

# Natural Resources & Civilizations

University of Northern Iowa

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# Geoarchaeology

## Archaeometry









# 3 by 5 cards

- Name
- Major
- Hometown
- Fav. Music artist



# Logistics

- August 24 to December 15. 2025 – M, W, F
- Blackboard – Keeping track of scores
- Content - <https://www.exploreiowageology.org/NRcxxx>



# Walkabout





# Geo-Experienced Quiz





1. Why do the Earth's rivers contain fresh water, while the oceans are salty?



2. How are the terms **climate** and **weather** similar and/or different?

4. Is soil the same as dirt?  
Is one more important than the other?



3. What types/sources of energy can produce change upon the Earth's surface?



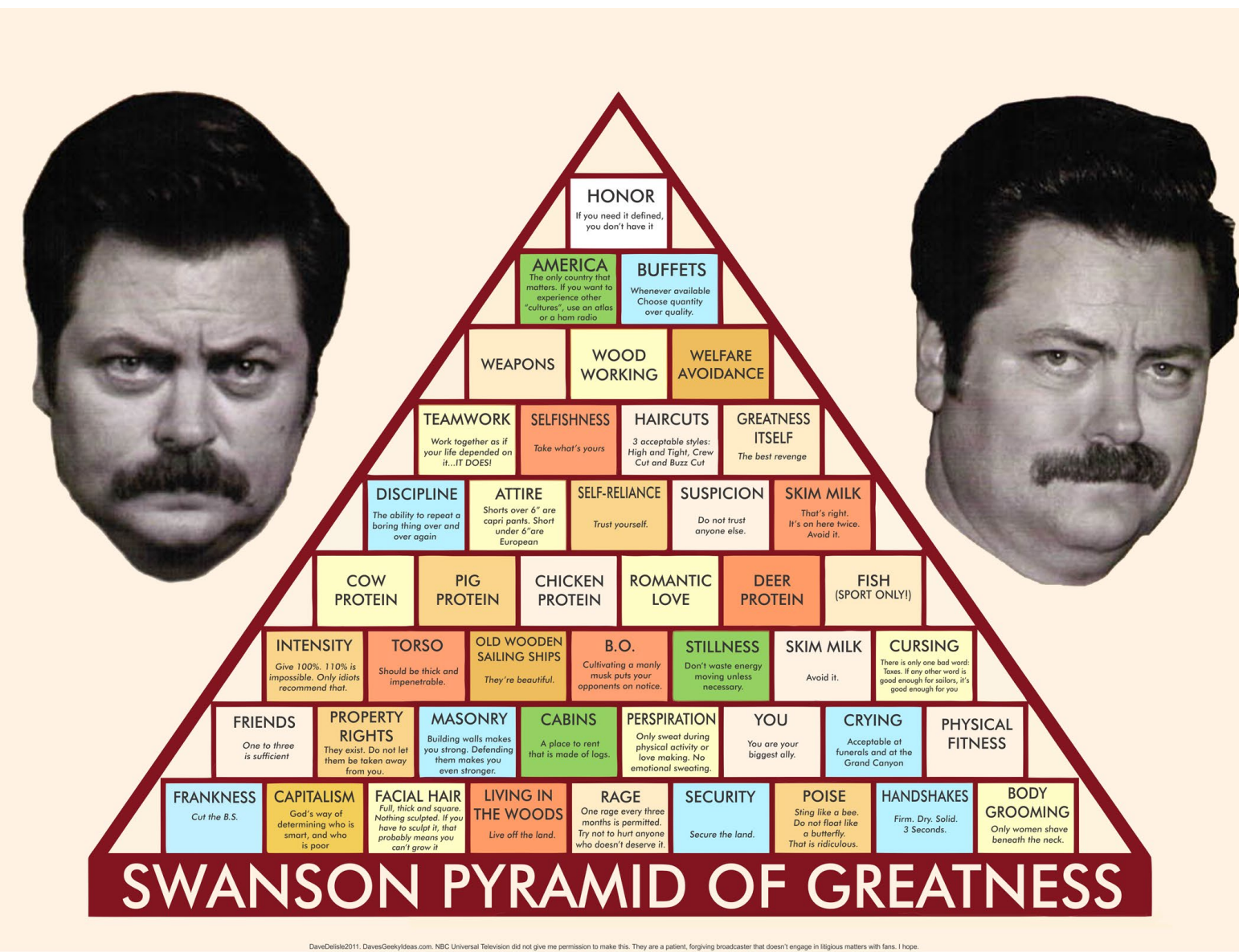
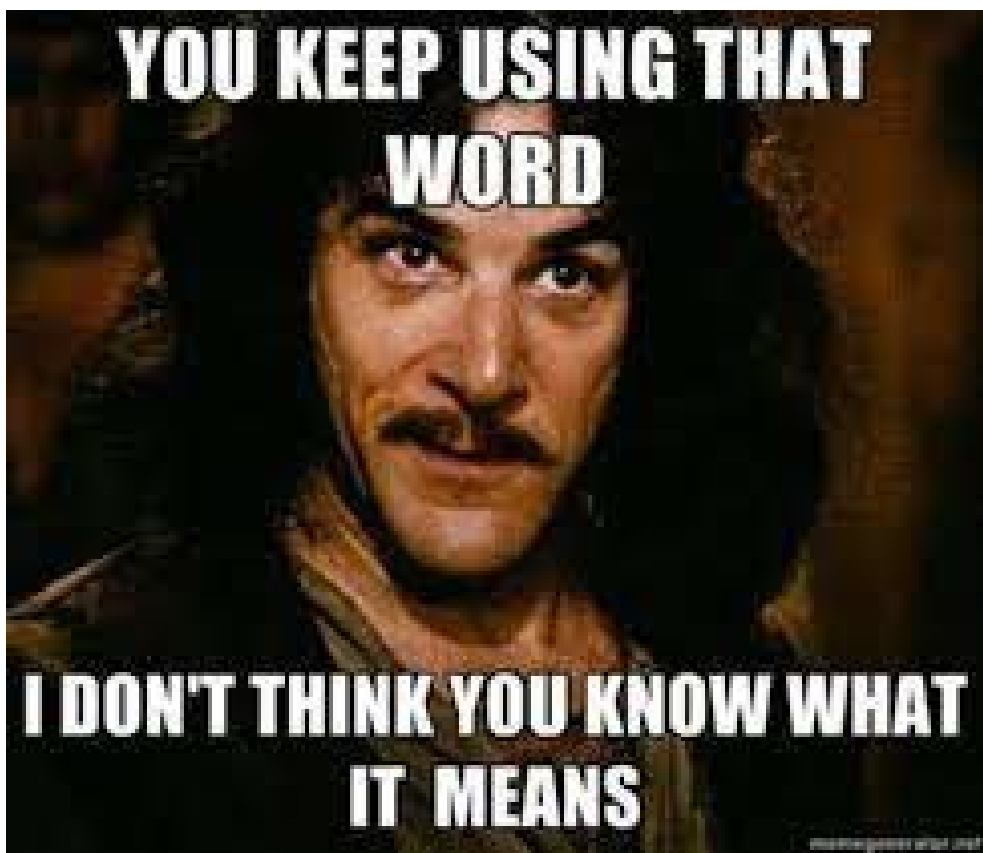
5. Where does your tap water come from? List what factors determine your drinking water's quality...



