and how do you prevent it?
2. Two neighbors both keep Walls and Archers and never attack, though both would rather skip the cost. Neither gains by dropping defenses alone. Which concept is this, and is it good for both?
3. A shop owner tells a rival she will never cut her prices. The rival does not believe her. What would make the promise credible?

In the game: under Simultaneous turns, never leave anything weak in reach at end of turn.

In the world: a promise is worth what it would cost the promiser to break it.

PART 9

Reference

Look things up here: every term in the book, the mistakes almost every new player makes, one-page checklists, the best places to keep learning, and a short history of the earlier games.

Glossary

Game terms first, then the real-world concepts. Concept entries link to their full lesson.

Game terms

1UPT

"One unit per tile." From Civ V onward, only one military unit can stand on a hex. [VI](#) Corps and Armies merge two or three units into one, and a tile can also hold one civilian, one support and one religious unit. [VII](#) Commanders pack units together instead.

4X

Explore, expand, exploit, exterminate: the four activities of empire-building strategy games.

Adjacency bonus

[VI](#) Extra yield a district gets from what sits next to it. [VII](#) Buildings get adjacency bonuses from nearby features instead. [Districts](#)

Age

[VII](#) One of the three chapters of a game (Antiquity, Exploration, Modern), each ending in a transition.

[VI](#) "Golden" and "Dark" Ages are something different: era-by-era bonuses earned through Era Score. [Ages and Crises](#)

Agenda

[VI](#) What an AI leader likes and dislikes. Each has one visible agenda and a hidden one, and Gathering Storm adds a second hidden one later. Diplomatic visibility reveals the hidden ones.

Amenities

[VI](#) City-level contentment from luxuries, entertainment and some policies. Too few slows growth and cuts yields. [Housing and Amenities](#)

Apex civ

[VII](#) A civilization in the age it was designed for.

Barbarians

[VI](#) Hostile units that spawn from camps in unclaimed land. [Barbarians](#)

Beeline

Researching straight toward one tech or civic, skipping everything not on the path.

Boost (Eureka / Inspiration)

[VI](#) Completing an in-game task cuts the cost of a related tech (Eureka) or civic (Inspiration) by 40%. Civ VII has no Eureka or Inspirations. [Tech and Civics](#)

Builder

[VI](#) Civilian unit with limited charges that builds tile improvements and harvests resources. Civ VII has no Builders. (Civ IV and V called this unit a Worker.)

Casus belli

A justification for war. [VI](#) Declaring war with one reduces the diplomatic penalty. [Why Wars Start](#)

Celebration

[VII](#) A period of bonuses triggered by enough excess Happiness. [Growth and Happiness](#)

Chop

[VI](#) Removing Woods with a Builder for a one-time lump of Production. Removing Rainforest (Food and Production) or Marsh (Food) also pays out. [Builders and Chopping](#)

City Center

The tile the city is founded on. [VI](#) It always yields at least 2 Food and 1 Production.

City-state

A minor power that can't win but gives bonuses to whoever has influence over it. **VI** You compete with Envoys. **VII** Independent Powers become city-states when you befriend them. [City-States](#)

Civic

VI **VII** A node on the culture tree. Civics unlock policies, some buildings and, in Civ VI, governments.

Commander

VII A leader unit that carries several units as one army and gains experience across ages.

[Commanders and War](#)

Corps / Army

VI Two or three identical units merged into one stronger unit. [Timing Pushes](#)

Crisis

VII A forced challenge late in an age (plague, invasion, revolt) that makes you slot crisis policies.

Dedication

VII A bonus you pick at an age transition. Five are always on offer, and Triumphs unlock more [patch 1.4.0](#). **VI** The same word names the bonuses you choose when entering a Golden, Dark or Heroic Age.

Diplomatic Favor

VI A currency earned from your government, alliances and city-states, spent in the World Congress. [Diplomacy](#)

District

VI A specialized tile of a city (Campus, Commercial Hub, Holy Site and so on) that holds its buildings.

Envoy

VI A token you send to a city-state. More envoys bring more bonuses, and the most envoys (at least 3) makes you suzerain.

Era Score

VI Points from historic moments. It decides whether your next era is Dark, Normal, Golden or Heroic. [Loyalty and Ages](#)

Fog of war

The parts of the map you can't currently see. In strategy theory, the uncertainty of war in general. [Clausewitz](#)

Fortify

VI A land unit that stays put digs in: +3 defense after one turn, +6 after two or more. [Combat](#)

Golden Age

VI An era with bonus loyalty and a strong dedication, earned with high Era Score.

Goody hut

VI A tribal village. The first unit to enter gets a random reward, which is why early scouting pays.

Government Plaza

VI A one-per-empire district that unlocks special buildings and boosts neighboring districts.

Governor

VI A named official you assign to a city for its bonuses. [Governors](#)

Great Person

A unique unit (scientist, general, merchant and others) earned with Great Person points, used once for a big effect. [Wonders and Great People](#)

Grievances

VI A running record of who has wronged whom. It shapes AI attitudes and how much Favor war costs you.

Housing

VI The soft population cap of a city. Growth slows as you approach it.

Improvement

A farm, mine, pasture or similar built on a tile to raise its yield.

Independent Power

VII A minor faction on the map. It can be hostile, neutral, or befriended into a city-state.

Influence

VII The diplomacy currency: treaties, endeavors, sanctions, and befriending Independent Powers. [Influence](#)

Lens

A map overlay that shows one kind of information, such as settler spots, appeal, loyalty or religion.

Loyalty

VI How firmly a city belongs to you. At zero it rebels and becomes a free city.

Luxury resource

VI A resource that gives amenities to your cities when improved. Extra copies are good trade goods.

Mastery

VII An optional second research of a tech or civic for an extra bonus.

Overbuilding

VII Replacing an outdated building with a current-age one on the same tile. [Quarters](#)

Pantheon

VI An early faith bonus you pick before founding a religion.

Policy card

VI A swappable bonus slotted into your government. Swaps are free when a civic finishes.

VII Civ VII calls them social policies.

Quarter

VII An urban tile holding two current-age buildings. Two unique buildings make a Unique Quarter.

Rush

An early attack built before the opponent can defend. It also means paying gold or faith to finish something instantly.

Settlement limit

VII The number of towns and cities you can hold before each extra one costs Happiness in every settlement. [Settlements](#)

Specialist

A citizen assigned to a building or district instead of a tile.

Suzerain

The player who controls a city-state and gets its bonus. **VI** The civ with at least 3 envoys and more than anyone else; it can pay Gold to levy the city-state's army. **VII** The first player to finish befriending an Independent Power.

Tall / wide

Few large cities versus many cities. **VI** Community consensus favors wide. **VII** The settlement limit is the brake.

Real-world concepts

Each concept has a full lesson with its origin, how the game models it, where the model breaks, and an experiment. This list is the short version.

"War made the state"

The idea that modern states were built by the need to fight wars. Rulers who wanted armies had to tax, borrow and count their people, and the offices they built to do that became the state.

Agglomeration economies and clusters

Firms and workers are more productive near each other, thanks to shared suppliers, a shared pool of skilled labor and ideas that spread by contact. Concentration then feeds itself.

Timing push

An attack timed to a short window when your units outclass the enemy's. [Timing Pushes](#)

Tourism

Cultural pressure on other civs, used for the Culture victory. [Culture Victory](#)

Town

VII A settlement that turns production into Gold and picks a focus. It can be upgraded to a city.

Trade route

A Trader unit's repeating route between two cities, giving yields to one or both ends. [Trade Routes](#)

Triumph

VII A goal within an age. Minor Triumphs give instant rewards, and Major ones unlock Dedications. It replaced Legacy Paths in patch 1.4.0.

Unique unit / building

A civ's special version of a unit or building.

War weariness

Growing unhappiness or penalties the longer and harder you fight.

World Congress

VI A recurring global vote on resolutions, paid for with Diplomatic Favor.

Yield

What a tile, building or citizen produces: ● **Food**, ● **Production**, ● **Gold**, ● **Science**, ● **Culture**, ● **Faith**.

Zone of control

VI The tiles next to a military unit, where enemy units must stop moving.

All models are wrong

Every model simplifies, so every model is false somewhere. The useful question is whether it is wrong in ways that matter for what you are using it to do.

Anarchy and the security dilemma

With no world government to call for help (anarchy), each state arms to feel safe. Its neighbors cannot tell defense from preparation to attack, so they arm too. Everyone ends up less safe than before, though nobody wanted a fight.

Arrow's impossibility theorem

With three or more options, no ranked voting rule can always turn individual rankings into a group ranking while meeting four mild conditions together: any rankings allowed, unanimity respected, irrelevant options ignored, and no dictator. Every rule breaks at least one.

Balancing vs bandwagoning

States usually ally against the state they fear most (balancing); joining it (bandwagoning) is rarer. Fear depends on power, nearness, offensive capability and apparent intentions: a balance of threat. Weak, isolated states bandwagon more often.

Bounded rationality and satisficing

Real decision-makers have limited information, time and computing power. Instead of finding the best option, they set an aspiration level and take the first option that clears it. Simon called this "satisficing". How well it works depends on the environment as much as the mind.

Collapse of complex societies

Societies solve problems by adding complexity: more officials, soldiers and rules. Each new layer costs more and returns less. When returns fall low enough, a society can suddenly shed much of its complexity. That shedding is collapse.

Comparative advantage

Two parties both gain from trade when each makes what it gives up least to make, even if one of them is better at everything.

Complex interdependence

When states are tied by many channels (governments, firms, people) and force between them is too costly, power comes from uneven dependence. Whoever would suffer less if the ties were cut holds the leverage.

Compounding

A quantity compounds when each period's growth is added to the base that grows the next period. Steady percentage growth doubles the quantity about every 70 divided by the rate in percent. Small early gains therefore matter far more than equal gains later.

Creative destruction

Capitalism grows as new products, methods and firms replace old ones. The new makes the old worthless, so growth and destruction are one process.

Credible commitment and cheap talk

A promise or threat only changes what others do if they believe you will carry it out. Words that cost nothing to say are cheap talk. Commitments become credible when backing out would cost you.

Deliberate practice

Effortful practice designed to fix one specific weakness, just beyond your current ability, with fast feedback, usually guided by a teacher. Ericsson and colleagues argued that accumulated hours of it, more than talent, explain expert performance.

Deterrence and compellence

Deterrence is a threat that stops someone from starting something ("attack me and you will pay"). Compellence is a threat that makes someone stop or do something ("leave, or else"). Both work only if the other side believes you can and will carry it out.

Diffusion of innovations

New ideas spread along an S-shaped curve: slowly among a few early adopters, fast through the majority, then slowly among the last holdouts. Speed depends on how much better the idea is and how easily people can see and try it.

Diminishing marginal returns

Hold the other inputs fixed and keep adding one input: each extra unit eventually adds less output than the one before. Total output still rises, just more slowly. The law says nothing about growing all inputs together.

Dirty hands

Sometimes the right political act is also a wrong one, so the leader who does it is guilty as well as right. Walzer says a good leader feels that guilt, and we trust them because they do.

Division of labor

Splitting work into specialized tasks raises output per worker through skill, saved switching time and better tools. Smith's limit: specialization pays only when the market is big enough to take the output.

Ethic of conviction

Doing what you believe is right and leaving the results to God or fate. Weber set it against the ethic of responsibility and said politics needs both.

Ethic of responsibility

Judging an act by its foreseeable results and answering for them. Weber's other ethic of politics, which he said must work together with the ethic of conviction.

Exit, voice and loyalty

When a firm, party or state declines, members can exit (leave) or use voice (complain, organize, vote). Loyalty delays exit and gives voice time to work. Easy exit can drain voice, so a harder exit sometimes helps an organization recover.

Exogenous and endogenous growth

In Solow's model, investing more lifts income per head to a higher level, but the faster growth fades, because capital hits diminishing returns. Lasting growth per head comes from technology, which the model takes as given. Romer made technology the result of deliberate research.

Expected value and risk

The average payoff of a choice if you could make it many times: each outcome's value times its probability, added up. Risk is how widely the outcomes spread around that average.

Experiential learning cycle

Kolb describes learning as a repeating four-stage cycle: have a concrete experience, reflect on it, form an abstract idea that explains it, then test the idea by acting. Each pass changes what you notice in the next experience.

Externalities

An externality is a cost or benefit of an action that falls on people who had no part in it and is not priced. Pigou proposed taxing harmful ones and subsidizing helpful ones so that private and social costs line up.

Fog of war, friction and the culminating point

Clausewitz argued that most information in war is uncertain or wrong (now called the fog of war), that countless small problems make simple plans hard to carry out (friction), and that every attack weakens as it advances until it reaches a culminating point, after which pressing on invites defeat.

General-purpose technologies

A general-purpose technology is used across many sectors, keeps improving and makes other inventions possible: steam, electricity, computing. Its payoff comes late, because users must reorganize around it first.

Geography and development

Diamond argues that differences in domesticable plants and animals, the orientation of continents and exposure to disease, not differences between peoples, explain why some regions built states and conquered others. Critics answer that institutions and colonial history explain more than environment does.

Grand strategy (ends, ways, means)

A state's plan for using all its resources, military and civilian, to reach its most important goals over the long run. Ends are the goals, means are the resources, and ways are how you turn one into the other.

Hard question

The box in many lessons where winning and doing right pull apart: a real case, the strongest honest argument on each side, and a question back to you. The book never gives the answer.

Heartland and rimland

Mackinder argued that whoever holds inner Eurasia (the Heartland), safe from sea power, can dominate the world. Spykman replied that the prize is the coastal belt around it (the Rimland), where most people and industry are.

Imagined communities

A nation is an imagined political community. Its members will never meet most of the others, yet feel they are one people. Anderson credits print capitalism, mass-printed books and newspapers in a shared language, with spreading that feeling.

Imperial overstretch

When a great power's military and territorial commitments grow faster than the economy that pays for them, the power declines.

Inclusive and extractive institutions

Inclusive institutions spread political power and protect property for most people, which rewards investment and lets new firms replace old ones. Extractive institutions concentrate power and income in an elite that blocks change. The authors argue extractive growth does not last.

Information asymmetry

When one side of a deal knows more about quality than the other, the uninformed side offers an average price, good sellers withdraw and average quality falls, sometimes until the market fails. Inspection, warranties and signals exist to close the gap.

Institutions: the rules of the game

Institutions are the rules people make to shape how they deal with each other: laws and constitutions, unwritten norms, and how both are enforced. Organizations are the players; institutions are the rules. Rules change slowly because those who gain from them defend them.

Lanchester's laws

Simple equations for how fast two forces wear each other down. When every soldier can fire at any enemy (the square law), fighting strength grows with the square of numbers, so a bigger force wins by far more than its head start.

Learning by doing

Productivity rises with experience: the more of something an economy has made, the cheaper the next unit. Arrow treated this as a source of growth, because what one producer learns spills over to others.

Marginal analysis

Decide by comparing the extra benefit of one more unit with its extra cost, not by looking at averages or totals. Keep adding while the extra benefit beats the extra cost.

