

Scarcity and Survival

Resources, Rationing, and the Moral Weight of Who Lives

Name _____ Class _____ Date _____

PART 1: THE LIFEBOAT PROBLEM



Drought-cracked earth. When resources run out, survival becomes a question of choices.

In April 1841, the American ship *William Brown* struck an iceberg and sank in the North Atlantic. Forty-one survivors, most of them emigrant passengers, crowded into a leaking and badly overloaded longboat under the command of the first mate, Francis Rhodes. The following night the weather turned, the boat began to fill, and Rhodes gave an order: the boat had to be lightened. The crew threw passengers into the freezing sea, and by most accounts sixteen people died: fourteen men and two women. The survivors were rescued the next morning.

Only one sailor, Alexander Holmes, was ever put on trial, and in 1842 an American court convicted him of manslaughter and sentenced him to six months in prison. The judge accepted that there are emergencies in which not everyone can be saved, but he made two points that are still quoted today. First, sailors owe a duty to their passengers and should not save themselves first. Second, if some must die, the fair way to choose them is by drawing lots. The case left a question that has haunted philosophy ever since: when there is not enough for everyone, who decides who lives and who dies?

This is the scarcity problem at its most extreme, but scarcity does not appear only in lifeboats. Every day, hospitals decide which patients receive transplant organs and which remain on the waiting list, and governments decide how to allocate limited budgets among education, defense, and healthcare. In the first months of the COVID-19 pandemic, doctors in northern Italy faced the lifeboat problem in real time: too many patients and not enough intensive care beds and ventilators. They used triage, a

system for deciding who is treated first, based on factors such as the likelihood of survival. These decisions are never purely medical; they are deeply moral.

PART 2: TRAGEDY OF THE COMMONS

In 1968, the ecologist Garrett Hardin published an influential essay called "The Tragedy of the Commons." He described a shared pasture where several farmers graze their cattle. Each farmer benefits from adding one more cow, which means more milk and more meat, but the pasture can support only a limited number of animals. If every farmer acts in their own self-interest, adding cow after cow, the pasture is destroyed and everyone loses. Hardin called this the tragedy of the commons: individuals acting rationally in their own interest collectively destroy a shared resource.

The pattern repeats across human civilization. Fishing fleets deplete ocean fish stocks because no single boat benefits from catching less. Factories pollute rivers because the cost of pollution is shared by everyone while the profit belongs to the owner. Countries burn fossil fuels because the economic benefits are immediate and national, while climate change is gradual and global. The atmosphere is the ultimate commons: shared by all, owned by none, and damaged by everyone. The tragedy is not that people are evil, but that rational individual behavior can produce a collective catastrophe.



About 2.2 billion people, roughly one in four worldwide, lack safely managed drinking water.

Hardin's story is not the whole truth, however. The economist Elinor Ostrom spent decades studying real communities that share forests, fisheries and irrigation water. She found that many of them manage these resources successfully for generations, using their own rules and their own ways of punishing cheats. She won the Nobel Prize in economics in 2009, and her work suggests that the tragedy is a danger, not a law of nature.

PART 3: SCARCITY IN SCIENCE FICTION

Science fiction has explored scarcity with brutal honesty. In Liu Cixin's *The Dark Forest*, Earth faces invasion by the Trisolaran fleet, and enormous resources are redirected toward defense. Some people conclude that the war cannot be won and that humanity's only hope is to build ships and flee. This idea is called Escapism, and the world's governments make it a crime. Building escape ships would drain resources from the common defense. Worse, there could never be enough ships for everyone, so the plan raises a question no society can answer peacefully: who goes, and who stays? To many people in the novel, a plan that saves only a few is treason against everyone else.

The problem returns in *Death's End*. Research into ships that could travel at the speed of light is banned, partly because the public sees such ships as an escape hatch for the rich and powerful. The novel forces readers to confront an uncomfortable possibility: when a whole species is in danger, people may prefer that nobody escapes rather than accept that only some will. Is that fairness, or is it a kind of collective suicide?

"The real problem of humanity is the following: we have Paleolithic emotions, medieval institutions, and god-like technology."