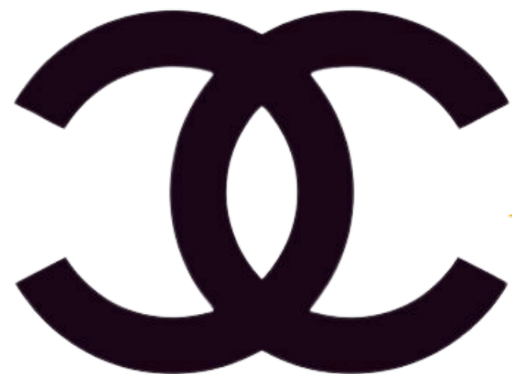
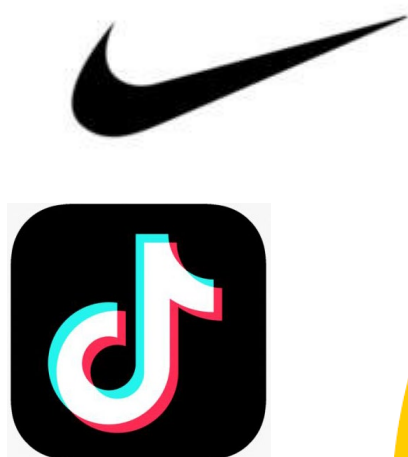
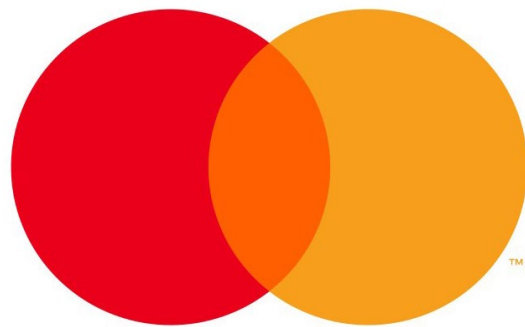