Monopoly of legitimate violence

Weber defines the state by its means, as a community that successfully claims the monopoly of the legitimate use of physical force within a territory. That legitimacy can rest on tradition, on a leader's charisma or on legal rules.

Nash equilibrium

A set of choices, one per player, where no player can do better by changing only their own choice. Everyone is making their best reply to everyone else.

Network spread of religion

Religions grow mainly through existing social ties such as family, friends and trading partners; mass preaching matters less. A steady growth rate of about 40% per decade, compounded for centuries, is enough to turn a small sect into a majority.

Offensive realism

Mearsheimer argued that because states can never be sure of others' intentions, great powers try to gain as much power as they can, ideally becoming the dominant power in their region. In this view, only the strongest are safe.

Opportunity cost

The cost of a choice is the value of the best alternative you gave up. It applies even when no money changes hands: every tile, build and research pick has one.

Path dependence

When returns increase with adoption, small early events can lock a system onto one path, and switching later is costly even if another path would have been better. Where you end up depends on the order things happened, not only on the final payoffs.

Prisoner's dilemma

A game where each player does better by betraying, whatever the other does, yet both end up worse off than if both had cooperated.

Realpolitik

Politics follows the distribution of real power the way nature follows physics. Whoever holds actual social force rules, and ideals succeed only when force backs them. Rochau, a liberal, meant it as advice about means; he kept his liberal goals.

Repeated games and the evolution of cooperation

When the same players face a prisoner's dilemma again and again, with no known last round, cooperation can last if they reciprocate: start nice, punish a betrayal once, forgive, stay predictable. The future must matter enough to outweigh a one-time cheat.

Revolution in military affairs

A revolution in military affairs (RMA) is a jump in how war is fought, when new technology combines with new organization and doctrine so that older forces become obsolete almost at once.

Sea power

Mahan argued that national greatness rests on sea power: a strong navy, merchant shipping, overseas bases and control of key sea lanes. A navy should seek command of the sea by defeating the enemy's main battle fleet.

Soft power

The ability to get others to want what you want, through the appeal of your culture, your political values and your policies, instead of through force or payment.

Stationary vs roving bandit

A roving bandit takes everything and moves on, so nobody invests. A bandit who settles and rules gains from his subjects' prosperity, so he taxes instead of looting and supplies order. Both sides end up better off, and secure, long rule matters.

Stocks, flows and feedback loops

A stock is an amount that has built up, like water in a bath. A flow changes it each period, like the tap and the drain. Feedback loops link the stock back to its flows: reinforcing loops amplify, balancing loops stabilize.

Structural realism and the balance of power

Waltz argued that state behavior is shaped less by leaders or ideas than by the structure of the system: no world government, and power spread unevenly. To survive, states watch relative power and tend to balance against whoever grows too strong.

Sun Tzu, *The Art of War*

An ancient Chinese manual arguing that the best victories come with the least fighting: know yourself and the enemy, shape the situation before battle, attack weakness rather than strength, and use terrain and deception.

The is-ought gap

No description of how the world is, on its own, proves what anyone ought to do. To get from facts to duties you need a value, and you should say which one.

The Malthusian trap

When population can grow faster than food, any gain in living standards is eaten by more mouths, until people are back at subsistence. Extra output raises the number of people, not income per head, until technology or institutions break the link.

The Melian Dialogue

Thucydides' account of the talks between Athens and the island of Melos in 416 BC. The Athenians argue that "the strong do what they can and the weak suffer what they must" (Crawley's translation). The Melians refused; Athens put the grown men to death and enslaved the women and children.

The OODA loop

Observe, Orient, Decide, Act: the cycle every fighter or organization runs. Boyd argued that the side which cycles faster and orients more accurately can act inside the opponent's loop, so the opponent keeps reacting to a situation that has already changed.

The principal-agent problem

When one party (the principal) relies on another (the agent) to act for it, and the agent has its own interests and better information, the principal bears agency costs: monitoring, incentives, and the losses from decisions that still go the agent's way.

The sunk-cost fallacy

A sunk cost is spending you cannot get back. A good decision ignores it and compares only future costs and benefits. The fallacy is letting past spending push you to continue, which Arkes and Blumer showed in experiments.

Time value and discounting

A benefit now is worth more than the same benefit later, because the early one can be invested and because people are impatient. Discounting converts future benefits into present value so that choices across time can be compared.

Tragedy of the commons, and governing the commons

Hardin: each user of an open resource gets the full gain of taking more but shares the cost, so the resource is overused. Ostrom: communities often prevent this with clear boundaries, local rules, monitoring, graduated sanctions and cheap ways to settle disputes.

Transfer of learning

Transfer is using something learned in one setting in a different one. "Low-road" transfer happens automatically when the new setting looks like the old one. "High-road" transfer needs you to deliberately abstract a principle and look for where else it applies.

The Mistakes Almost Everyone Makes

Most veterans made these once. Beginner threads on CivFanatics, Steam and gaming sites keep listing the same ones, and each links to the lesson that fixes it.

Civ VI VI

- 1. Too few cities.** Nothing in Civ VI directly punishes you for more cities. Reach turn 100 with three and you are playing uphill. **Districts**
- 2. Building every wonder.** Most wonders don't help your victory, and losing a race to the AI can waste much of the Production (the yield that builds units and buildings) you put in. **Wonders**
- 3. Placing districts without a plan.** A district can't be moved, so a poor spot costs you adjacency (extra yield from what sits next door) all game. **Districts**
- 4. Founding a religion you don't use.** It costs Faith (the yield spent on religion) and Holy Sites (faith districts) you could spend elsewhere. **Religion**
- 5. Ignoring barbarians.** A scout that reaches you brings a raiding party. **Barbarians**

6. **Sitting on Gold, Favor** (a currency spent in the World Congress) **or spare luxuries**. A stockpile does nothing until you spend it. Buy tiles, Builders (units that build farms, mines and the like) and Settlers (the units that found cities), and sell spare luxuries. [Time value](#)
7. **Forgetting policy cards** (swappable bonuses slotted into your government). Swap them every time a civic completes. [Governments](#)
8. **Researching before the boost**. Finish a tech before its Eureka (a 40% research discount for a related task) triggers and the discount is wasted. [Tech and Civics](#)
9. **Leaving units exposed**. A ranged unit in the open is a gift to the enemy. [Combat](#)
10. **Wars without an end goal**. Long wars pile up Grievances (a running record of who wronged whom) and war weariness (unhappiness that grows the longer you fight). [Why Wars Start](#)
11. **Switching victory type late**. Pick one by the middle of the game and commit. [Choosing Your Victory](#)
12. **Starving cities of Food**. Production feels good, but population drives everything else. [Tiles and Growth](#)
13. **No defense at all**. The AI targets weak neighbors. [Security dilemma](#)
14. **Ignoring Housing** (a city's soft population cap) **and Amenities** (city contentment from luxuries and entertainment) until growth stops. [Housing and Amenities](#)
15. **Settling on bad land to grab a resource**. Fresh water and Food come first. [Where to Settle](#)

Sources: CivFanatics "Rookie Mistakes"; CivFanatics "General advice for those starting out"; Steam discussion on going wide.

Civ VII VII

1. **Settling far past the settlement limit** (how many settlements you can hold before penalties). Each settlement over the limit costs Happiness, with no cap since [patch 1.4.0](#). [Settlements](#)
2. **Upgrading every town to a city too early**. Towns earn Gold, and once focused they send Food to your cities and add focus bonuses.
3. **Hoarding Influence**. Spend it on Independent Powers (Civ VII minor factions you can befriend or fight), treaties and endeavors. [Influence](#)
4. **Ignoring Independent Powers**. Hostile ones raid you. Befriended ones become your city-states (minor powers that cannot win).
5. **Forgetting to overbuild**. Old buildings lose their bonuses at an age change. [Quarters](#)
6. **Wasting Commanders**. Their experience carries across ages. [Commanders](#)
7. **Trying to conquer everyone early**. War Support and war weariness bite hard.
8. **Ignoring the age meter**. The crisis arrives at 70% age progress. [Ages and Crises](#)
9. **Following pre-May-2026 guides**. Patch [patch 1.4.0](#) replaced Legacy Paths with Triumphs and changed how victories work. [Winning](#)

Sources: TheGamer; GameRant; 2K patch notes 1.4.0.

One-Page Checklists

Print these or keep them on a second screen. Each line is a habit. Break it when you have a reason.

Tip First game of Civ VI? Use only the every-turn list. The every-era list uses ideas from Parts 2 to 5, such as Era Score (points for historic moments that set your next era) and trade routes, so add it once you have read those. Until then, "my victory" just means your turn-60 target.

Civ VI: every turn VI

- Did a civic finish? Re-check policy cards (swappable bonuses slotted into your government).
- Can a Eureka (a 40% research discount for a related task) **or Inspiration** (a 40% civic discount for a related task) be triggered before I research this?

- Is any city building something that no longer serves my victory?
- Is any city close to its housing cap or short of amenities?
- Is gold piling up? Buy a tile, a Builder (a unit that builds farms, mines and the like) or a Settler (the unit that founds a city), or patronize a Great Person (a famous figure you recruit for one big effect).
- Are any units standing in the open next to an enemy?

Civ VI: every era VI

- Is my victory type still the right one? **Pivot rules**
- Is my Era Score (points for historic moments that set your next era) on track for a Golden Age (a bonus era earned with high Era Score), or at least not Dark?
- Who is the runaway AI, and who is weak next to me?
- Do I need walls, or a few modern units to stop looking like prey?
- Are my trade routes full?

Civ VII: every turn VII

- Is Influence piling up? Befriend an Independent Power (a Civ VII minor faction you can befriend or fight) or sign a treaty.
- Is any town ready to pick a focus (7 population)?
- Am I over the settlement limit (how many settlements you can hold before penalties), and is the happiness cost worth it?
- Is a growth event better spent on a new tile or a specialist?

Civ VII: every age VII

- Before 70% age progress: get ready for the crisis policies.
- Which Triumphs can I still finish this age?
- Which civ do I want next, or do I keep this one?
- Which buildings will I overbuild first next age?

Where to Keep Learning

The best free sources for each game, the mods worth installing, and the original works behind every concept in this book.

Guides and communities

Source	Game	Best for
2K official beginner's guide and official glossary	VII	Firaxis's own first-game advice and definitions
2K patch notes	VII	Checking whether a guide is still current
CivFanatics forums	VI VII	Strategy threads, game-data digging, mods
CivFanatics acronyms and terms	VI	Decoding forum shorthand
Civilization wiki (fandom)	All	Exact numbers, tables, formulas
Zigzagzigal's Civ Summaries	VI	Short guides to every civ
PotatoMcWhiskey, "Civ 6 Overexplained" (example episode)	VI	Long, patient video explanations
r/civ	All	Questions, news, screenshots of your mistakes

Careful Older classics such as Carl's Guides (Civ V) and Sisiutil's beginner guide (Civ IV, 2009) are good reading on general strategy, but their rules belong to older games.

Mods worth having

Mod	Game	What it does
CQUI	VI	Cleaner, more informative interface
Detailed Map Tacks	VI	Plan districts with adjacency previews
Quick Deals, Better Trade Screen	VI	Faster trading with the AI
Better Balanced Game (BBG)	VI	The standard balance mod for multiplayer, not a learning aid
Vox Populi (Community Patch)	V	A deep overhaul. Install its bundled EUI, not the Workshop version.
Steam Workshop mods (official since patch 1.2.2)	VII	UI tweaks such as Sukritact's Simple UI Adjustments. Check compatibility after each patch.

Sources: PC Gamer; CivFanatics install guide; 2K support; Windows Central.

Reading ladder

The original source behind every concept in this book, grouped by discipline. Each concept lesson also suggests an easier first read.

Concept	Where it comes from
Decision science	
Bounded rationality and satisficing	Herbert A. Simon, "A Behavioral Model of Rational Choice," <i>Quarterly Journal of Economics</i> 69(1): 99–118 (1955); "satisficing" named in "Rational Choice and the Structure of the Environment," <i>Psychological Review</i> 63(2) (1956)
Expected value and risk	Daniel Bernoulli, "Specimen theoriae novae de mensura sortis" (1738), translated as "Exposition of a New Theory on the Measurement of Risk," <i>Econometrica</i> 22(1) (1954); John von Neumann and Oskar Morgenstern, <i>Theory of Games and Economic Behavior</i> (1944)
The sunk-cost fallacy	Hal R. Arkes and Catherine Blumer, "The Psychology of Sunk Cost," <i>Organizational Behavior and Human Decision Processes</i> 35(1) (1985).
Economics	
Agglomeration economies and clusters	Alfred Marshall, <i>Principles of Economics</i> (1890); Paul Krugman, "Increasing Returns and Economic Geography," <i>Journal of Political Economy</i> 99(3) (1991); Michael E. Porter, <i>The Competitive Advantage of Nations</i> (1990).
Comparative advantage	David Ricardo, <i>On the Principles of Political Economy and Taxation</i> (1817), chapter VII
Creative destruction	Joseph A. Schumpeter, <i>Capitalism, Socialism and Democracy</i> (1942)
Diminishing marginal returns	Anne-Robert-Jacques Turgot, observations on Saint-Péravy's prize essay (1767). Applied to land and rent in 1815 by Malthus, Ricardo, West and Torrens.
Division of labor	Adam Smith, <i>An Inquiry into the Nature and Causes of the Wealth of Nations</i> (1776), Book I, chapters I to III.
Externalities	Arthur C. Pigou, <i>The Economics of Welfare</i> (1920)
Learning by doing	Kenneth J. Arrow, "The Economic Implications of Learning by Doing," <i>Review of Economic Studies</i> 29(3) (1962).
Marginal analysis	William Stanley Jevons, <i>The Theory of Political Economy</i> (1871); Carl Menger, <i>Grundsätze der Volkswirtschaftslehre</i> (1871).
Opportunity cost	David I. Green, "Pain-Cost and Opportunity-Cost," <i>Quarterly Journal of Economics</i> 8(2) (1894).
Exogenous and endogenous growth	Robert M. Solow, "A Contribution to the Theory of Economic Growth," <i>Quarterly Journal of Economics</i> 70(1) (1956); Paul M. Romer, "Endogenous Technological Change," <i>Journal of Political Economy</i> 98(5) (1990).
Time value and discounting	Irving Fisher, <i>The Theory of Interest</i> (1930).