E. O. Wilson, biologist, 2009

PART 4: SOLUTIONS AND TRADE-OFFS

Economists and philosophers have proposed various frameworks for managing scarcity. Utilitarianism says we should maximize total well-being: save the greatest number of lives, even if individual choices seem harsh. The philosopher John Rawls proposed the veil of ignorance: design your system as if you did not know what position you would occupy in it. If you might turn out to be the richest person in society or the poorest, the healthiest or the sickest, what rules would you choose? Rawls believed this thought experiment would lead people to fairer rules.

Others advocate market solutions: let prices rise until supply and demand reach equilibrium. During a water shortage, higher prices encourage people to use less and attract investment in new supply. Critics argue, however, that market solutions punish the poor: if water costs ten times more, the wealthy still drink while the poor go thirsty. The tension between efficiency and equity, between what works and what is fair, runs through every debate about scarcity. There are no perfect answers, only trade-offs.



Tokyo, with Mount Fuji on the horizon. More than 8 billion people share one planet's resources.

KEY VOCABULARY

Term	Meaning	Term	Meaning
<i>scarcity</i>	having too little of a resource to meet demand	<i>allocate</i>	to distribute resources for a particular purpose
<i>triage</i>	a system of deciding which patients or problems are dealt with first	<i>transplant</i>	to move an organ from one body to another; an operation of this kind
<i>self-interest</i>	concern for one's own advantage	<i>deplete</i>	to use up or exhaust a resource
<i>rational</i>	based on logic and reason rather than emotion	<i>treason</i>	the crime of betraying one's country or group
<i>luxury</i>	something desirable but not necessary	<i>utilitarianism</i>	the philosophy that the right action is the one that produces the most well-being overall
<i>equilibrium</i>	a state of balance between opposing forces	<i>equity</i>	fairness; giving each person what they need, which may not be equal shares
<i>tragedy of the commons</i>	the destruction of a shared resource by individuals each acting in their own interest	<i>lottery</i>	a system of random selection

Discussion & Analysis

Scarcity and Survival · Lesson Activities

A. COMPREHENSION

1. What happened on the William Brown's longboat in 1841?

2. What did the judge at Alexander Holmes's trial say about how such a choice should be made?

3. What is the tragedy of the commons? Give one example from the reading.

4. Why does the tragedy occur even when nobody is acting with evil intent?

5. What did Elinor Ostrom's research show?

6. In The Dark Forest, why is Escapism treated as a crime?

7. Explain the veil of ignorance. How is it supposed to produce fairer rules?

8. Why do critics say that market solutions to scarcity are unfair?

B. VOCABULARY IN CONTEXT

Complete each sentence with a term from the vocabulary list. Use each term once.

allocate · deplete · equilibrium · equity · lottery · luxury · self-interest · treason · triage ·
utilitarianism

1. During the pandemic, some hospitals used _____ to decide which patients received ventilators first.

2. Overfishing will _____ ocean stocks within decades if governments do not act.

3. Each farmer acted out of _____, but the result was a disaster for everyone.

4. The government must _____ its limited budget among education, defense, and healthcare.

5. Some argue that in a survival situation, fairness becomes a _____ the group cannot afford.

6. The price of water will rise until supply and demand reach _____.

7. True _____ means giving people what they need, not simply giving everyone the same amount.

8. The judge suggested that the victims should have been chosen by _____.

9. According to _____, the best choice is the one that saves the greatest number.
10. In the novel, planning to flee the planet is treated as _____ against the rest of humanity.

C. CRITICAL THINKING

1. On the William Brown, the crew chose who would die, and the crew survived. The judge said lots should have been drawn. Do you agree? What would you have done?
- _____
- _____
- _____
2. Climate change is often described as a tragedy of the commons. Does Hardin's framework fit? What would Ostrom's findings suggest about solving it?
- _____
- _____
- _____
3. If only 1,000 humans could survive an extinction event, how would you select them: by lottery, by merit, or in some other way? Defend your choice.
- _____
- _____
- _____
4. Is planning to leave rather than stay and fight always wrong? Can you think of situations in which escape is the morally correct choice?
- _____
- _____
- _____

D. THE GREAT DEBATE: FAIRNESS VS. SURVIVAL

Scenario: A colony ship carrying 500 people to a new planet suffers engine damage. It can reach its destination only if it carries no more than 400 people. One hundred must be left behind on a barren moon with little hope of rescue. How are they chosen?