6. Natural resources are...

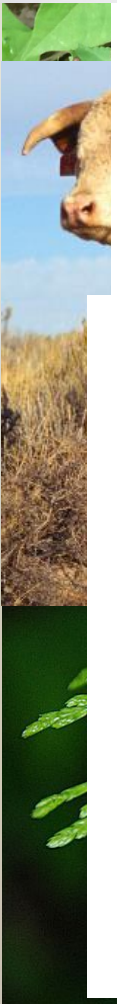
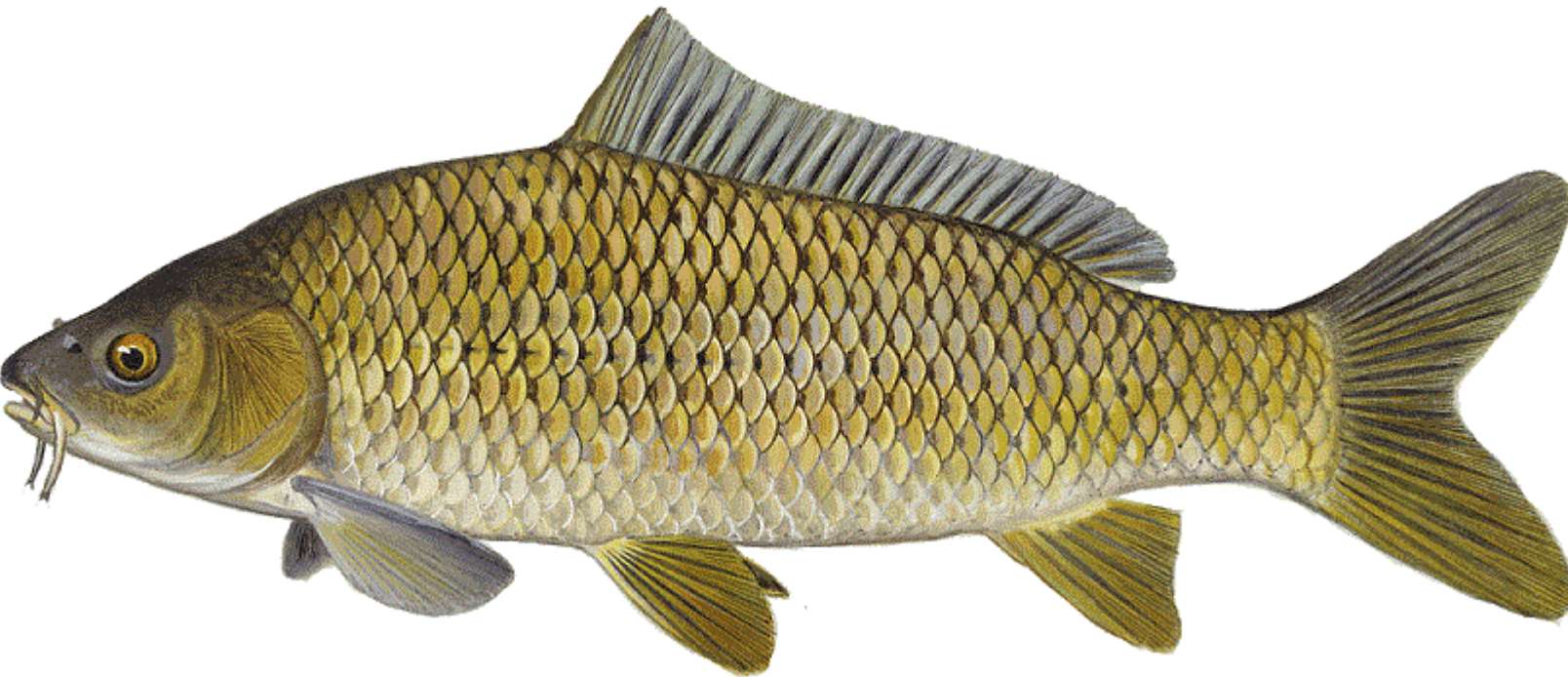
7. A Civilization is...













# Civilization

A dynamic society characterized through its advanced developments in art, culture, education, financial systems, government, and technological to industrial skills.



*“Thinking is easy, acting difficult, and to put one’s thoughts into action, the most difficult thing in the world.” - Goethe*





Air



Water



Land



Life





4300





# Roma

1200  
years







1776 to ..? @ 249





2976

6076





# The End of the Roman Empire Wasn't That Bad

By James Fallows

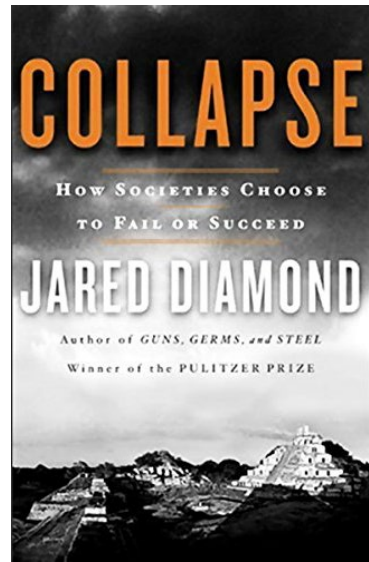
- U.S.A. vs. Rome
- Could the self paralysis of American national government somehow user in a rebirth – of our own Dark Ages?
- People are shifting their enthusiasm and careers to local and state efforts





# Jared Diamond – Trends of *Collapse*

1. Environmental destruction
  - Inadvertently destroying the resource base your society depends on...
2. Climate change (warming or cooling)
3. Hostile neighbors (War- someone wants your resources and is willing to fight for them)
4. Once friendly neighbors choose not to support you
5. Political, social, culture factors





# Societal reactions –

## *Observations – Critical Thinking – Decisions*

1. Failure to perceive the problem
2. Recognize the problem but choose to do nothing about it
3. Recognize the problem work effectively together, but it is not enough