Concept	Where it comes from
Economics / history	
The Malthusian trap	Thomas Robert Malthus, <i>An Essay on the Principle of Population</i> (1798).
Economics / intelligence	
Information asymmetry	George A. Akerlof, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism", <i>Quarterly Journal of Economics</i> (1970)
Economics / politics	
Tragedy of the commons, and governing the commons	Garrett Hardin, "The Tragedy of the Commons", <i>Science</i> (1968); Elinor Ostrom, <i>Governing the Commons</i> (1990)
Game theory	
Credible commitment and cheap talk	Thomas C. Schelling, <i>The Strategy of Conflict</i> (1960)
Nash equilibrium	John F. Nash Jr., "Equilibrium Points in n-Person Games," <i>Proceedings of the National Academy of Sciences</i> 36(1) (1950); "Non-Cooperative Games," <i>Annals of Mathematics</i> 54(2) (1951)
Prisoner's dilemma	Merrill Flood and Melvin Dresher, experiments at RAND (1950); the prisoners story and name credited to Albert W. Tucker (1950)
Game theory / IR	
Repeated games and the evolution of cooperation	Robert Axelrod, <i>The Evolution of Cooperation</i> (1984)
Geopolitics	
Geography and development	Jared Diamond, <i>Guns, Germs, and Steel: The Fates of Human Societies</i> (1997); critics J. M. Blaut, <i>Eight Eurocentric Historians</i> (2000), and Acemoglu, Johnson & Robinson, "The Colonial Origins of Comparative Development," <i>American Economic Review</i> 91(5) (2001)
Heartland and rimland	Halford J. Mackinder, "The Geographical Pivot of History," <i>The Geographical Journal</i> 23(4) (1904), and <i>Democratic Ideals and Reality</i> (1919); Nicholas J. Spykman, <i>America's Strategy in World Politics</i> (1942) and <i>The Geography of the Peace</i> (1944)
Sea power	Alfred Thayer Mahan, <i>The Influence of Sea Power upon History, 1660–1783</i> (1890)
Historical sociology	
"War made the state"	Charles Tilly, "Reflections on the History of European State-Making," in <i>The Formation of National States in Western Europe</i> (1975); <i>Coercion, Capital, and European States, AD 990–1990</i> (1990)
History / IR	
Imperial overstretch	Paul Kennedy, <i>The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000</i> (1987)
History / systems	
Collapse of complex societies	Joseph A. Tainter, <i>The Collapse of Complex Societies</i> (1988)
IR	
Anarchy and the security dilemma	John H. Herz, "Idealist Internationalism and the Security Dilemma," <i>World Politics</i> 2(2) (1950); Robert Jervis, "Cooperation under the Security Dilemma," <i>World Politics</i> 30(2) (1978)
Balancing vs bandwagoning	Stephen M. Walt, <i>The Origins of Alliances</i> (1987)
Complex interdependence	Robert O. Keohane and Joseph S. Nye, <i>Power and Interdependence: World Politics in Transition</i> (1977)
Offensive realism	John J. Mearsheimer, <i>The Tragedy of Great Power Politics</i> (W. W. Norton, 2001)
Realpolitik	Ludwig August von Rochau, <i>Grundsätze der Realpolitik</i> (1853)
Soft power	Joseph S. Nye Jr., <i>Bound to Lead: The Changing Nature of American Power</i> (1990); "Soft Power," <i>Foreign Policy</i> , no. 80 (Autumn 1990), pp. 153–171
Structural realism and the balance of power	Kenneth N. Waltz, <i>Theory of International Politics</i> (Addison-Wesley, 1979)

Concept	Where it comes from
IR / strategy	
Deterrence and compellence	Thomas C. Schelling, <i>The Strategy of Conflict</i> (1960) and <i>Arms and Influence</i> (1966)
Learning science	
Deliberate practice	K. Anders Ericsson, Ralf T. Krampe and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," <i>Psychological Review</i> 100(3) (1993)
Experiential learning cycle	David A. Kolb, <i>Experiential Learning: Experience as the Source of Learning and Development</i> (Prentice-Hall, 1984)
Transfer of learning	David N. Perkins & Gavriel Salomon, "Teaching for Transfer," <i>Educational Leadership</i> 46(1): 22–32 (1988)
Military OR	
Lanchester's laws	Frederick W. Lanchester, <i>Aircraft in Warfare: The Dawn of the Fourth Arm</i> (1916), collecting his 1914 articles in <i>Engineering</i>
Military strategy	
Fog of war, friction and the culminating point	Carl von Clausewitz, <i>On War</i> (<i>Vom Kriege</i> , 1832–34)
The OODA loop	John R. Boyd, "Destruction and Creation" (essay, 1976) and "Patterns of Conflict" (briefing, final version 1986)
Sun Tzu, <i>The Art of War</i>	<i>Sunzi bingfa</i> (<i>The Art of War</i>), attributed to Sun Wu (China, Warring States period; date and authorship debated)
Military strategy / technology	
Revolution in military affairs	Andrew F. Krepinevich, "Cavalry to Computer: The Pattern of Military Revolutions," <i>The National Interest</i> , no. 37 (Fall 1994), pp. 30–42, building on Soviet "military-technical revolution" writing of the 1980s
Philosophy	
The is–ought gap	David Hume, <i>A Treatise of Human Nature</i> (1739–40), Book 3, Part 1, Section 1.
Political economy	
Exit, voice and loyalty	Albert O. Hirschman, <i>Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States</i> (1970)
Inclusive and extractive institutions	Daron Acemoglu and James A. Robinson, <i>Why Nations Fail</i> (2012).
Institutions: the rules of the game	Douglass C. North, <i>Institutions, Institutional Change and Economic Performance</i> (1990).
The principal–agent problem	Michael C. Jensen and William H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," <i>Journal of Financial Economics</i> 3(4) (1976).
Stationary vs roving bandit	Mancur Olson, "Dictatorship, Democracy, and Development", <i>American Political Science Review</i> (1993)
Political philosophy	
Ethic of conviction versus ethic of responsibility	Max Weber, "Politics as a Vocation" (<i>Politik als Beruf</i>), lecture in Munich, 28 January 1919; published 1919.
Dirty hands	Michael Walzer, "Political Action: The Problem of Dirty Hands," <i>Philosophy & Public Affairs</i> 2, no. 2 (Winter 1973): 160–180.
Political sociology	
Imagined communities	Benedict Anderson, <i>Imagined Communities: Reflections on the Origin and Spread of Nationalism</i> (1983)
Monopoly of legitimate violence	Max Weber, "Politik als Beruf" ("Politics as a Vocation"), lecture of 1919

Concept	Where it comes from
Social choice	
Arrow's impossibility theorem	Kenneth J. Arrow, "A Difficulty in the Concept of Social Welfare," <i>Journal of Political Economy</i> 58(4) (1950); expanded as <i>Social Choice and Individual Values</i> (1951)
Sociology of religion	
Network spread of religion	Rodney Stark, <i>The Rise of Christianity: A Sociologist Reconsiders History</i> (1996)
Statistics / philosophy of science	
All models are wrong	George E. P. Box, "Science and Statistics," <i>Journal of the American Statistical Association</i> 71(356): 791–799 (1976). The longer saying, "all models are wrong, but some are useful," comes from Box's later writing (first in 1978–79, then Box & Draper, 1987).
Strategy	
Grand strategy (ends, ways, means)	B. H. Liddell Hart, <i>Strategy</i> (2nd rev. ed., New York: Praeger, 1967; first ed. 1954); ends, ways and means from Arthur F. Lykke Jr., "Defining Military Strategy," <i>Military Review</i> 69(5) (1989)
Systems	
Compounding	No single originator. Standard teaching treatment: Albert A. Bartlett, "Forgotten Fundamentals of the Energy Crisis," <i>American Journal of Physics</i> 46(9): 876–888 (1978)
Stocks, flows and feedback loops	Donella H. Meadows, <i>Thinking in Systems: A Primer</i> (2008). Earlier: Jay W. Forrester, <i>Industrial Dynamics</i> (1961).
Systems / economics	
Path dependence	W. Brian Arthur, "Competing Technologies, Increasing Returns, and Lock-In by Historical Events," <i>The Economic Journal</i> 99(394): 116–131 (1989); Paul A. David, "Clio and the Economics of QWERTY," <i>American Economic Review</i> 75(2): 332–337 (1985)
Technology	
Diffusion of innovations	Everett M. Rogers, <i>Diffusion of Innovations</i> (1962). Classic evidence: Zvi Griliches, "Hybrid Corn: An Exploration in the Economics of Technological Change," <i>Econometrica</i> 25(4) (1957).
General-purpose technologies	Timothy F. Bresnahan and Manuel Trajtenberg, "General Purpose Technologies: 'Engines of Growth'?", <i>Journal of Econometrics</i> 65(1) (1995).

How the Series Got Here: Civ IV and V

You will meet advice written for older games. This page tells you which rules it assumes.

Game	Released	Map and armies	Economy	What carried forward
IV Civilization IV	2005	Square tiles; unlimited unit stacking ("stacks of doom")	Cottages that grow into towns vs a Great-Person "specialist economy"; civics	Religion, Great People
V Civilization V	2010	Hexes; one unit per tile (1UPT)	Empire-wide Happiness that punishes many cities; social policy trees ("Tradition four-city" was a classic plan)	Hexes, 1UPT, city-states
VI Civilization VI	2016	Hexes, 1UPT with corps and armies	Districts and adjacency, Eureka, local amenities and housing, policy cards	Districts became VII's quarters
VII Civilization VII	2025	Hexes, Commanders carry units	Ages, changing civs, towns vs cities, settlement limit	Today's game

Tip When a guide talks about cottages, a specialist economy or stacks of doom, it is a Civ IV guide. When it talks about global happiness or Tradition vs Liberty, it is Civ V.

Sources: Civilization IV, Civilization V, Civilization VI, Civilization VII (Wikipedia).

PART 10

Where Civ Is Wrong, and Where It Is Silent

This part turns the book's method on the game itself. The first lesson lists what Civ gets wrong about history. The second asks the question the game never asks: what winning has to do with doing right.

The Six Assumptions Built Into Every Civ Game

Every Civ game runs on six rules that no real society ever lived under. Play long enough and they start to feel like facts about the world.

What the game assumes VI VII

Turn 250. Every civ on the map is climbing the same tech tree, one rung at a time. Your Settlers (the units that found cities) have walked onto land that belonged to nobody. The camps you cleared had no names. One leader has run your people since the first turn. None of this ever happened to any real people, and after a few hundred turns none of it feels strange.

Every model leaves things out, and Civ must, or it would be unplayable. The trouble starts when you forget what was left out and the gaps feel like facts about the world. Scholars who study games as history name six big ones.

1. **History is one ladder.** The tech tree runs in one direction, from Pottery to rockets, and every civ climbs the same rungs. Kacper Poblócki argued in 2002 that this makes the West's path look like "the only logical development" of humankind. Real technologies were lost, rediscovered, skipped and combined in orders no tree allows. Roman concrete was forgotten for centuries. Mesoamerican societies built cities and calendars without draft animals or iron tools.
2. **The land is empty until you settle it.** Your Settler walks onto open ground and founds a city. Postcolonial critics call this the game's version of *terra nullius*, the legal fiction that land with no recognized state belonged to no one. Real frontiers were almost always someone's home.
3. **"Barbarians" (hostile raiders from camps) have no history.** In Civ VI they appear from camps, raid, and exist to be cleared. Dom Ford's 2016 study of Civ V points out that the game frames anyone outside the state system as an obstacle. Civ VII's Independent Powers (Civ VII minor factions you can befriend or fight) are a small step away from this, since you can befriend them and they can become city-states (minor powers that cannot win).
4. **States are the only real actors, and one leader runs each for 6,000 years.** Merchants, priests, peasants, rebels and migrants appear only as yields and pop counts. That is the "great man" view of history, which most historians abandoned long ago.
5. **Peoples are fixed brands.** In Civ VI a civ keeps the same bonuses all game, as if "being Roman" were a permanent trait. Civ VII's age changes admit that societies transform, though it still packages each phase as a ready-made civ.
6. **Everything can be measured and controlled.** Every outcome in Civ comes from numbers you can see and change. Alexander Galloway argued in 2006 that the game's real lesson is that winning means learning the algorithm. Real rulers faced uncertainty they could not price, and most of what happened in their countries happened without them.

Sources: Poblócki, "Becoming-state: the bio-cultural imperialism of Sid Meier's Civilization," *Focaal* 39 (2002): 163–177 (record); Ford, "eXplore, eXpand, eXploit, eXterminate," *Game Studies* 16(2), 2016; Galloway, *Gaming: Essays on Algorithmic Culture*, ch. 4 "Allegories of Control," University of Minnesota Press, 2006 (overview).

STATISTICS · PHILOSOPHY OF SCIENCE

All models are wrong

In 1859 Urbain Le Verrier, the French mathematician who had predicted Neptune by calculation in 1846, turned the same method on Mercury. Its orbit slowly turns around the Sun, and it turned slightly faster than Newton's laws allowed. The gap is tiny, 43 arcseconds a century. Le Verrier trusted the model and blamed something unseen: a planet, or a belt of asteroids, inside Mercury's orbit. That year a country doctor, Edmond Lescarbault, wrote that he had watched a small black dot cross the Sun on 26 March. Le Verrier announced the planet and called it Vulcan. Astronomers hunted it for decades and never confirmed it. In 1915 Einstein's general relativity explained the gap with no new planet at all. Newton's model had been wrong all along. It is still right enough to plan most spaceflight.

All models are wrong: every model simplifies, so every model is false somewhere. The useful question is whether it is wrong in ways that matter for what you are using it to do.

HOW THE GAME MAPS IT

In the game	In the world
Each citizen eats exactly 2 Food VI	A simplification that is useful for play and wrong about how farming societies actually fed themselves
Three Ages with clean transitions VII	A way of dividing history into periods that no historian would defend, which is what makes the game teachable
Every "where the map breaks" list in this book	Box's question applied to each concept, one at a time

WHERE THE MAP BREAKS

- ✗ Box was writing about statistical models fitted to data. A game is a designed model with no fitting step, so it can be wrong on purpose, and often is, for fun.
- ✗ "All models are wrong" gets used to dismiss any model someone dislikes. Box meant the reverse: keep the model and find where it fails. Le Verrier made the opposite mistake. He kept Newton and invented a planet.
- ✗ The scholars quoted in this part go further than Box. They argue that Civ's errors all point one way, toward Western technological progress as the only path.

READ NEXT

- Accessible: "All models are wrong" (Wikipedia), a short history of the phrase; "Vulcan (hypothetical planet)" (Wikipedia).
- Primary: Box, "Science and Statistics" (1976), nine readable pages.

George E. P. Box, "Science and Statistics," *Journal of the American Statistical Association* 71(356): 791–799 (1976). The longer saying, "all models are wrong, but some are useful," comes from Box's later writing (first in 1978–79, then Box & Draper, 1987).

What the game does get right

Civ still teaches, because its systems push on you the way the world pushes on states. Food limits growth. Rivals arm when you arm. Trade ties your interests to other people's. The game models *pressures* well and *people* badly.

Adam Chapman's *Digital Games as History* (Routledge, 2016) argues that games are a form of history in their own right, one you do rather than read. Kurt Squire studied students learning world history through Civ III (2004). Writing later with Shree Durga, he described two styles of play: "expert gaming," which treats Civ as a system to master, and "historical gaming," which treats it as a way to replay and question the past. Each style teaches something the other misses. This book asks you to do both.

Diane Carr, in "The Trouble with Civilization" (2007), warns against the opposite mistake, treating a game's rules as what players take from them. Players argue with games, mock them, mod them and tell their own stories through them. Your own critical play is part of what the game means.