Position A: Lottery

Everyone has an equal chance. Nobody judges who is more valuable. Random selection is the only truly fair method because it treats every life as equal. The moment you start ranking people, you create an inequality that will poison the colony before it arrives.

Position B: Merit

Survival requires skills: doctors, engineers, farmers, leaders. A lottery could remove every doctor or every engineer. The colony needs the best chance of success, not the fairest process. Harsh, but rational. The dead cannot benefit from fairness.

Position C: Volunteers, then lottery

Ask for volunteers first and honor their choice. If there are not enough, use a lottery for the rest. This preserves dignity and choice while still solving the problem, and nobody has to rank human lives.

After the debate, write your own position in three or four sentences.

E. SCENARIO ANALYSIS: WHO GETS THE RESOURCE?

Choose two or three scenarios. Decide how to distribute the resource and explain your reasoning using ideas from the reading.

1. Hospital: One Organ

A heart is available for transplant. Patient A is 25, otherwise healthy, with two children. Patient B is 60, a retired surgeon who could train new doctors. Patient C is 40 and has waited the longest. Who gets the heart?

2. Spaceship: Limited Fuel

Your ship has fuel to reach one destination. Planet A has water but an unknown atmosphere. Planet B has breathable air but no confirmed water. Planet C is the closest but also the smallest. Where do you go?

3. City: Water Rationing

A drought has cut the water supply by 60%. Do you give every person an equal ration, raise prices, give priority to hospitals and schools, or cut industrial use first?

4. Colony: Food Shortage

A Mars greenhouse fails. Food will last 6 months for 30 people, or 12 months for 15. The next supply ship arrives in 10 months. What do you do?

5. Nation: Pandemic Vaccines

Only 20% of the population can be vaccinated in the first month. Who goes first: healthcare workers, the elderly, children, essential workers, or a random selection?

6. Earth: The Last Ship

An asteroid will hit Earth in five years. One ship can carry 10,000 people. Eight billion want a seat. How do you choose, and who designs the process?

Notes:

F. ESSAY PROMPT

Choose ONE of the following and write a well-organized essay of 300 to 500 words on a separate sheet of paper.

- Option A: "In a true survival situation, fairness is a luxury." Do you agree or disagree? Use examples from the reading, from history or from your own experience.
- Option B: Choose one real tragedy of the commons (climate change, overfishing, deforestation, water pollution). Explain why it happens and propose a realistic solution.
- Option C: It is often said that a society should be judged by how it treats its weakest members. How does this idea apply to the scenarios in this lesson? Do you agree with it?

Plan your essay in the box before you write: your main claim, three supporting points with evidence, and your conclusion.

Teacher's Notes & Answer Key

Scarcity and Survival · Instructor Guide

LESSON OVERVIEW

LEVEL

Advanced (CEFR B2 to C1)

DURATION

60 to 90 minutes

FOCUS

Reading, ethical reasoning, debate

Source material: United States v. Holmes; Hardin and Ostrom on the commons; Rawls; Liu Cixin's trilogy

Series: Humans & The Universe, Lesson 5 of 8. Works as a standalone lesson.

SUGGESTED LESSON FLOW

Warm-up (5 min)	Ask: a lifeboat can hold 10 people but 15 need to get in. What do you do? An instant moral dilemma to open the lesson.
Pre-reading (5 min)	Key vocabulary: scarcity, allocate, triage, tragedy of the commons, utilitarianism.
Reading (15 to 20 min)	Parts 1 to 4. The William Brown story is a strong hook; let students react before continuing.
Comprehension (10 min)	Section A as a quick check.
Vocabulary (10 min)	Section B. Ten gaps, word bank supplied.
Debate (10 to 15 min)	Section D. Assign positions or let students choose.
Scenarios (15 to 20 min)	Section E. Pairs choose two or three scenarios and present their decisions to the class.
Homework	Section F essay. Section C questions can be used for a second discussion lesson.