*Do Our Choices Matter?*



# Yale Climate Connections, [Dana Nuccitelli](#), April 14, 2020

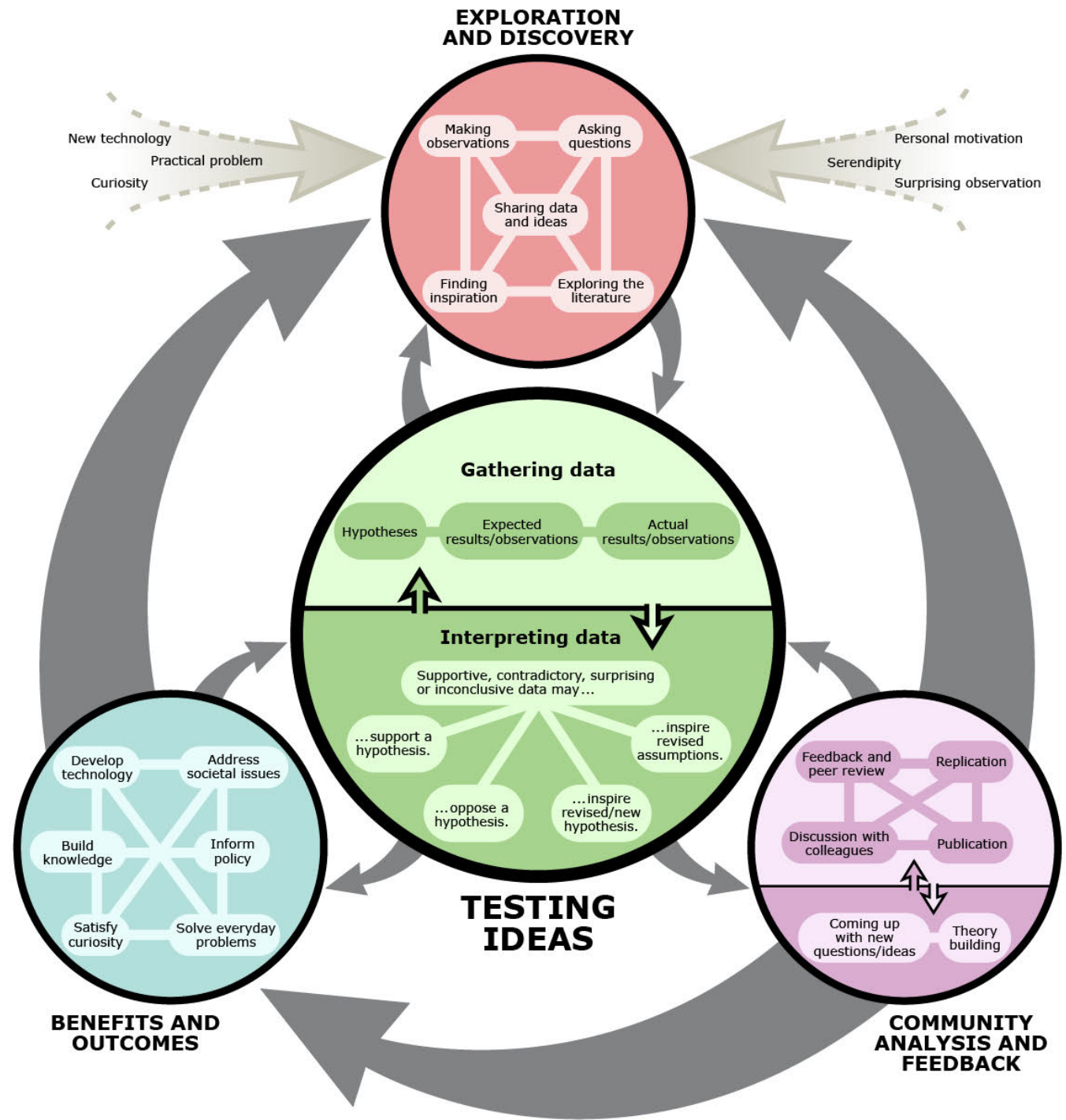
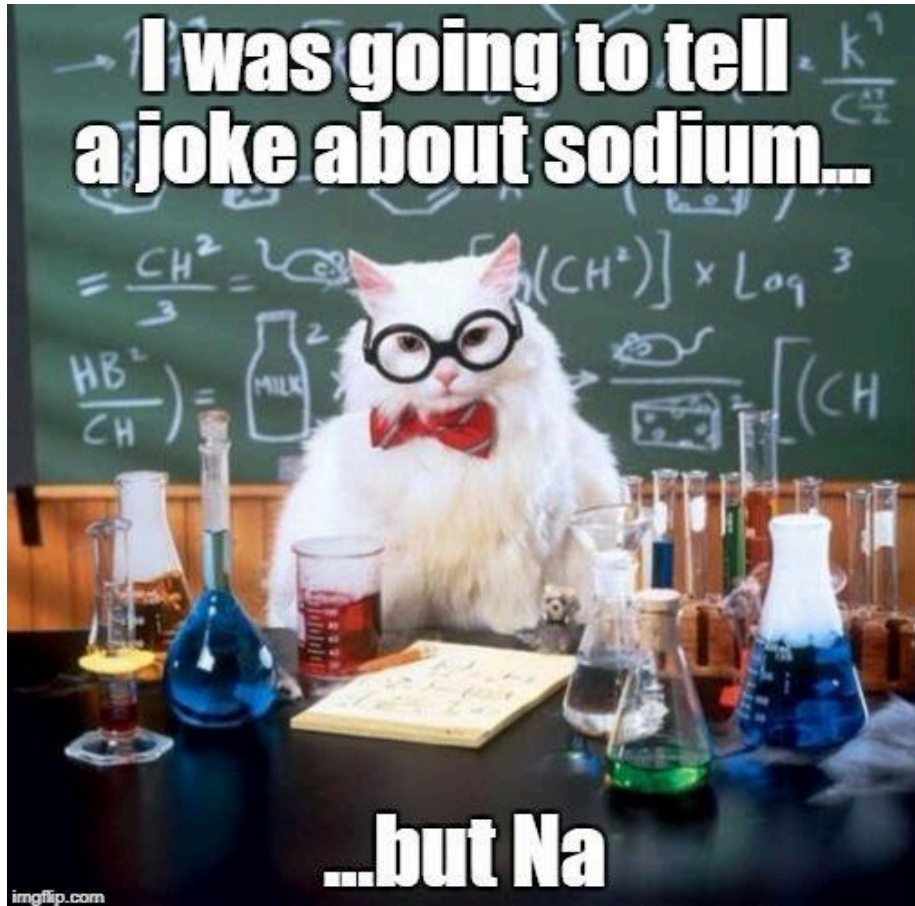
## Patterns of Denial