LAB · Lab: Play one game as a historian

Predict first: guess which list will be longer at the end: things your society did that no button allows, or things the game made easier than history did.

1. Start any game. Before turn 1, write down one real society you know a little about, such as Song China, the Inca, or the Mali Empire.
2. Every 50 turns, stop and list anything that society actually did that no button in the game lets you do. Examples: move your whole population somewhere else, split into two states, lose a war and survive as a culture, let merchants override the ruler.
3. At the same stops, keep a second list of things the game made *easier* than history did, such as instant borders, perfect information about your own cities, or loyal armies.

Measure: how many items are on each list by the end.

What you should see: the "impossible" list grows faster than the "easier" list. Most of the gaps are about people, uncertainty and collapse, which are the three hardest things to turn into rules.

If your result differs: a long "easier" list may mean you know your society mainly through its rulers, which is the game's own lens. In Civ VII the "impossible" list may grow more slowly, since age changes let a society transform and Independent Powers can be befriended into city-states.

In the world: pick one model you use often, such as a budget spreadsheet, a fitness app or a news map. List three things it cannot show you, and one decision you made that it would have got wrong.

DO

- Use the game to feel pressures: scarcity, rivalry, distance, compounding.
- Ask of every rule, "who does this leave out?"
- Read one real history of a civ you play, and compare.

AVOID

- Saying "history proves" something because it works in Civ.
- Treating a civ's game bonus as a fact about real people.
- Assuming progress is automatic or goes one way.

READ NEXT

- Accessible: Kanishk Tharoor, "What Sid Meier's video game empire got right and wrong about civilization" (Kill Screen, via Longreads, 2016).
- Scholarly: Dom Ford, "eXplore, eXpand, eXploit, eXterminate" (*Game Studies*, 2016), free online.
- Book length: Adam Chapman, *Digital Games as History* (Routledge, 2016); Souvik Mukherjee, *Videogames and Postcolonialism: Empire Plays Back* (Palgrave Macmillan, 2017).

Check yourself

1. Your size-5 Civ VI city needs exactly 10 Food a turn to feed its citizens. What simplification is that, and what would Box ask about it?
2. A classmate says Civ shows that technology always moves forward in one order. Which of the six assumptions is that, and what real cases break it?
3. A city plans a new road with a traffic model that counts only cars. What would Box's question tell the planners to do?

In the game: win by its rules, and keep a running list of what those rules leave out.

In the world: any model, from a spreadsheet to an ideology, is a game with hidden rules. Ask what it cannot see before you trust what it shows.

Winning and Doing Right

Civ lets you wipe a captured city off the map, and the only bill is what other leaders think of you. Real rulers have faced that choice with people inside. What wins, and what is right?

The Raze button VI VII

Turn 190. Your army takes a rival's city of size 8. It sits on the river you wanted, its districts (specialized city tiles that hold buildings) are in the wrong places, and it will take many turns to turn loyal. A panel asks whether to keep it or raze it, and you must decide this turn.

In Civ VI most captured cities can be razed. Razing destroys the city completely, with every district and improvement it owned. The land clears, so you can found a city on a better spot or let your own borders grow into the gap. The bill is diplomatic. **Grievances** (a running record of who wronged whom) are the game's running score of who has wronged whom. Capturing a city earns up to a base of 50 with its owner, and razing it up to 150, three times as much. An original capital can never be razed. A Free City, one that has rebelled from its owner, can be razed with no Grievances at all.

Civ VII offers Keep or Raze, and both cost Influence (a diplomacy currency), the diplomacy currency, for the rest of the Age. Once a settlement is razed, it costs twice as much each turn as one you keep.

Nobody in the city appears on screen. Population is a number, and it goes to zero. That is a model, and like every model in this book it leaves something out. What it leaves out is the subject of this lesson.

Sources: City (Civ6); Grievances (Civ6); Settlement (Civ7).

What the strong said

In 416 BC an Athenian army landed on Melos, a small island that had tried to stay out of Athens's war with Sparta. Thucydides, the Athenian who wrote that war's history, set down the talks as a dialogue. The envoys refused to argue about justice. In Richard Crawley's translation, they said that "right, as the world goes, is only in question between equals in power, while the strong do what they can and the weak suffer what they must." The Melians trusted the gods and Sparta, and said no. That winter the city fell. The Athenians "put to death all the grown men whom they took, and sold the women and children for slaves," and sent 500 colonists to take the land. The hard question in **How the AI Thinks and Cheats** puts Melos to you directly. Here it stands for one view at its plainest: power decides.

Nineteen centuries later a sacked official turned that view into advice. Niccolò Machiavelli served the republic of Florence from 1498 to 1512. When the Medici family returned to power, he was dismissed, accused of plotting against them, imprisoned and tortured. Released, he retired to a small property near Florence and in 1513 wrote *The Prince*, which he dedicated to a Medici. Chapter 15 refuses to describe the ideal ruler. In W. K. Marriott's translation, "how one lives is so far distant from how one ought to live, that he who neglects what is done for what ought to be done, sooner effects his ruin than his preservation." A prince who wants to last must know "how to do wrong, and to make use of it or not according to necessity."

That is the realist case, written by a man who had watched his republic fall. Rulers who ignore how power works tend to lose, and their people pay. The three ideas below come from thinkers who took that case seriously and still refused to stop there.

POLITICAL PHILOSOPHY

Ethic of conviction versus ethic of responsibility

Munich, 28 January 1919. Germany had lost the war, and in November Bavaria had overthrown its king. Max Weber, a sociologist of 54, had just lost his own run for parliament. A students' union asked him to lecture on politics as a vocation. Politics works through force, he told them, and whoever takes it up "contracts with diabolical powers." Then he drew a line. You can act by conviction, as in "The Christian does rightly and leaves the results with the Lord." Or you can act by responsibility, and "give an account of the foreseeable results of one's action." He would not choose for them. Only the two together, he said, make a person with "the calling for politics." (Gerth and Mills's translation.)

Ethic of conviction versus ethic of responsibility: the first does what is right and leaves the results to God or fate; the second judges an act by its foreseeable results and answers for them. Weber said politics needs both.

HOW THE GAME MAPS IT

In the game	In the world
Keeping a promise to an ally when breaking it would win the war	Conviction: the rule holds, whatever it costs
Breaking it, counting the Grievances, and winning	Responsibility: judged by results, and answerable for them

WHERE THE MAP BREAKS

- ✗ Weber's example of pure conviction was a revolutionary, the "convinced syndicalist" who blames the world when good intentions turn out badly. Today "responsibility" gets used as a licence for whatever works. He ruled that out: it is not "unprincipled opportunism," and "Naturally nobody says that."
- ✗ Civ scores every consequence for you. Weber's politician must foresee results nobody will ever tally, and own them anyway.
- ✗ Gerth and Mills called the first ethic the "ethic of ultimate ends." This book uses the other common rendering, "conviction."

READ NEXT

- Accessible: Weber, "Politics as a Vocation," in *From Max Weber: Essays in Sociology*, trans. H. H. Gerth and C. Wright Mills (1946), pp. 77–128, free at the Internet Archive.
- Primary: Weber, *Politik als Beruf* (Munich: Duncker & Humblot, 1919).

Max Weber, "Politics as a Vocation" (*Politik als Beruf*), lecture in Munich, 28 January 1919; published 1919.

POLITICAL PHILOSOPHY

Dirty hands

In 1973 the political philosopher Michael Walzer built an argument on a line from a play. In Sartre's *Dirty Hands* (1948), the Communist leader Hoederer says, in Lionel Abel's translation: "I have dirty hands right up to the elbows. I've plunged them in filth and blood. Do you think you can govern innocently?" Walzer's answer was no. His test case is a decent candidate who can win only by making a deal with a dishonest ward boss over school-building contracts. We want him to make it, Walzer wrote, precisely because he has scruples: "We know he is doing right when he makes the deal because he knows he is doing wrong." If he is a good man, Walzer added, he will feel guilty afterwards. The right act can leave a stain.

Dirty hands: sometimes the right political act is also a wrong one, so the leader who does it is guilty as well as right. Walzer says a good leader feels that guilt, and we trust them because they do.

HOW THE GAME MAPS IT

In the game	In the world
A surprise war costs 150 Grievances, which decay with each turn of peace VI	The game's stain washes out on a timer. Walzer's never fully does
Reloading the save after a choice you regret	No reload: "The innocent man, afterwards, is no longer innocent"

WHERE THE MAP BREAKS

- ✗ Walzer's harder case is a leader who orders a captured rebel tortured to find bombs set to go off within twenty-four hours. A thought experiment fixes every fact in advance. Real officials rarely know that the prisoner knows, and "guilty but right" can be stretched to excuse almost anything.
- ✗ Civ never asks you to feel anything. Walzer's test is a feeling: the leader who makes the deal without a flicker of guilt has failed it.
- ✗ Walzer calls Weber's version of this figure "a tragic hero" who suffers alone, and doubts that the problem can be settled inside one person's conscience.

READ NEXT

- Accessible: Jean-Paul Sartre, *Dirty Hands* (*Les Mains sales*, 1948), the play Walzer starts from.
 - Primary: Walzer, "Political Action: The Problem of Dirty Hands," *Philosophy & Public Affairs* 2, no. 2 (1973), on JSTOR.
- Michael Walzer, "Political Action: The Problem of Dirty Hands," *Philosophy & Public Affairs* 2, no. 2 (Winter 1973): 160–180.

PHILOSOPHY

The is-ought gap

David Hume was in his twenties when he wrote *A Treatise of Human Nature*, most of it written in La Flèche, a small town in France. It came out in 1739 and 1740, and by his own account it "fell dead-born from the press." Early in its third book, on morals, he added an observation that "may, perhaps, be found of some importance." Every system of morality he had read, he wrote, reasons for a while about God or human affairs, and then "of a sudden" every proposition is "connected with an ought, or an ought not." The change is "imperceptible; but is, however, of the last consequence," and nobody explains it. A writer can describe the world perfectly and slip in a duty without noticing.

The is-ought gap: no description of how the world is, on its own, proves what anyone ought to do. To get from facts to duties you need a value, and you should say which one.

HOW THE GAME MAPS IT

In the game	In the world
"The AI attacks the weak." A fact about the rules	An <i>is</i>
"The AI attacks the weak, so you should too." A rule with a value hidden inside it	An <i>ought</i> , smuggled in

WHERE THE MAP BREAKS

- ✗ Hume asked that the step be "observed and explained," and said that how an ought could be deduced from an is "seems altogether inconceivable." Readers still argue whether he meant it can never be done or only that it must be shown.
- ✗ In Civ the gap closes by design. The rules fix the goal, so "you ought to settle on rivers" is simply true for anyone who wants to win. In the world, nobody wrote the victory conditions.
- ✗ The gap cuts both ways. Realists who read Thucydides as "the strong win, so be strong" skip the step. So do idealists who read the Marshall Plan as "kindness pays, so be kind."

READ NEXT

- Accessible: Hume, *A Treatise of Human Nature*, Book 3, Part 1, Section 1, last paragraph, free at davidhume.org; his short autobiography, "My Own Life" (1776).
- Primary: the same passage, cited as T 3.1.1.27.

David Hume, *A Treatise of Human Nature* (1739–40), Book 3, Part 1, Section 1.

Where winning and doing right meet

The realist case has a gap of its own: it describes one round. Most of what states do to each other they will do again next year, with the same neighbors watching. Around 1980 Robert Axelrod ran a tournament of computer programs playing the prisoner's dilemma. The simplest entry, Tit for Tat, won two tournaments in a row: cooperate first, then copy whatever the other side did last time. When the game repeats, being decent, firm and easy to read wins. *Repeated games* tells the story.

Joseph Nye's *soft power* points the same way: being admired gets you what force cannot buy. So does Thomas Schelling's *credible commitment*, which makes a record of kept promises an asset. Then there is the Marshall Plan. On 5 June 1947, at Harvard, George Marshall called for a program to rebuild Europe. Fanned

by fear of Communist expansion, Congress approved funding that rose to over \$12 billion, and the aid also opened markets for American goods. The generous act and the selfish one were the same act. The hard question in *Diplomatic Victory* asks whether a good deed still counts when it also pays.

Where they split

Now go back to Melos. Athens did what it said the strong do, and it worked. That same winter it voted to send an armada to conquer Sicily. By 413 BC about 200 ships and thousands of men were lost, and many of Athens's subject allies revolted. In 405 BC the Spartan commander Lysander expelled the Athenian colonists from Melos and brought the surviving Melians home, a gesture that doubled as propaganda. In 404 BC Athens surrendered its walls, its fleet and every overseas possession. In the text as it has come down to us, the Melian Dialogue ends one book of Thucydides, and the next opens with Athens deciding to sail for Sicily.

It is tempting to call that justice. A realist will say Athens lost a long war against a coalition for many reasons, and that the Melians' stand on principle got the Melians killed. An idealist will answer that an empire which tells its subjects it rules by force alone has told them when to leave, and after Sicily they left. Both are right about something. At Melos force won and the appeal to justice lost, and the story did not end there.

The hard question: is mercy a weakness or a weapon?

In the game a captured city is a number to keep or erase. In 428 BC Mytilene, on the island of Lesbos, rebelled against Athens and lost. In Crawley's translation, the assembly voted "to put to death not only the prisoners at Athens, but the whole adult male population of Mitylene, and to make slaves of the women and children," and sent a galley with the order. "The morrow brought repentance with it," and the assembly met again. The show of hands was "almost equal." A second galley, its rowers eating at the oars, arrived just after the decree was read. More than a thousand men named as the revolt's leaders were still put to death.

The case for severity: Cleon said the empire was "a despotism," held by strength, not loyalty, and that Mytilene's revolt was "of malice and deliberate." Spare it, and every ally learns that a failed revolt costs little.

The case against: Diodotus claimed no pity. The question, he said, was "how to make the Mitylenians useful to Athens." A city that expects death never surrenders, so harshness buys longer sieges and "a ruined town" that pays no tribute.

Your call: *Diodotus saved a city with an argument from profit. If the sums had come out the other way, should Athens have killed them all?*

The question is yours

This lesson stops short of a verdict, on purpose. You have seen the realist case at full strength: Athens at Melos, Machiavelli after his fall, and a game that pays you to play by their rules. You have seen the other case too: decency winning Axelrod's tournament, Diodotus saving a city, Western Europe rebuilt with another country's dollars. Weber says a politician needs both ethics. Walzer says even the right choice can stain. Hume adds the warning that matters most. Thucydides shows you what the strong did, and that is an *is*. Whether you should do the same is an *ought*. Describing how the world is never, on its own, settles what you should do. You cross that gap with a value, named out loud and defended. The game never asks you to name one. The world does.

READ NEXT

- Accessible: Thucydides, *History of the Peloponnesian War*, trans. Richard Crawley, Book 5 (Melos) and Book 3 (Mytilene), free at MIT Classics.
- Accessible: Machiavelli, *The Prince*, trans. W. K. Marriott, chapter 15, free at Project Gutenberg.