ANSWER KEY: SECTION A (COMPREHENSION)

1. After the ship sank, 41 survivors were in a leaking, overloaded longboat. When the weather worsened, the first mate ordered the boat lightened and the crew threw about sixteen passengers overboard. The rest were rescued the next morning.
2. That sailors owe a duty to passengers and should not save themselves first, and that if some must die, the fair way to choose is by drawing lots. Holmes was convicted of manslaughter and given six months.
3. The destruction of a shared resource by individuals each acting in their own interest. Examples from the reading: overgrazing a shared pasture, overfishing, river pollution, burning fossil fuels.
4. Because each person is acting rationally: one more cow or one more catch benefits that individual, while the cost is spread across everyone. No malice is needed, only self-interest repeated many times.
5. That many real communities manage shared resources such as forests, fisheries and irrigation water successfully over long periods, using their own rules and penalties. The tragedy is a risk, not something that always happens.

6. Because building escape ships would take resources from the common defense, and because there could never be enough ships for everyone, which raises the question of who goes and who stays. A plan that saves only a few is seen as a betrayal of everyone else.
7. You design the rules of a system without knowing what position you will hold in it. Because you might turn out to be among the worst off, you have a reason to choose rules that treat the worst off fairly.
8. Because when prices rise, the wealthy can still afford the resource and the poor cannot. Efficiency is achieved at the cost of equity.

ANSWER KEY: SECTION B (VOCABULARY)

1. triage 2. deplete 3. self-interest 4. allocate 5. luxury 6. equilibrium 7. equity 8. lottery
9. utilitarianism 10. treason

DISCUSSION EXTENSIONS

Real world: Have students research how different countries decided who received COVID-19 vaccines first. Was it fair? Compare approaches.

Film connection: In *Snowpiercer* (2013), the last humans live on a train divided by class. How does the film illustrate scarcity and social hierarchy?

Link to Lesson 4: A Mars settlement would face extreme scarcity. How would utilitarianism, the veil of ignorance and a lottery each apply to sharing its resources?

Philosophy: Introduce the trolley problem. Is actively choosing who dies different from allowing someone to die by doing nothing? Apply the answer to the William Brown.

Section E: There are no correct answers. Scenario 4 has a hidden option that strong students find: ration for 30 people, stretch the food as far as possible and hope the ship arrives early.

KEY DISCUSSION LANGUAGE

Moral reasoning

"The right thing to do is... because..."

Challenging

"But that assumes..." / "What if the situation were reversed?"

Trade-offs

"We gain X, but we lose Y."

Justifying

"This is justified because..." / "The alternative is worse."

Empathy

"Put yourself in their position..."

Conceding

"I see your point, but..."

Sources & Further Reading

United States v. Holmes (1842), Circuit Court for the Eastern District of Pennsylvania. Accounts of the number thrown from the longboat vary; sixteen is the figure most often given.

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

United Nations World Water Development Report 2024: 2.2 billion people without safely managed drinking water.

John Rawls, *A Theory of Justice* (1971). E. O. Wilson, remarks at a public discussion at Harvard, 2009.

Liu Cixin, *The Dark Forest* (2008) and *Death's End* (2010).

Humans & The Universe

An eight-lesson advanced reading and discussion series

This lesson is part of a connected series for advanced learners. Each lesson pairs a science fiction premise with the real science, history and ethics behind it, and each works as a standalone class or as part of the full sequence.

1	The Dark Forest: game theory, deterrence and the fate of civilizations	
2	Should We Answer? SETI, the Fermi Paradox and the risk of saying hello	
3	Waking Up in the Future: hibernation, time and the cost of survival	
4	Living in Space: survival, adaptation and leaving Earth behind	
5	Scarcity and Survival: resources, rationing and who gets to live	<i>you are here</i>
6	First Contact Protocols: diplomacy, danger and speaking for humanity	
7	The Ethics of Technology: power, responsibility and dangerous tools	
8	Endings and Legacy: extinction, memory and what we leave behind	

Lesson 1, The Dark Forest, is a free download from Tahric Teaches on Teachers Pay Teachers.