<b>Stage 1</b> <b>It's not happening</b>	"The Democrats are politicizing the coronavirus ... This is their new hoax" [REDACTED]	"It's a hoax; I think the scientists are having a lot of fun." [REDACTED]
<b>Stage 2</b> <b>It's not our fault</b>	"China is to blame because the culture where people eat bats and snakes and dogs and things like that, these viruses are transmitted from the animal to the people" - Sen. [REDACTED]	"China does not do anything to help climate change. They burn everything you could burn; they couldn't care less" - [REDACTED]
<b>Stage 3</b> <b>It's not that bad</b>	"One day like a miracle it will disappear" - [REDACTED]	"[The climate] will change back." - [REDACTED]
<b>Stage 4</b> <b>Solutions are too costly</b>	"We cannot let the cure be worse than the problem itself." - [REDACTED]	"I think the climate change is just a very, very expensive form of tax." - [REDACTED]
<b>Stage 5</b> <b>It's too late</b>	"It is going to spread further and I must level with you ... many more families are going to lose loved ones before their time" - [REDACTED]	"The climate apocalypse is coming. To prepare for it, we need to admit that we can't prevent it." - Author [REDACTED]



# Using Science

- The scientific method
- Observing and testing





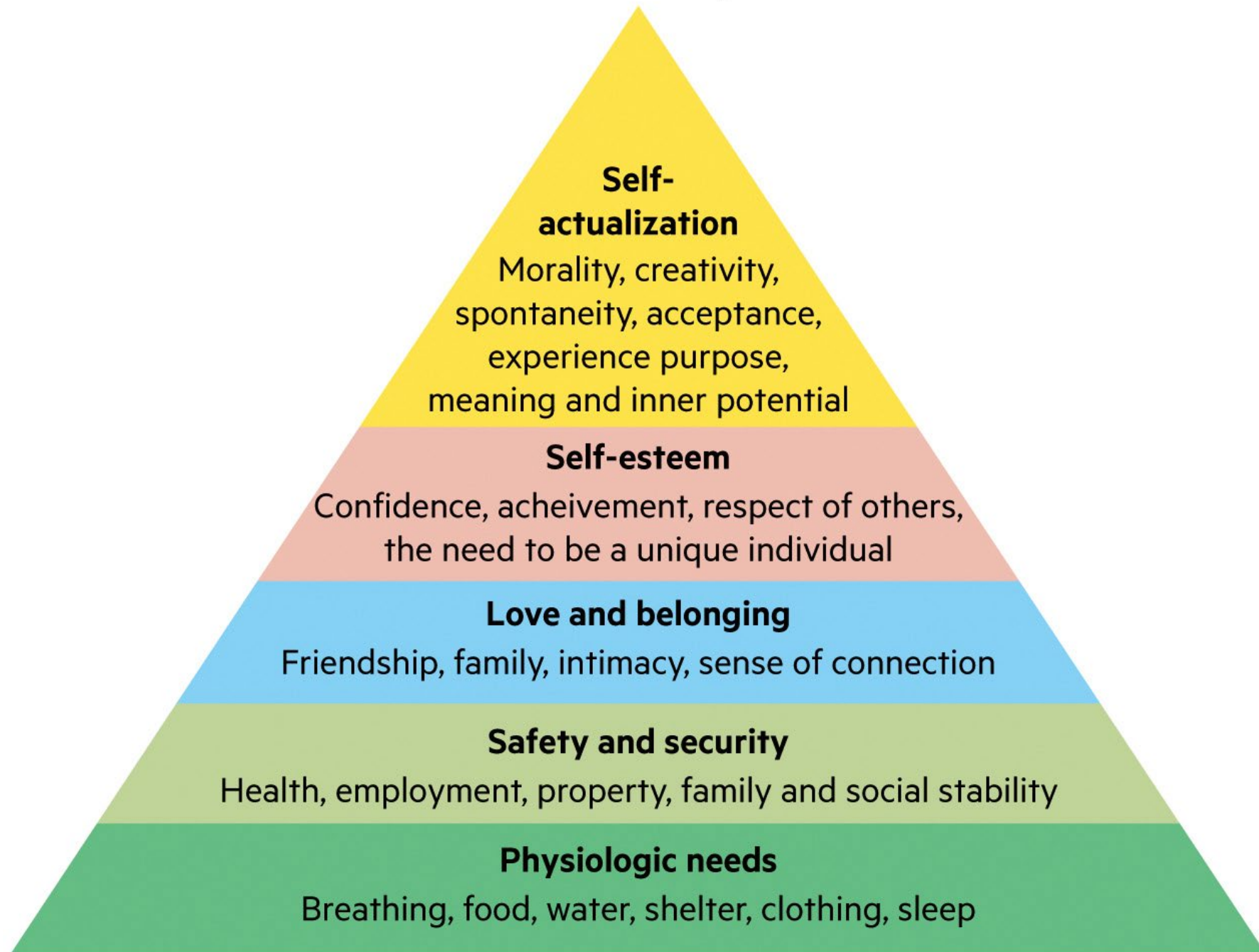
# SUSTAINABLE DEVELOPMENT GOALS







# Maslow's Hierarchy of Needs







Astounding new beginnings are underway



# Wicked Problems

1. You don't understand the problem until you have developed a solution.
2. Wicked problems have no stopping rule / No one solution...
3. Solutions to wicked problems are not right or wrong.



# Wicked Problem - Identifiers cont.

4. Every wicked problem is essentially unique and novel.
5. Every solution to a wicked problem is a 'one-shot operation.'
6. Wicked problems have no given alternative solutions.







# *Taming* a wicked problem





# 1. Lock down the problem definition.

*Develop a description of the problem or a related sub-problem that you can address... Declare that to be the problem.*

*Without doing this, meaningful communication is difficult.*

*Work toward a shared understanding.*



2. Specify objective parameters. What will you measure to identify success?

*This taming approach amounts to locking the problem down (point 1), because what is measured becomes, officially, the problem.*



A meme featuring a close-up of a man with glasses and a light blue shirt, looking directly at the camera with a serious, slightly concerned expression. In the background, another person is visible, out of focus.