Check yourself

1. You capture a size-8 city in Civ VI. Razing it would clear the land for a better city site. What does the game charge you, and what does it never count?
2. A leader breaks a treaty to prevent a war she believes would kill thousands, and sleeps badly for years. Which two concepts describe her, and how do they differ?
3. A friend says: "History shows that ruthless countries come out on top, so ours should be ruthless." What has the sentence skipped, and what would Hume ask for?

In the game: before you press Raze, say out loud what you are buying and what the model is not counting.

In the world: facts about power tell you what winning costs. Only a value you can name tells you whether to pay it.

PART 11

Use It on the Real World

Nine real cases read with the concepts from the game, three hard questions where winning and doing right pulled apart, and a grand strategy memo for a real country.

Systems: The 2020–23 chip shortage

In 2021 car makers could not buy enough chips. By 2023 the chip industry was selling less. Reacting to a delay, careful people amplified both.

The case

In spring 2020 car makers expected sales to fall to the levels of the 2007–09 Great Recession. They cut their parts orders, and automotive chip vendors canceled orders with the foundries, the plants that make chips. Car-industry chip sales collapsed in the second quarter of 2020, while demand for computers and electronics more than made up the loss as work and school moved online. Then car sales rebounded, and chip output could not meet car makers' demand. Fires and droughts at large chip plants made it worse. A United States Commerce Department survey found that, for the chips buyers found hardest to get, median inventory had fallen from 40 days' worth in 2019 to under five days in 2021, while median demand ran as much as 17 percent above 2019. AlixPartners estimated 7.7 million vehicles of lost production in 2021. Then sales turned down, and global chip sales fell 8.2 percent in 2023, from a record \$574.1 billion to \$526.8 billion.

Sources: ECB (2021); NBC News (2021); IHS Markit (2020); US Commerce Department (2022); AlixPartners (2021); SIA (2024).

Concept lens: inventory is a stock, orders are flows, and the time from order to delivery is the delay, which makes this **stocks, flows and feedback** at world scale. Logistics managers at Procter & Gamble named the amplification the "bullwhip effect" after studying orders for Pampers; Lee, Padmanabhan and Whang (1997) traced it partly to firms that forecast from the swings they see and over-order when they fear rationing. Sterman's 1989 experiments with the beer game, a classroom supply-chain game, showed that people misread delayed feedback, which is **bounded rationality**.

Where the concepts strain

- ✗ The beer game models one product moving down one chain. Chips are thousands of products, and Commerce named wafer capacity as the main bottleneck, a real shortfall that better forecasting alone would not have fixed.
- ✗ Sterman's evidence comes from a game with steady rules. Real buyers also faced lockdowns in Malaysia, which AlixPartners blamed for its 2021 revision, and fires at chip plants; how much of the swing was behavior is still argued.

Back in the game

In Gathering Storm (the second Civ VI expansion) VI strategic resources such as Iron add to a stockpile every turn, and a new Iron mine adds nothing until a Builder (a unit that builds farms, mines and the like) has been trained and walked to the tile. In Civ VII VII each settlement past the settlement limit (how many

settlements you can hold before penalties) costs 5 Happiness in every settlement, a balancing loop that bites once the Settler (the unit that founds a city) is already spent.

Check yourself

1. Your Iron stockpile looks full, so you queue several Iron units. It runs dry before a Builder can reach the second Iron tile. What went wrong?
2. Which effect turns small changes in shoppers' demand into large swings in factory orders, and why?
3. A product is scarce and buyers are hoarding. What will you read a year or two later?

In the game: read a stockpile as a flow with a delay; build the inflow before the stock runs low.

In the world: when everyone is hoarding, the shortage may already be turning into next year's glut.

Economics: Concorde and the money already spent

Britain and France kept paying for a plane that would never pay back. Biologists named a fallacy after it. Only part of the story fits.

The case

In February 1967 Britain's aviation minister, John Stonehouse, gave Parliament Concorde's new bill. Development had been estimated at £150 to £170 million when Britain and France signed their treaty on 29 November 1962. It now stood at £450 million plus a £50 million contingency. Quitting was costly too: the treaty included a clause, first asked for by Britain, imposing heavy penalties for cancellation. Concorde first flew on 2 March 1969 and carried paying passengers from 21 January 1976; by then the program had cost over £1.3 billion. Twenty were built, only Air France and British Airways bought them, and the last commercial flight was in 2003. In 1976 the biologists Richard Dawkins and T. R. Carlisle named the "Concorde fallacy," continuing an investment because of what has been spent rather than what it will return. In humans it is called the sunk-cost effect, and in 1999 the psychologists Hal Arkes and Peter Ayton argued no animal clearly shows it, while young children show it less than adults.

Sources: Hansard (1967); Concorde (Wikipedia); Dawkins & Carlisle (1976); Arkes & Ayton (1999); The National Archives blog (2019); FRUS (1965).

Concept lens: the penalty clause made quitting expensive for both partners, a **commitment device** that kept each promise believable. Each year's Concorde budget was something else left unfunded, an **opportunity cost**. And "we have come too far to stop" is the **sunk-cost fallacy** that Arkes and Blumer measured in 1985.

Where the concepts strain

- ✗ Some of the staying was rational. The penalties were a real future cost, which rational choice weighs. The label may fit the rhetoric better than the decision.
- ✗ Arkes and Blumer's evidence came from small laboratory scenarios, and field evidence on the effect's size is mixed. Prestige and jobs were also goals; if they counted as returns, paying on could be a judgment about future value rather than a fallacy.

The hard question: should you keep a promise that has turned into a bad deal?

In Civ VI **VI** a broken promise adds 100 Grievances, the game's tally of grudges, and play moves on. Britain found its Concorde promise harder to break. Harold Wilson's Labour government took office in October 1964 and decided to quit the treaty. Wilson sent his aviation minister, Roy Jenkins, to Paris to tell the French. By January 1965, Jenkins admitted, strong French pressure had reversed the decision, and Britain kept building. In 1969 the attorney general warned that walking away alone carried a "fifty-fifty chance" of "unacceptable costs" if France sued. Tony Benn reminded the cabinet that 16,000 workers were building Concorde, 8,000 of them in Bristol.

The case for keeping it: Britain had signed, and had itself asked for the penalty clause. A country that drops a treaty when it turns expensive teaches every partner that its signature is cheap, and thousands of jobs rode on the work.

The case against: a previous government signed, and taxpayers kept paying for a plane that only two airlines would buy. A promise to go on wasting money is still waste, and every extra year's spending was money that could not be spent on anything else.

Your call: *when a promise made by your predecessors starts costing your own people, does it still bind you?*

Back in the game

In Civ VI **VI** a rival may finish a Wonder, a one-of-a-kind landmark, while your city is twenty turns into it. Check how much of that effort comes back, then choose the next build on future value alone. In Civ VII **VII** a new age leaves old buildings outdated; their cost is spent either way, so build over them without regret.

Check yourself

1. You are 25 turns into a Wonder (a one-of-a-kind building only one civ can own) when a rival finishes it. A new Wonder needs 20 more turns, a Campus (the science district) 12. What do you compare?
2. A friend says, "I have paid for three years of this degree, so I must finish." Which concept, and what should they ask instead?
3. A city has spent half a stadium's budget and finishing will now cost double. Which two numbers should decide?

In the game: when a Wonder race is lost, choose the next build as if the lost turns had never happened.

In the world: judge a project by what it still costs and what it will still return; spent money gets no vote.

Political economy: The two Koreas

One people, one peninsula, and a thirtyfold income gap. The land and language are the same. The rules are not.

The case

The average North Korean, by the count of Daron Acemoglu and James Robinson, can expect to live ten years less than a cousin south of the 38th parallel. Korea is a central case of their *Why Nations Fail* (2012). North and South share a language, a history and a peninsula, yet the authors note that South Koreans have living standards similar to those of Portugal and Spain, and North Koreans about one tenth of that. The North has published no regular national accounts since the 1960s, so the Bank of Korea estimates them. It puts the North's 2023 income per person at 1.589 million South Korean won, about one thirtieth of the South's, and some North Korea experts call its estimates too optimistic. The authors' explanation is institutions, the rules that decide who holds power and who keeps what they earn. In their account the South's became inclusive, with property protected and markets open, while the North's stayed extractive, run by an elite that takes and blocks change.

Sources: Wikipedia; *Foreign Policy* (2012); *Korea Times* (2024); KEIA (2025).

Concept lens: a textbook case for **inclusive versus extractive institutions**, built on Douglass North's **institutions as the rules of the game**. The authors argue that Korea holds **geography** and culture roughly constant, so the rules are the prime suspect. Critics such as Jeffrey Sachs answer that geography, geopolitical threats and debt matter too.

Where the concepts strain

- ✗ Much of South Korea's fast growth came under Major General Park Chung-hee, who took power in a 1961 coup and ruled until his assassination in 1979; direct presidential elections returned only in 1987. Sachs's 2012 review lists 1960s Korea with Prussia, nineteenth-century Japan and 1980s China as deep reforms led by unelected rulers; the authors reply that extractive growth does not last.
- ✗ Francis Fukuyama called the pair too coarse, and critics point to China, which has grown for decades under rules the book calls extractive; the authors answer that China disproves them only if it gets rich while staying authoritarian.

Back in the game

Civ has no domestic politics; you are the elite. The closest it comes VI is a conquered city with Unhappy citizens and no Governor, which tends to lose Loyalty (how firmly a city stays yours) each turn and at zero revolts into a Free City. In Civ VII VII each settlement past the settlement limit (how many settlements you can hold before penalties) costs 5 Happiness everywhere.

Check yourself

1. You capture a rich city and give it nothing (no Amenities, no Governor, no builds). What will its Loyalty tend to do, and what is the fix?
2. Two towns share a river, language and climate. One has secure property and open courts; the other's mayor seizes any business that succeeds. Which theory predicts the gap?
3. A country grows fast for twenty years under one unelected ruler. What do Acemoglu and Robinson predict, and what would Sachs reply?

In the game: treat a captured city as a province to win over, or expect to lose it.

In the world: when similar places diverge, ask first who makes the rules and who keeps the gains, then look at the map.

International relations: The Anglo-German naval race

British crowds chanted for more warships, and a German admiral planned a fleet Britain would fear to fight. Each side called its own ships defensive.

The case

In the winter of 1908–9 British crowds petitioned Parliament under the slogan "We want eight and we won't wait." The race behind the slogan was a decade old. In March 1898 Germany's parliament had passed a Navy Law for 19 battleships; a second law in 1900 raised the plan to 38. Admiral Tirpitz, who drove the program, had called Britain Germany's "most dangerous enemy," and a February 1900 memo from his office set out the idea historians call the "risk fleet," a navy Britain would fear to engage. Britain's standard since 1889 was a fleet equal to the next two navies combined. In December 1906 it commissioned HMS *Dreadnought*, which made every older battleship, Britain's included, obsolete. Germany followed, and a 1908 law sped up its building. Eight capital ships (battleships and battlecruisers) were authorized for 1909–10. In 1909 Britain would settle for a 60 percent lead; Tirpitz would concede only 4:3. Talks in 1912 failed. By July 1914 Britain had 29 capital ships in service and 13 building, Germany 18 and 8.

Sources: Sondhaus; GHDI; Royal Museums Greenwich; Wikipedia.

Concept lens: often taught as the textbook **security dilemma**. Each side called its own fleet defensive and read the other's as a threat, and a battleship can defend a coast or attack one, so offensive and defensive forces looked alike, which Jervis says sharpens the dilemma. Tirpitz's risk fleet was meant as **deterrence**; Britain's answer, more ships and then new partners, was **balancing**.

Where the concepts strain

- ✗ A security dilemma needs both sides to want only safety. Tirpitz wanted the fleet as "a political power factor" against Britain, and the 1900 memo aimed to make Britain afraid to fight, so the model fits London's response better than Berlin's opening move.
- ✗ The dilemma suggests arming spirals toward war, yet by 1912–13 Germany had in effect dropped out. The Reichstag authorized only five new capital ships for 1912–14 while funding a big army expansion in 1913, and the German fleet sat in port for most of the war; how much the race caused 1914 is still argued.

Back in the game

In Civ VI VI units near a rival's border earn a relationship penalty and leaders with the Paranoid agenda dislike strong militaries, so a buildup meant for defense raises the temperature. In Civ VII VII paying Influence to stay neutral when an ally goes to war signals defensive intent at a cost.

Check yourself

1. Your neighbor's military score jumps, so you build an Encampment (the military district) and Knights. Next turn they denounce you. Explain in Jervis's terms.
2. Why did Dreadnought sharpen the dilemma rather than ease it?
3. Two neighbors each announce a "purely defensive" missile program this year. What should you expect, and what could soften it?

In the game: before you arm, ask how the buildup reads to your rival, and arm in ways that look defensive.

In the world: your safe choice is someone else's threat; expect the reply, and show you want only safety.

Geopolitics: The Red Sea and the long way round

A ship from Shenzhen to Rotterdam takes about 31 days through Suez and 41 around Africa. In 2024 most shipping lines chose the long way.

The case

From late 2023, Yemen's Houthi movement fired missiles and drones at merchant ships in the Red Sea, calling the attacks solidarity with Palestinians in Gaza. The UN Security Council demanded that they stop, and American and British warships shot down missiles and drones. Most shipping lines still went around the Cape of Good Hope. The Suez Canal carries about 10 percent of world maritime trade by volume and 22 percent of container trade, and, says UNCTAD, the United Nations trade body, there is no ideal alternative to it for Asia to Europe trade. In UNCTAD's February 2024 assessment, monthly Suez transits were down 42 percent from their peak, container tonnage through the canal had fallen 82 percent, and container spot freight rates from Shanghai had risen 122 percent in two months. By June 2024, against mid-December 2023, Suez transits were down 70 percent and Cape arrivals up 89 percent. Citing Clarksons Research, UNCTAD put the detour's extra demand at 3 percent for ships in general and 12 percent for container ships. Figures are as of UNCTAD's 2024 reports.

Sources: UNCTAD, rapid assessment (February 2024); UNCTAD, *Review of Maritime Transport 2024* (press release); UN Security Council (2024); Al Jazeera (2024).

Concept lens: a chokepoint is a narrow passage much traffic must use, and **sea power**, in Mahan's sense, is control of the sea lanes that run through such places. Who bears the cost when one closes is **asymmetric interdependence**, where whoever would suffer less if the ties were cut holds the leverage. The extra hulls are **stocks and flows**, since a 56-day India to Europe loop needs 8 ships and a 63-day one needs a ninth.

Where the concepts strain

- ✗ Mahan expected a battle fleet to decide command of the sea. Here no battle between fleets took place; warships shot down missiles and drones, yet traffic through Suez was still down 70 percent in June 2024. Attacks on merchant ships, a kind of raiding Mahan treated as secondary, imposed costs that strong navies could not quickly remove.

- ✗ Keohane and Nye wrote about ties between states where force was off the table; here an armed group outside any government's direct control used force. Trade adjusted by taking the long way, with added costs UNCTAD put at about \$1.7 million per Asia to Europe round trip around the Cape against \$1 million through Suez, spread thinly over many containers.