**FACT:**

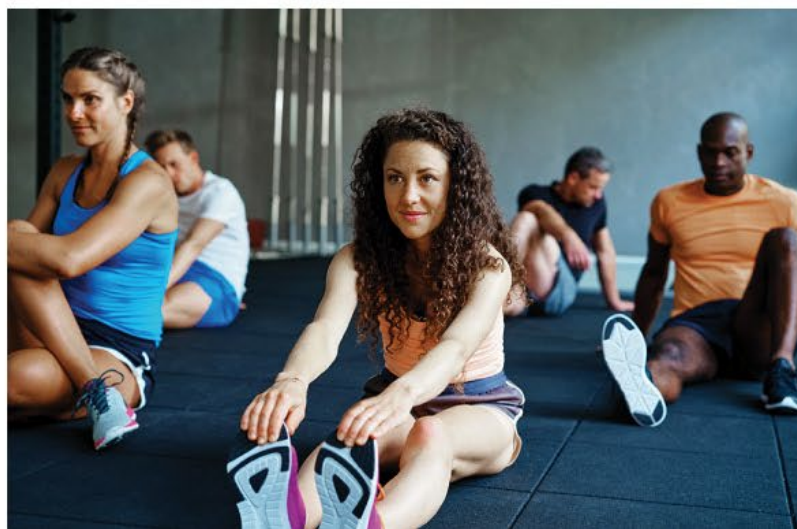
**COMMUNICATION IS KEY**

The '*Holy Grail*' is **effective collaboration** – creating shared understanding about the problem and shared commitment to the possible solutions.





oriko Cooper/Alamy Stock Photo



lamingo Images/Shutterstock



Richard Jones/Shutterstock

# Social Acceptance & Conformity





# Influencing behavior

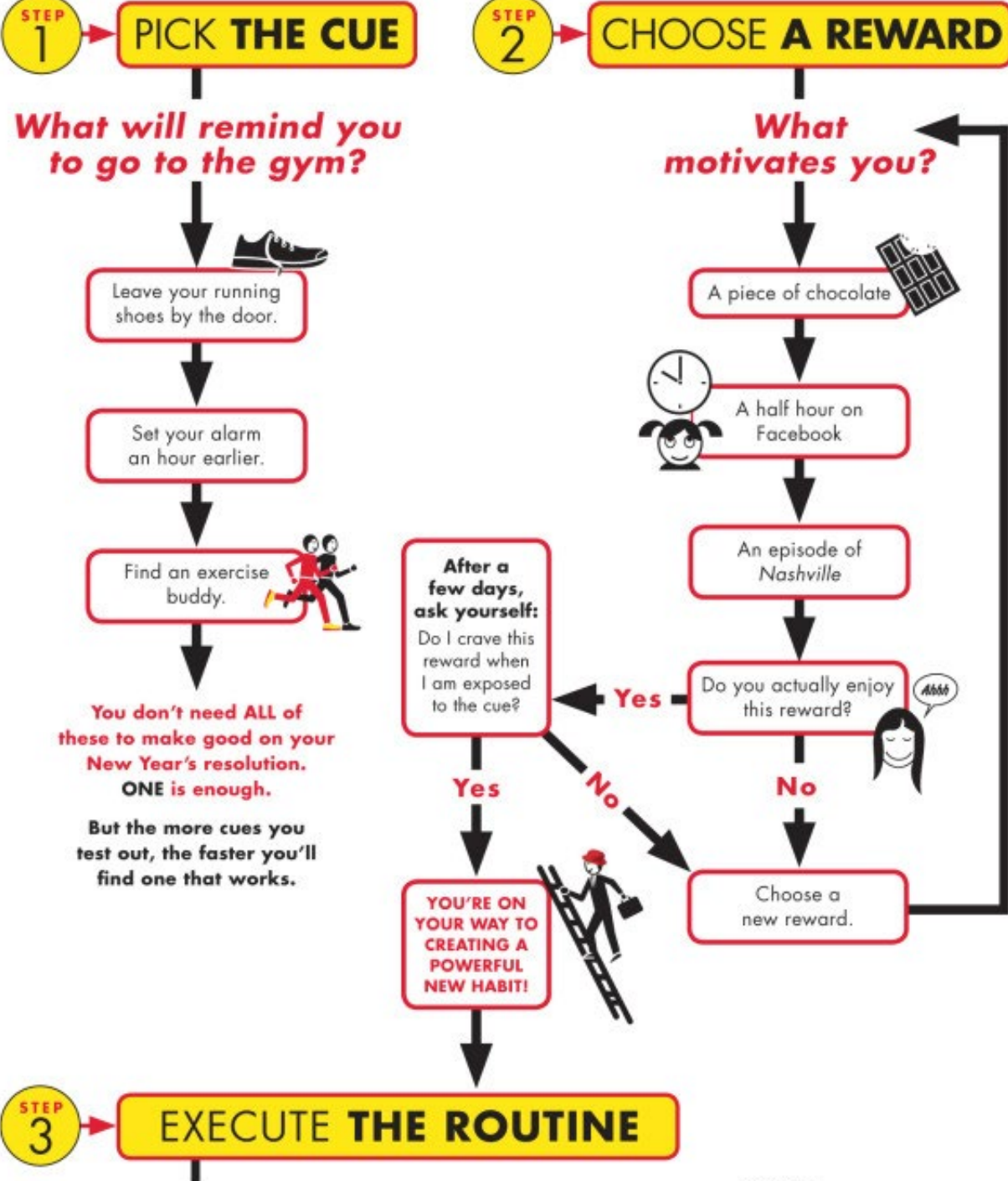
- Prompts
- Feedbacks
- Commitments
- Incentives
- Rules, Regulations, Laws

24 centimeters  
(9.45 inches)

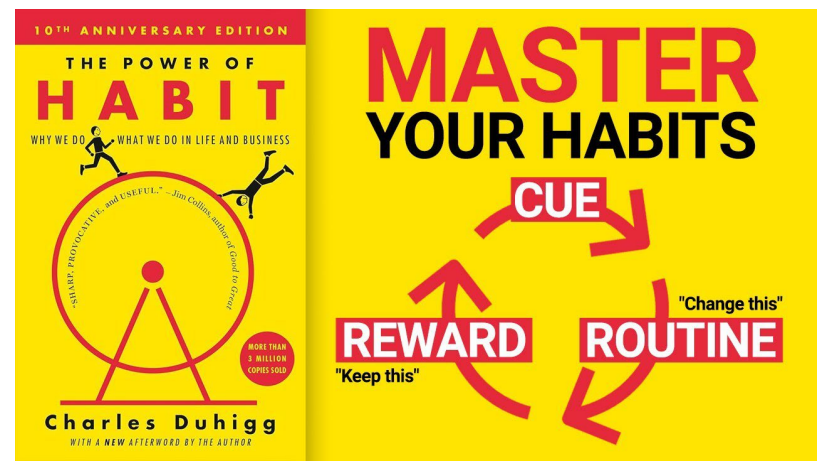
21 centimeters  
(8.27 inches)







# Habits

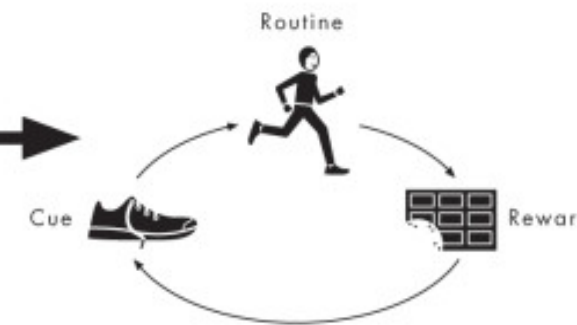


**STEP 3 → EXECUTE THE ROUTINE**

*Your cue reminds you of your routine.*  
*Your reward motivates you.*  
**Now execute!**

**COMMIT TO YOUR PLAN—IN WRITING.**

Studies show that the best way to implement a New Year's resolution is to write it down as a formula.



This year when I see \_\_\_\_\_ **CUE**  
I will \_\_\_\_\_ **BEHAVIOR** in order  
to get \_\_\_\_\_ **REWARD**.

**Post this plan where you will see it.**  
**Try it for a week.**  
*Thank us later.*



# Importance of words

- Frames

*A mental short-cut that uses word associations and images to help people quickly apply meaning to new information.*