Back in the game

Civ VI **VI** has no blockade; a ship stops trade only by plundering a Trader, and raiders such as Privateers (naval raiding units) pillage coasts but cannot take cities. You cannot choose a Trader's path, only its destination. That is the Red Sea in miniature.

Check yourself

1. You are at war, and enemy Privateers keep plundering Traders (units that run trade routes) on the six sea routes that cross one strait. What are your options, and what does each cost?
2. Rerouting moved the same cargo. Why did UNCTAD still report 12 percent more demand for container ships?
3. Pick any strait or canal in the news. Who gains if it closes, and who ends up paying?

In the game: map the straits your trade routes pass through, and guard or avoid any that one enemy ship could close.

In the world: trade does not stop at a closed chokepoint; it goes the long way round, and everyone pays a little.

Strategy: Napoleon's march to Moscow

Napoleon took Moscow and lost his army. A Prussian officer fighting for Russia watched, and later named the point where winning turns into losing.

The case

Carl von Clausewitz, a Prussian officer, opposed his country's forced alliance with Napoleon, left the Prussian army and joined the Russian one. On 24 June 1812 Napoleon's Grande Armée began crossing the Niemen into Russia, about 450,000 men in the first wave of a force put at 600,000 to 685,000. Minard's 1869 chart draws the army as a thinning band, starting at 422,000. The Russians fell back through stripped country. Clausewitz fought for Russia at Borodino on 7 September, and Napoleon entered Moscow on 14 September with about 100,000 men. He held the old capital and could neither force a peace nor stay. He left on 19 October. The winter retreat, crossing the Berezina on 26–29 November, brought the toll to about 380,000 dead, missing or captured; Minard's band ends at 10,000. Clausewitz wrote his own account. His unfinished *On War*, published by his widow Marie from 1832, named the culminating point of the attack, where the attacker has only enough strength left to hold on and wait for peace; beyond it, he wrote, the scale turns and a counterblow follows.

Sources: Wikipedia (invasion of Russia; Clausewitz; Peninsular War; Fire of Moscow); Linda Hall Library; Routledge; Clausewitz, *On War*, trans. J. J. Graham (Book II, chapter 5; Book VII, chapter 5).

Concept lens: the home case for **Clausewitz's culminating point**. Sun Tzu warned that "there is no instance of a country having benefited from prolonged warfare" and told generals to forage on the enemy. Fighting in Spain, where 230,000 French troops were tied down, and in Russia at once resembles **imperial overstretch**.

Where the concepts strain

- ✗ The culminating point is obvious only afterward. By the usual signs Napoleon was winning in September, having fought the main Russian army and taken Moscow. Clausewitz himself wrote that everything hung on whether taking Moscow would force Tsar Alexander to make peace, and that calling the campaigns of 1805 and 1807 wise and this one rash is judging "by the result."
- ✗ Sun Tzu's "forage on the enemy" assumes there is something to take; stripped country denied it, so the maxim describes a choice the enemy can veto. Overstretch, for Kennedy, is a theory of decades, and Minard thought the cold mattered enough to plot the temperature beneath the retreat.

The hard question: would you burn your own city to beat an invader?

In the game a city is yields and a population count. Moscow in 1812 had around 270,000 people. Most fled before the French arrived, but 6,200 to 10,000 civilians stayed, along with 10,000 to 15,000 sick or wounded Russian soldiers. The city's military governor, Count Fyodor Rostopchin, had its fire engines removed or destroyed. Fires burned from 14 to 18 September and destroyed about three-quarters of the city. Of some 8,000 wooden houses, about 500 were left. Most historians blame the first fires on Russia's scorched-earth strategy, though who gave which order is still argued.

The case for the torch: Russia was fighting for its survival. An invader who finds food and shelter can stay, and one who finds ashes must leave. Denying Napoleon supplies struck his army where it was weakest, its logistics, and he left within five weeks.

The case against: the people who paid were Russians: the civilians who stayed, the wounded, and every family whose home burned. And the gain is doubtful. The French general Marcellin Marbot argued that enough buildings survived to house the entire army.

Your call: *if destroying what your own people own might save the country, who gets to decide, and should they ask first?*

Back in the game

In Civ VI VI units heal only 5 HP a turn in enemy land and fighting abroad doubles war weariness (unhappiness that grows the longer you fight), so a city assault has a turn after which you deal less damage than the city repairs. That turn is your culminating point.

Check yourself

1. You hold two captured cities, your army is at half strength far from home, and the enemy capital is in sight. What does 1812 say to check?
2. Define the culminating point of the attack, and say why September 1812 made it hard to see.
3. A company buys firms in distant countries, paying for each deal with the last. Which two concepts apply, and what should its board watch?

In the game: decide the turn you will stop before the push starts and write it down; the front never says stop.

In the world: success on the way in hides the point where going on starts to cost more than it gains.

Technology: Electricity reaches the factory floor

Electric motors spread through American factories for decades before output per worker jumped. The payoff waited for managers to rebuild the factory around them.

The case

In 1987 the economist Robert Solow quipped that computers were everywhere except in the productivity statistics. In 1990 Paul David borrowed the quip to ask why, and answered with the electric motor. In 1899 electric motors supplied less than 5 percent of the mechanical drive in American factories. Warren Devine's 1983 study traced the climb, to 25 percent by 1909, past steam by 1920, and about 78 percent by 1929. At first factories simply put a motor where the steam engine had been, turning the same overhead shafts and belts. From the mid-1890s to about 1920 "group drive" was in vogue, with each motor turning a section of shafting for a group of machines. The payoff came when managers put a motor on each machine ("unit drive") and redesigned the building around it, lighter, with machines arranged in the order of the work. David dates the productivity surge to the early 1920s, when only slightly more than half of factory drive was electrified, four decades after the first central power station opened. Devine found output per worker-hour in manufacturing rising 1.3 percent a year before 1919 and 3.1 percent after.

Sources: David (1990); Devine (1983); Solow (1987).

Concept lens: electricity is the model **general-purpose technology**, used everywhere and paying off only after users reorganized. The climb from 5 to 78 percent over thirty years fits the rising part of a **diffusion** S-curve. Shafts, belts and the buildings around them held factories to the old layout until the plants wore out, a loose case of **path dependence**, since the lock came from durable buildings rather than the increasing returns Arthur described.

Where the concepts strain

- ✗ David's analogy forecast that computers would pay off once firms reorganized, as factories had. Nothing here fixes how long a later lag must be; forty years is one case, and a general-purpose technology can also stall.
- ✗ David's finding that motor growth "statistically" accounts for about half of the 1920s speed-up in manufacturing productivity comes from comparing industries. It cannot cleanly separate electricity from other changes of the decade, such as continuous-process manufacturing, which he says were tied to it only indirectly.

Back in the game

In Civ VI **VI** Apprenticeship and Industrialization each add +1 Production (the yield that builds units and buildings) to every Mine the turn they complete; the real lag has no mechanic. In Civ VII **VII** old buildings keep lower yields until you overbuild them, so new yields arrive only when the old plant is replaced.

Check yourself

1. You research Apprenticeship and every Mine gains Production the same turn. Which step of the electricity case did the game skip?
2. A technology spreads from 5 to 78 percent of users in thirty years, but measured benefits appear only past the halfway mark. Which two concepts explain the shape and the delay?
3. Firms are spending heavily on a new general-purpose tool while output per worker barely moves. What does the dynamo case predict, and what evidence should you seek?

In the game: a yield-boosting tech is worth most in cities you are about to rebuild.

In the world: judge a general technology by how much work has been reorganized around it; adoption shows in budgets before output.

Society: The Korean Wave

In 2020 a Korean film won the Best Picture Oscar. A few years earlier, Korean shows had faded from Chinese screens. Attraction is power, until a bigger neighbor objects.

The case

In February 2020 *Parasite* became the first film not in English to win the Best Picture Oscar. In 2021, 142 million Netflix households watched *Squid Game* in its first four weeks. The Korea Foundation, surveying through 149 Korean missions abroad, counted 178 million hallyu fans in 2022, up from 9.26 million in 2012. Hallyu, the Korean Wave, began in the late 1990s, with help from the state: a 1999 law on cultural industries put film, music, games and broadcasting on the list for support. Joseph Nye, who coined "soft power" for attraction rather than force or payment, wrote in 2009 that South Korea's soft power "is not prisoner to the geographical limitations" of its hard power. In 2016–17, after Seoul agreed to host a United States missile-defense system (THAAD), Korean content faded from Chinese screens. Beijing announced no ban. A 2017 KEIA report, citing Chinese and Korean media, described an unofficial order to pull Korean shows from streaming sites, a list of 42 barred Korean celebrities, and no K-pop concert of over 10,000 seats since October 2016.

Sources: Nye (2009); WIPO Lex; oscars.org; UW; Netflix (2021); *Korea Times* (2023); KEIA (2017); CBS News (2017).

Concept lens: **soft power** with numbers attached. In Keohane and Nye's terms, China's leverage in 2017 came from **asymmetric interdependence**, because Korean studios and retailers stood to lose more from cut ties than Chinese viewers did.

Where the concepts strain

- ✗ Nye stresses that governments do not control their own culture, so soft power is hard to steer. Korea is cited both ways, since the 1999 law came first, yet the biggest hits came from private studios and an American platform.
- ✗ Attraction did not protect Korea when hard interests clashed. Beijing never acknowledged a ban, yet Korean shows and big concerts faded from China, and regulators closed 75 stores of Lotte, the group that supplied the land for THAAD, citing inspection failures. Soft power moved Chinese audiences and did not move Beijing.

Back in the game

Civ VI's Culture victory VI is the soft-power victory, and attraction travels along contact, since Tourism (cultural pull that wins a Culture victory) to a civ rises 25 percent with open borders and 25 percent more with a trade route. A rival refusing open borders only denies you a bonus; it cannot shut your culture out of its market, as Beijing did in 2017.

Check yourself

1. You are close to a Culture victory when your biggest Tourism target denounces you and refuses open borders. What do you expect, and what do you do?
2. A country's films are loved abroad, yet its diplomats win few votes in international bodies. Does this refute Nye?
3. A government announces a fund to "build soft power" through pop music. Give one reason to expect success and two for doubt.

In the game: build Tourism along contact, with open borders and trade routes to the rivals you want to win over.

In the world: attraction is real power that governments can feed but neither own nor defend; it bends when hard interests collide.

Decision science: The Cuban Missile Crisis

By crew accounts, on 27 October 1962 a Soviet submarine captain, believing he was under attack, ordered a nuclear torpedo readied. Threats work only when believed, and the most dangerous can come true by accident.

The case

On 27 October 1962 American ships used practice depth charges to signal the Soviet submarine B-59 to surface. In crew accounts gathered by the National Security Archive, its captain, believing he was under attack, ordered the nuclear torpedo readied, until the brigade's chief of staff, Vasily Arkhipov, saw that the Americans were only signaling. That same day a U-2 spy plane was shot down over Cuba. It had begun on 14 October, when a U-2 photographed Soviet nuclear missile sites in Cuba. On 22 October President Kennedy announced on television "a strict quarantine on all offensive military equipment under shipment to Cuba" and declared that any nuclear missile launched from Cuba against a nation in the Western Hemisphere would require "a full retaliatory response upon the Soviet Union." On 26 October Khrushchev offered to remove the missiles for a United States pledge not to invade Cuba; on 27 October he also demanded that American Jupiter missiles leave Turkey. Kennedy answered the first letter and ignored the second, while his brother Robert privately told the Soviet ambassador the Jupiters would be removed soon, though this could not be part of any public settlement. On 28 October Khrushchev announced the missiles would be dismantled.

Sources: Office of the Historian; American Presidency Project; National Security Archive; Allison (RAND, 1968); Burr and Nuti, Wilson Center (2023).

Concept lens: the televised threat and quarantine were **commitments** Kennedy could not cheaply walk back, and keeping the Jupiter promise out of the public settlement let the threat look as if it had held. The episode mixes **deterrence** (do not launch) with compellence (remove the missiles). Graham Allison (1969) argued that neither government acted as a single calculating mind; in one of his models, organizations follow routines and take the first workable option, which is Simon's **bounded rationality**.

Where the concepts strain

- ✗ Schelling's chapter "The Threat That Leaves Something to Chance" treats a risk that leaders do not fully control as a tool they can still create on purpose, and B-59 shows how real that risk was. Yet the Americans did not know of the incident at the time, so neither side could judge how much risk it was running.
- ✗ Firmness won, says the public story; firmness plus a no-invasion pledge and a secret promise on the Jupiters, says the archive. They teach opposite lessons about commitment, and Allison's three models each explain only part of the outcome.

The hard question: may leaders lie to keep the peace?

In Civ every term of a deal is on screen. The deal that ended the Cuban crisis had a hidden half. Only nine American officials knew of Robert Kennedy's promise on the Jupiters, which left Turkey in April 1963. In January 1963 Kennedy and his defense secretary, Robert McNamara, denied to Italy's prime minister that there had been a trade, and Secretary of State Dean Rusk told a Senate subcommittee that the removal had nothing to do with Cuba. Those who knew did not fully acknowledge the deal until 1989.

The case for secrecy: Kennedy saw a deal as essential to cut the risk of war, and a public swap under threat could have told every ally that its protection was for sale. The American ambassador in Turkey warned that the United States would lose much if the Turks got "the impression that their interests as an ally were being traded off in order to appease an enemy."

The case against: officials misled allies and the Senate, and voters were taught that firmness alone had won, a lesson only half true. Khrushchev, unable to show what he had gained, looked as if he had simply backed down.

Your call: *if a lie helps end a nuclear standoff, when, if ever, is the public owed the truth?*

Back in the game

In multiplayer **VI** a declared Friendship blocks war declarations for its length, and units parked on a border you said you would defend are the tripwire that makes a threat real. In Civ VII **VII** Sanctions and Treaties cost Influence, so they say more than a message.

Check yourself

1. A rival marches an army to your border and types that it is "just training." You build Walls and park units in view. Which of Schelling's ideas are in play?
2. Kennedy's televised threat was a commitment. What did the secret side of the deal add, and what does it do to the claim that firmness alone won?
3. Two governments trade public ultimatums over a disputed island this month. What should you watch for beyond the speeches?

In the game: back every promise and threat with something that costs you if you break it.

In the world: a threat you cannot retreat from is powerful and dangerous in equal measure; leave the other side a door.

Capstone: A Grand Strategy Memo for a Real Country

In *Part 5* you wrote a memo for your civ. Now write one for a real country.

The template

Grand strategy is the use of all a state's resources to reach its main goals; Lykke's test is whether ends, ways and means balance. Pick a country you do not live in, to argue from data rather than loyalty.

Heading	What to write
Ends	Two or three goals any government would keep, such as secure territory, rising living standards and a seat at the table.
Means	Population, income, trade, armed forces and budget, each with its source.
Constraints	Geography (coasts, chokepoints, markets), economy (exports and buyers), institutions (how fast decisions change), neighbors (who fears whom).
Ways	Three concrete actions (alliances, trade deals, posture, investment) that turn means into ends.
Security dilemma check	How each way reads from the neighbor's capital, and what signal shows it is not a threat.
Pivot rule	One observable event that would change the plan, written down in advance.
Check-in	The date you will reread the memo against the news.

Worked example, Britain 1900–1909

Ends. Keep the sea lanes and empire secure with a navy as strong as the next two combined (the 1889 two-power standard). **Means.** The world's largest fleet, deep finances, a small army; the Boer War of 1899–1902 took about 448,000 imperial and colonial troops. **Constraints.** Russia was expanding toward Manchuria and Korea, Germany had passed navy laws in 1898 and 1900, and Britain wanted to cut imperial overcommitment and bring the fleet home, an **overstretch** problem. "Splendid isolation," a phrase from 1896, no longer matched the means. **Ways.** The Anglo-Japanese Alliance of 30 January 1902 promised neutrality if either partner fought one power and help if it fought two, and is credited with deterring France from joining Russia's war with Japan. The Entente Cordiale of 8 April 1904 settled colonial disputes with France, Egypt for Morocco, short of an alliance. The Anglo-Russian Convention of 31 August 1907 settled Persia, Afghanistan and Tibet and later formed part of the Triple Entente. If these deals were aimed at Germany they were **balancing** in Walt's sense; historians debate that, and the 1904 entente was not framed against Germany. **Security dilemma check.** Seen from Berlin, three settlements with Germany's neighbors could look like a ring, whatever London intended; Sondhaus notes the German naval threat had helped drive Britain into the Triple Entente. **Pivot rule.** A rule history would have tested is "if Germany speeds up its building, outbuild it." Germany's 1908 law did, and Britain authorized eight capital ships for 1909–10.

Where to get the numbers

Use neutral public sources. World Bank Open Data covers population, income, trade and debt; the SIPRI Military Expenditure Database covers defense spending; UN Comtrade shows who sells what to whom; IMF PortWatch counts daily ship transits at Suez, the Cape and Panama; Our World in Data has long series; V-Dem and the Polity Project score institutions. The CIA announced on 4 February 2026 that it had ended its World Factbook, so use the sources above instead.

In the game: write the memo for your civ before turn 1 and for a real country before you next read the news.

In the world: a grand strategy is shared goals, measured means, ways your neighbors can read as defensive, and a rule for changing your mind.

Answers

Answers to every "Check yourself" question, in book order. Try each question before you look.

What Kind of Game Is This? p. 11

1. One. A Religious Victory needs more than half the cities of every civ still in the game. 5 of 10 is exactly half, so a sixth city completes it.
2. Grand strategy: matching ends, ways and means. The end is the space race. Production is a means, and an unused army spends it on a way that serves no end you picked.
3. It is grand strategy on a small scale. She names the end that matters most, then lines up her hours (the means) behind it, instead of giving every task an equal share.

Setting Up Your First Game p. 15

1. The two bonuses make a 4-point gap. Damage grows exponentially with the gap, so your hits do about 17% more damage and the AI's about 15% less.
2. Deliberate practice: skill grows fastest just beyond your current level, with fast feedback. Chieftain is now too easy, so move up to Prince, where neither side gets a combat bonus.
3. Pick a piece just past her current level and get fast feedback, such as recording herself. The first is repeating what she knows; the second cannot see why she fails.

Reading the Screen and Taking a Turn p. 17

1. A Eureka pays 40% of the cost at once, which is 20 Science. At 5 a turn that saves 4 turns: the tech takes 6 turns instead of 10.
2. Bounded rationality. Time and attention are limited, so satisfice: set a good-enough bar, such as "heads for unexplored land and stays safe", take the first move that clears it, and save thought for settling.
3. Set a bar, such as close, open on Saturdays and well reviewed, and take the first that clears it. Search longer when the choice is hard to reverse, the way founding a city is.

Where to Settle p. 21

1. River: 5 Housing minus 3 citizens leaves 2 spare, so full speed. Dry: Population 3 is already past its 2 Housing, so quarter speed.
2. Geography and development: the starting endowment shaped the lead. Critics such as Acemoglu, Johnson and Robinson stress institutions and choices, so check what each of you built, and when, before blaming the land.
3. Geography (water, transport, farmland) and choices or institutions (who governed, what was built). The lesson's warning applies: be wary of any story that uses just one of the two.

Your First 60 Turns p. 24

1. 10 turns at 8 a turn. Colonization adds 50% Production toward Settlers, making 12 a turn, and $80 \div 12$ is about 6.7, so it finishes in 7 turns.
2. Path dependence: an early choice locks in later ones. In Civ the lock-in is an explicit rule, since districts cannot move. Arthur and David studied lock-in that emerges from millions of separate choices.
3. About 10 years, by the rule of 70 ($70 \div 7$). Money added early has more doublings ahead of it, so it ends larger than the same sum added later.

Tiles and Growth p. 30

1. Two citizens eat 4, leaving 3. Size 2 needs 24 Food, so 8 turns. With 1 less Food the surplus is 2, so 12 turns. One Food a turn cost four turns of growth.
2. No. Need is population $\div 2$, rounded up, so size 8 still needs 4, while the 7th citizen added one. Marginal analysis judges each next unit by its own extra cost, and Civ's costs jump at thresholds.
3. The 60 she did not earn, plus anything else the shift would have given her. **Opportunity cost** is the best alternative given up, even when no money leaves your pocket.

Housing and Amenities p. 34

1. Housing minus population is 0, so 25% counts: 1 Food a turn. A Granary adds 2 Housing, leaving 2 spare, so the whole surplus counts again.
2. The Malthusian trap, which Civ reduces to a growth stall: at the cap, extra Food buys little growth. A Granary or Aqueduct lifts it at once. The real escape was new farming methods and, after about 1800, technical change.
3. Seats are the fixed input, like Housing. Extra cooks add less and less once seats bind, which is diminishing returns. Find the binding limit first: more seats or faster table turnover may pay more than a cook.

Builders and Chopping p. 39

1. Chop first: Magnus adds 50%, and Production beyond the current build carries over. Then place the Campus, since placing it on Woods clears them for nothing. The chop uses the last charge, so the Builder disappears.
2. Time value. Production now can build a Settler now, and that city pays back every turn after. Discounting makes early yields worth more, so 30 now beats 30 spread over 30 turns.
3. The lump today against the monthly earnings, discounted to today's value. Cash now can be put to work at once, say on stock that sells this month, so a sum today beats the same sum later.

Districts p. 41

1. Mountain +1. Rainforests $3 \times 0.5 = 1.5$, rounded down to 1. The district gives +0.5, rounded down to 0. Each kind rounds on its own, so the Campus gets +2 Science.
2. Agglomeration economies: neighbors raise each other's output. Real clusters also bring congestion, such as high rents, traffic and pollution. Civ models none of these, so clustering always pays in the game and only sometimes in life.
3. Division of labor: each baker gets faster and can buy better tools for one product. Smith's limit is market size. Specializing pays only if the town buys enough of each product to keep a bakery busy.

Tech and Civics p. 46

1. The Eureka adds 40% of the cost, so $30\% + 40\% = 70\%$. The tech does not complete, and you research the last 30% as normal. From 60% or more, it would have completed on the spot.
2. Diffusion of innovations. Real ideas spread along an S-curve: slowly among early adopters, fast through the majority, then slowly among holdouts, as hybrid corn did across US states.
3. Learning by doing: experience makes the next unit cheaper. Arrow added spillover. What one producer learns spreads to others, which is why he treated it as a source of growth for a whole economy.

Governments and Policies p. 51

1. Open the Government screen and slot Colonization; completing a civic makes the swap free. +50% Production cuts build time to about two-thirds, so each Settler takes about a third fewer turns.
2. They argue extractive rule, with power held by a narrow elite, cannot sustain growth. Civ has no domestic politics and ties no government to long-run growth, so there Autocracy really is only a tool. That is where the map breaks.
3. Rules set payoffs, so more people drive downtown on Saturdays. Shops that gain trade now have a stake in the rule and would defend it, which is why North says institutions change slowly.

Governors p. 55

1. Moving restarts establishment, so 5 turns pass with no +15% Science and Culture. The +8 Loyalty per turn starts the moment she is assigned, so the city gets that at once.
2. The problem needs an agent with its own interests and better information. Civ's Governors never shirk, steal or misreport, so there are no hidden actions to watch and no agency costs to pay.
3. She cannot watch every shift, so she pays to monitor, such as checking the till. Or she can change incentives: a share of profits lines the manager's interests up with hers.

Wonders and Great People p. 57

1. You are 10 short. Faith costs $150 + 10 \times 10 = 250$, which you have. Gold costs $200 + 15 \times 10 = 350$, which you lack. Pay 250 Faith.
2. The sunk-cost fallacy. Spending more cannot bring back what you already spent. Compare only what the next turns of Production would buy: a wonder you will probably lose, or a Settler.
3. Ignore the half already spent; it is gone either way. Compare the cost of finishing with the benefit of a finished stadium, and with the best other use of the same money.

Religion p. 61

1. 8 onto the city 7 tiles away: 1, doubled for the Holy Site, quadrupled for the Holy City. None onto the one 12 tiles away, outside the 10-tile reach; only units or trade routes carry your faith there.
2. Passive pressure. Stark argues faiths grew mainly through existing ties among neighbors, family and trading partners, at a steady compounding rate. That is pressure between nearby cities and along trade routes. Mass preaching, the Missionary's burst, mattered less.
3. Reward members who bring friends. Network spread says new members arrive mostly through existing ties, so each member's friends are the likeliest recruits. Posters are the broadcast, which Stark found mattered less than personal ties.

Trade Routes p. 64

1. Domestic: 2 Food and 1 Production (City Center 1 and 1, Campus 1 Food). International: 6 Gold, 3 per district. Your new city collects either; the domestic route grows and builds it, the international one pays cash.
2. Complex interdependence: whoever loses more if the ties are cut is weaker. War cancels every route between you, so you lose more. The break: Civ AIs barely weigh lost trade, so your routes will not deter them.
3. Comparative advantage. Every hour she spends on coffee is an hour of bread lost, and bread is where her lead is biggest. If she bakes and the café brews, together they make more, and trade lets both gain.

City-States and Envoys p. 68

1. +2 Science in your capital (1 envoy) plus +2 in each Library (3 envoys), so +6. Nobody is suzerain, because a tie means no suzerain. A fourth envoy would win you the title.
2. Walt: the neighbor. Threat depends on power, nearness, offensive capability and intentions, not size alone. Civ AIs balance against score instead, so the peaceful leader can draw as much hostility as a conqueror. That is where the map breaks.
3. Balance: line up with the distant power against the nearby threat, since nearness, offensive capability and intentions drive fear. If it is weak and isolated, with no help in reach, it is likelier to bandwagon with the neighbor.

Loyalty and Ages p. 71

1. 60 is Wavering: growth at 75% and all yields -25%. A Governor adds +8, the biggest flat source listed; Ecstatic citizens add +6. Growing your nearby cities also raises the pressure line.
2. Exit: the city left as a Free City and joined another civ. Voice, complaining or bargaining before leaving, has no mechanic. Disloyalty is a number you manage, not a protest you can negotiate with.
3. The complainers. Voice tells the manager what is wrong and gives time to fix it. Loyalty, such as friendships at the gym, delays exit and gives voice time to work. If leaving is too easy, that pressure drains away.

Diplomacy and the World Congress p. 74

1. 3: the free vote, then extras at 10 and 20 Favor (30 spent). The next costs 30, more than the 20 left. A full win earns 1 Diplomatic Victory point and no Favor refund.
2. Whether the future outweighs the one-time gain: cooperation lasts when play repeats with no known end. Civ charges 100 grievances and hands the victim a casus belli, and grievances fade only during peace.
3. Vote splitting: plurality chose the trip most members ranked last. A runoff between the top two picks the mountains, 5 to 4. Arrow proved no ranked rule meets every fair condition at once, so the rule shapes the winner.

Espionage p. 79

1. 24 turns. Your spies in that city act 2 levels higher, which raises the odds of the risky steal, and Gain Sources itself can't fail. A caught spy hands the rival a casus belli, so better odds matter.
2. Information asymmetry: it knows its real preferences and you don't. Pay to inspect: a delegation or embassy, an international trade route or a spy's Listening Post raises diplomatic visibility, which reveals hidden agendas.
3. Buyers offer an average price, so owners of good bikes keep them and the listings fill with lemons. Close the gap: inspect it, take a test ride, or buy from a seller with ratings or a warranty.

Climate and Disasters p. 82

1. 1 m tiles flood in Phase II and are submerged in Phase IV. 3 m tiles flood in Phase V and are submerged in Phase VII. A Flood Barrier stops flood damage; the City Center never goes under.
2. The tragedy of the commons. One world CO₂ level means each civ keeps the full gain of its own plants but shares the flood cost. One user's restraint barely moves the total; only shared rules like Climate Accords can.
3. A negative externality: a cost falling on people who had no part in the decision, with no price attached. Pigou proposed taxing the harm so the factory's private cost matches the cost to everyone.

Barbarians p. 86

1. The outpost starts building a raiding party of 3 to 6 units, depending on difficulty. Kill the Scout before it gets home and the raid never starts, so attack it with any unit in reach.
2. Olson's roving bandit turning stationary: raiders who settle gain a stake in the land and stop looting it. The break: only Clans mode shows this; in standard games barbarians never settle.
3. Weber defines the state by its claim to a monopoly on the legitimate use of force in its territory. Guards who punish people on their own authority challenge that claim; their force lacks the legitimacy the state claims.

Why Wars Start (and How to Avoid One) p. 90

1. Formal War, 100 Grievances, because the denunciation is more than 5 turns old. Territorial Expansion (75) needs two of your cities within 10 tiles of two of theirs. Surprise War would cost 150.
2. The security dilemma: each side's defense looks like a threat to the other. Civ shows rival units and scores on screen. Real states have to guess, and the guessing is what drives the dilemma.
3. Defenses that are hard to use for attack, such as fixed border fortifications. Your defense is someone else's threat, so the cheapest security is the kind that cannot be turned outward.

Combat p. 94

1. The Archer defends with its combat strength of 15, plus 3 for Woods, so $\Delta = 35 - 18 = +17$. That deals about 59 damage. Its 25 ranged strength only counts when it shoots.
2. About 7.1. Fighting strength goes with the square of numbers: $10^2 - 7^2 = 51$, and $\sqrt{51} \approx 7.1$. A head start of three units costs A only about three losses.
3. Both clear the problem that feeds the losses first, likely the machine, then the queue. When losses compound, as walkouts do, concentrated effort beats spreading it thin.

Timing Pushes p. 101

1. +15 strength each (20 to 35), about 1.8 times the damage against the same target. Upgrading together and attacking next turn gives the AI less time to build a counter before your window shuts.
2. Boyd's OODA loop: you act inside the enemy's decision cycle. Civ is turn-based, so both sides get the same tempo of decisions, and your speed comes from preparation.
3. The one that reorganizes. A revolution in military affairs needs new organization as well as new technology, and the advantage lasts only until the rival copies both.

Navies, Air and the Map p. 104

1. Quadriremes. Land ranged units take -17 against cities and ships do not, though both deal 50% less to walls. Ranged units cannot capture, so a melee unit, on land or a naval melee ship, takes the city.
2. Mahan. Civ VI has no blockade: a ship stops trade only by plundering a Trader, while blockade was the core of real command of the sea.
3. The coastal country on both counts. Like Spykman's rimland it is rich and connected but open to fleets. The landlocked one is safe from the sea but must trade through chokepoints it does not control.

Choosing Your Victory p. 108

1. Science primary: Korea is on the wiki's Science list, and mountains feed Campuses. Diplomatic secondary: Seasteads and Global Warming Mitigation give 1 Diplomatic Victory Point each, and science players reach them first.
2. Grand strategy, in Lykke's terms. The end is the Culture victory, the means are Faith and Wonders, and the way is buying Rock Bands with Faith. The way has to fit the means.
3. Fix the end (promotion), then list the means (budget, young players, home ground) and pick ways that fit them, such as developing young players. Avoid a plan its means cannot pay for, such as buying stars.

Science Victory p. 111

1. 1 light-year per turn on its own, plus 1 per station, makes 3 per turn: about 17 turns instead of 50. Each extra station adds another light-year per turn.
2. Romer's endogenous growth: ideas never run out, so knowledge compounds. The space projects cost 900 to 2,100 Production each, so factories decide the finish.
3. The clustered town. Agglomeration means nearby labs share people and ideas, the way a Campus gains +0.5 adjacency for each neighboring district.

Culture Victory p. 112

1. $200 \times 8 = 1,600$ Tourism per tourist. The cost of each tourist grows with the number of civs, so fewer civs make every tourist cheaper.
2. Soft power: shared political values make influence easier. The game's version breaks because attraction never backfires, and because Civ only counts tourists while no one changes their mind.
3. Attraction it does not fully control: the festival, local food, a welcoming name. A scandal or a violent incident can wipe out goodwill fast, because attraction is slow to build and fast to lose.

Domination Victory p. 115

1. 10 Favor per turn: 5 for each occupied original capital. Grievance losses come on top, which is one reason the plan says take one capital per campaign, then rest.
2. Imperial overstretch (Paul Kennedy): when military and territorial commitments grow faster than the economy that pays for them, the power declines. Rivals balancing against the leader are part of the pattern.
3. Costs of the new branches outrunning income from the old ones. Like an empire, the expansion is paid for by the existing base, and it fails when the bill outruns the income.

Religious Victory p. 118

1. A Standard map allows 5 religions, so one slot is left. If a rival takes it, nobody else can found one: drop Religious that turn and pivot to Culture, since Faith buys Rock Bands.
2. Network diffusion: ideas travel along ties between people. Rodney Stark argued that early Christianity grew mainly through ties among family, friends and trade partners.
3. The bring-a-friend event. Ideas spread along existing relationships, so recruiting through members' friends uses the network. Posters reach strangers with no tie to the club.

Diplomatic Victory p. 119

1. $10 + 20 + 30 = 60$ Favor. Each extra vote costs 10 more than the last, so several civs buying a few cheap votes each outvote one civ buying many expensive ones.
2. Arrow's impossibility theorem. Because no counting rule is perfectly fair, the agenda and the rule shape the result as much as the votes do.
3. Cooperate reliably, for example by backing workable proposals, so others expect cooperation back. Repeated play rewards a steady reputation, like the +1 Diplomatic Victory Point for voting with the winner each session.

How the AI Thinks and Cheats p. 123

1. +100% Production and Gold, +40% Science, Culture and Faith, and 3 Settlers. In Civ VI, +80% is only Immortal's Production and Gold bonus; it is Civ VII's Deity that gives +80%.
2. Structural realism, from Kenneth Waltz (1979). The structure of the system, more than leaders or ideas, drives states to balance against a power that grows too strong.
3. Offensive realism says the strong state seeks as much power as it can, ideally dominance of its region, and that weakness invites predation. The small country's best protection is to look too costly to attack.

Climbing the Ladder p. 128

1. Behind: about 10 is the Deity rough target, and one player says 5 means struggling. Make expansion pace your one skill, and replay the same seed to turn 60 changing only that.
2. Deliberate practice (Ericsson and colleagues, 1993). One limit: a 2014 meta-analysis found practice explained only about 26% of performance differences in games. Another: Ericsson required a teacher, and most Civ players coach themselves.
3. Pick one weakness just beyond her ability, such as a hard passage, and drill just that passage with fast feedback, ideally from a teacher. Playing what is already comfortable adds hours without much gain.

What's Different From Civ VI p. 131

1. The Antiquity limit is 3, so you are 1 over: -5 Happiness in every settlement. Civ VI has no settlement cap, so "settle everywhere" is a Civ VI habit that now has a price.
2. They loosen lock-in: tech and civic trees start fresh and you can pick a new civ. Your leader stays and Commanders keep their experience, so early choices still shape later ones.
3. Both are brakes on snowballing. A strong team or empire turns its lead into more strength, so the designers give trailing players a way back in.

Ages and Crises p. 133

1. Two at 80%, with more frequent bad events. At 90% you must slot 3 or 4 and events turn severe. The crisis ends at 100%, when the transition begins.
2. It matches the rising cost of complexity: a bigger state carries more upkeep when a shock hits. It breaks because the game schedules the crisis at 70%, while Tainter's collapses come from inside, when complexity stops paying.
3. What it costs to keep compared with what it now returns. Each added layer tends to return less than the one before, so low-return layers are where cuts hurt least when times get bad.

Towns, Cities and the Settlement Limit p. 137

1. 400 base, plus 300 for the capital, which counts as a city, minus $6 \times 50 = 300$: 400 Gold. That sits between the 200 minimum and the 1,000 cap.
2. The cost it puts on all the others. All 9 settlements would lose 5 Happiness each. Overstretch says to weigh the new holding's gain against what every other holding pays for it.
3. Each branch adds a cost every other branch pays: less of the owner's attention. Past some point those shared costs outrun the new shop's sales, like the penalty that hits every settlement.

Quarters and Overbuilding p. 138

1. Both go outdated: they lose adjacency and special effects but keep full maintenance, and the tile drops back to a district. Overbuild both with Exploration buildings; two current-age buildings make a Quarter again.
2. Outsiders usually bring the new, by innovating, and incumbents often lose. In the game you own both the old and the new building, so it hides the firms and workers who lose out.
3. The old press's upkeep against what it still earns. Like an outdated building at full maintenance, an obsolete asset keeps costing money after its edge is gone, so replacing it early can pay.

Growth, Specialists and Happiness p. 141

1. Each point below zero cuts yields by 5%, so -4 means -20%: 16 Science. Unhappiness does not cut Food, so 10 Food. Raise Happiness first, because a Specialist costs Happiness too.
2. Marginal analysis: compare the second Specialist's 3 Science with its own upkeep of 2 Food and 2 Happiness. Diminishing returns explains why it adds less than the first did.
3. Compare the 15 extra customers with the second hire's wage. The average per barista hides that the second one shares the machine, so each new hire adds less than the last.

Influence, Independent Powers and Diplomacy p. 143

1. A neutral power starts at 30 of the 60 points. At 2 points a turn, the last 30 take 15 turns. With Add Support from the start it gains 3 a turn: 10 turns.
2. Each refusal hurts the relationship more, and you will deal with this leader all game. Keeping cooperation going is usually worth more than the one deal you would save by refusing.
3. The partner remembers. A one-time gain can cost future deals and trust, just as each rejected proposal in Civ VII lowers the relationship score and makes later deals harder.

Commanders and War p. 145

1. A surprise war on a Friendly leader costs 4 War Support. That 4-point gap is war weariness: units lose 4 Combat Strength, and each settlement you founded loses $4 \times 3 = 12$ Happiness.
2. The culminating point: past it, advancing makes you weaker. Stop at the turn you picked in advance and make peace once you hold what you came for. Peace opens after 10 turns of war.
3. Public support is part of military power. In the game low War Support cuts Combat Strength and Happiness. In the world, fading support shrinks recruits, budgets and patience, so the war gets harder to fight.

Triumphs, Dedications and Winning p. 147

1. Between 40% and 60% of Modern you need 2× second place, which is 280. At 300 the 5-turn countdown starts. It pauses if the rival climbs above 150.
2. Pick the end you can reach, here a Military victory, then line up ways (Triumphs, wars, new settlements) and means (Production, Influence) behind it in every age, instead of feeding every score a little.
3. In a contest judged against a rival, the lead matters. A is only about 11% ahead, so a small swing flips it, the same logic as Civ VII's 1.25× bar late in Modern.

Your First Civ VII Game p. 149

1. Start a Befriend on it before you settle. A town founded within 5 hexes turns a neutral power hostile unless befriending has begun. The third town still fits your limit of 3.
2. Satisfice: take a good-enough option, such as the script's Scout first, and move on. Your attention is limited, which is bounded rationality, so spend it on learning what the game teaches.
3. Set a good-enough bar, take the first option that clears it, and revisit later. With limited time and information, a trusted default frees attention for the few choices that matter most.

Playing Against People p. 153

1. A double move: the enemy moves at the very end of this turn, then attacks at the very start of the next. Pull the unit back or cover it before ending the turn.
2. A Nash equilibrium: each is making its best reply to the other. It need not be good for both. Both would rather save the cost, but neither can cut alone safely.
3. Something that makes breaking it costly, such as a signed agreement with a penalty. Words that cost nothing are cheap talk; a commitment becomes credible when backing out would cost the promiser.

The Six Assumptions Built Into Every Civ Game p. 171

1. Each citizen eats exactly 2 Food, which is wrong about how farming societies fed themselves. Box asks whether it is wrong in ways that matter here. For learning that food limits growth, it is useful.
2. "History is one ladder." Roman concrete was forgotten for centuries, and Mesoamerican societies built cities and calendars without draft animals or iron tools, orders no tech tree allows.
3. Ask whether the model is wrong in ways that matter here. Leaving out buses, cyclists and walkers may matter a lot for a road, so they should check it against what it cannot see.

Winning and Doing Right p. 175

1. Grievances with the owner: up to a base of 150, three times the cost of capturing. It never counts the people. Population is a number that goes to zero.
2. Weber's ethic of responsibility: she judged the act by its foreseeable results and owns them. Walzer's dirty hands: the act was still a wrong, and her guilt shows she was fit to make it.
3. It jumps from an *is* (what some countries did) to an *ought* (what ours should do). Hume asks for the hidden value to be stated and defended: that coming out on top is worth what it costs others.

Systems: The 2020–23 chip shortage p. 181

1. You read the stock and ignored the flow and the delay. Watch the per-turn change, and send the Builder before the stock runs low.
2. The bullwhip effect. Each firm forecasts from the swings it sees and over-orders when it fears rationing, so swings grow upstream.
3. Likely a glut. Hoarding lifts orders above real use, new capacity arrives after the delay, and stocks overshoot. That is the bullwhip's prediction; chip sales did fall 8.2 percent in 2023.

Economics: Concorde and the money already spent p. 182

1. Only the future. The 25 turns are gone either way; weigh 20 turns for the Wonder's effect against 12 for the Campus, after checking what Production carries over.
2. Sunk cost. Ask whether the remaining year beats its best alternative use. Fees paid are gone either way; a penalty for leaving is a future cost and counts.
3. The remaining cost to finish, including any penalty for stopping, and the value the finished stadium will deliver. Money already spent is the same either way, so it cannot decide.

Political economy: The two Koreas p. 184

1. It tends to fall, and at zero the city revolts into a Free City, because you are running an extractive province. Invest instead, with Amenities, a Governor and builds, the game's version of inclusive rules.
2. Inclusive versus extractive institutions. The first town rewards investment and lets new firms rise; the second's elite takes and blocks change, so investment stops and the gap widens.
3. They predict the growth stalls unless the rules open up, since extractive growth does not last. Sachs would answer that Prussia, Japan, South Korea and China all made deep reforms under unelected rulers.

International relations: The Anglo-German naval race p. 185

1. A security dilemma. Your defensive buildup read as offensive, because the AI judges strength rather than intent, so your step toward safety lowered theirs and they answered with hostility.
2. It made every older battleship obsolete, so the count restarted and each new hull mattered more. A battleship can defend a coast or attack one, so offense and defense looked alike, which Jervis says sharpens the dilemma.
3. Each reads the other's program as offensive and buys more, so a race follows. Softening needs visibly defensive forces, costly signals of restraint, or an agreed ratio, which Britain and Germany never found.

Geopolitics: The Red Sea and the long way round p. 186

1. You cannot choose a Trader's path, only its destination, so send routes to cities that avoid the strait, guard it with warships, or make peace. Each costs yields, ships or war aims.
2. Ships at sea are a stock; cargo per month is a flow. A longer voyage keeps each ship out longer, so the same flow needs more hulls, like the India to Europe loop needing a ninth.
3. Whoever can threaten the passage cheaply gains bargaining power. The cost falls on shippers and consumers along the route, spread thinly, and hardest on trade with no alternative route, like Asia to Europe.

Strategy: Napoleon's march to Moscow p. 187

1. Whether you are past your culminating point. Compare damage dealt with the capital's healing, count turns for reinforcements, and ask if you can hold what you have; if not, consolidate or make peace.
2. The point where the attacker has only enough strength left to hold on and wait for peace; beyond it a counterblow follows. Napoleon had fought the main Russian army and taken Moscow, so the signs pointed the wrong way.
3. Overstretch and the culminating point. Watch whether each new commitment adds more cost than strength, and whether retreat is still possible before the means to hold the gains run out.

Technology: Electricity reaches the factory floor p. 189

1. The reorganization lag. Real gains waited until factories were rebuilt around unit drive. A truer rule would phase the bonus in, or grant it only after you rebuilt, as Civ VII's overbuilding does.
2. Diffusion of innovations gives the S-shaped spread. The general-purpose technology idea explains the delay, because users must reorganize before gains appear, so benefits trail adoption by years.
3. A lag while work is reorganized around the tool, then gains. Look for redesigned workflows and replaced old systems rather than purchases; buying the motor and keeping the shafts gave almost nothing.

Society: The Korean Wave p. 190

1. A slower flow rather than a stopped one, since Civ only removes a bonus. Keep trade routes to them, shift effort to other rivals, and remember a real government can shut the door.
2. No. Soft power is one resource among several, slow and hard to steer, and attraction to a culture need not carry over to policy where governments rather than publics decide.
3. Korea's 1999 law did precede its boom. Doubt because the biggest hits came from private studios and a foreign platform, and because a displeased neighbor shut it out of its market in 2017.

Decision science: The Cuban Missile Crisis p. 191

1. Their message is cheap talk. Your Walls and visible units are costly signals and a commitment, and deterrence works only if they believe you will fight, which visible cost makes believable.
2. A promise, kept out of the public settlement, to remove the Jupiters from Turkey soon. The public story credits firmness alone; the archive shows Kennedy also paid, quietly, so commitment did not win by itself.
3. Back channels and face-saving trades, forces operating close enough for accidents, and whether each side has left itself a way to step back without visible loss. The settlement is often the part nobody announces.