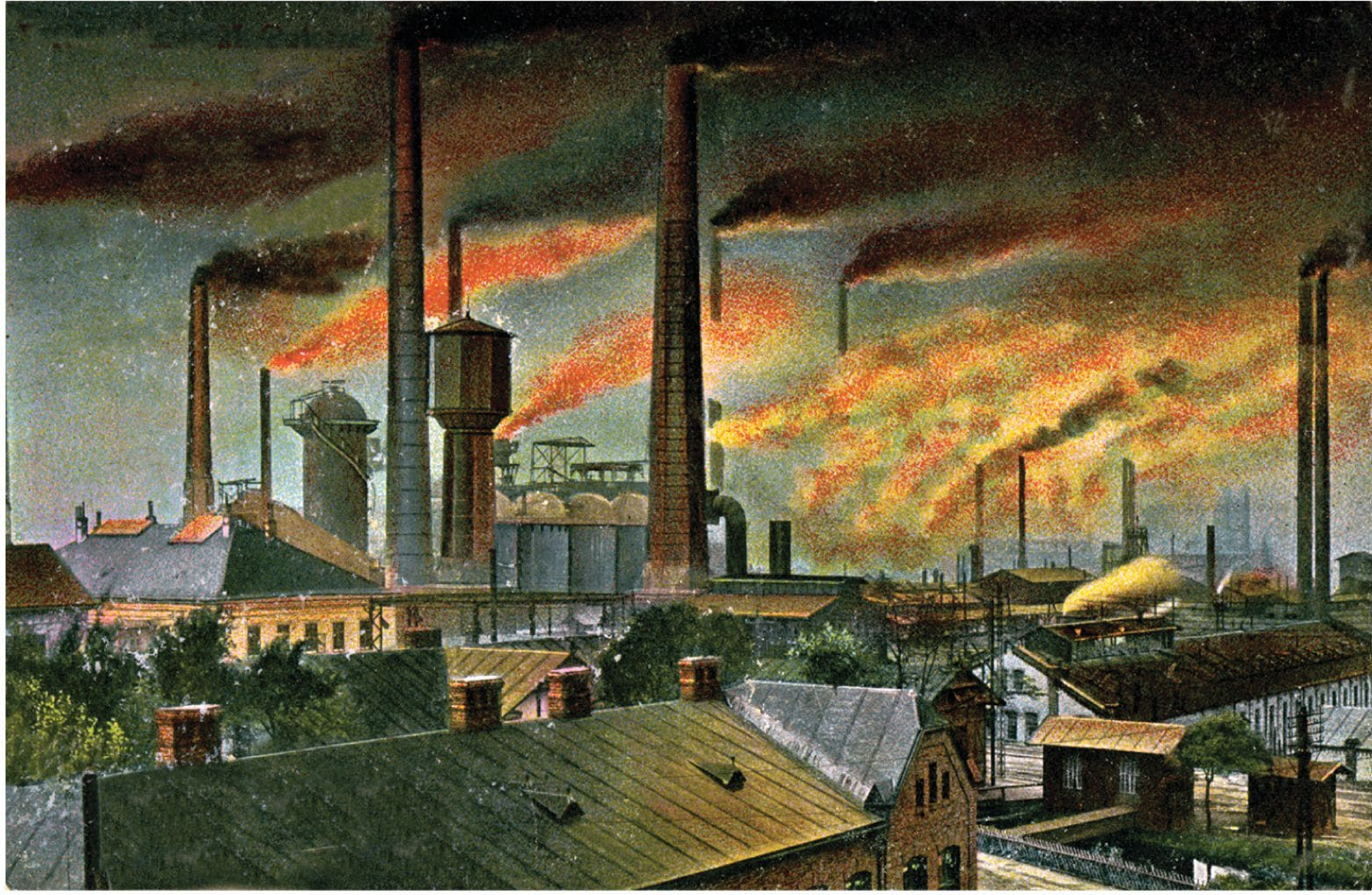


Jim Thompson/ZUMA Wire/Alamy Stock Photo



Jim West/Alamy Stock Photo





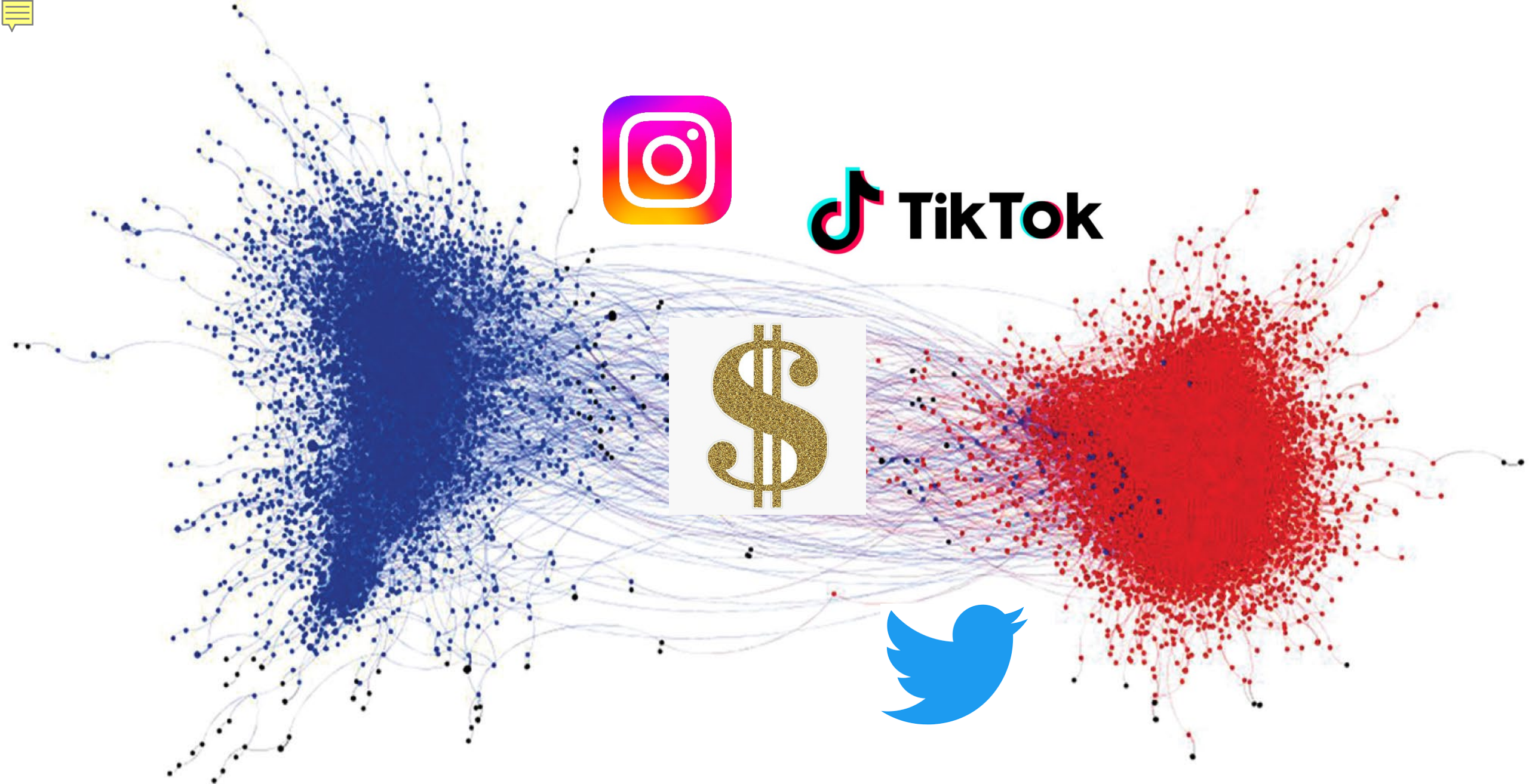


# Our Connections

- Social groups
- Organizations
- Networks











# Influencers





# Finding ways forward...

- *Imagination Is More Important Than Knowledge*
- **Knowledge** is limited, whereas **imagination** embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research.”



# Economics

- Demand
  - How much of the product/service is desired by consumers? How much is someone willing to pay for a product/service?
- Supply
  - Total quantity of the product of service available

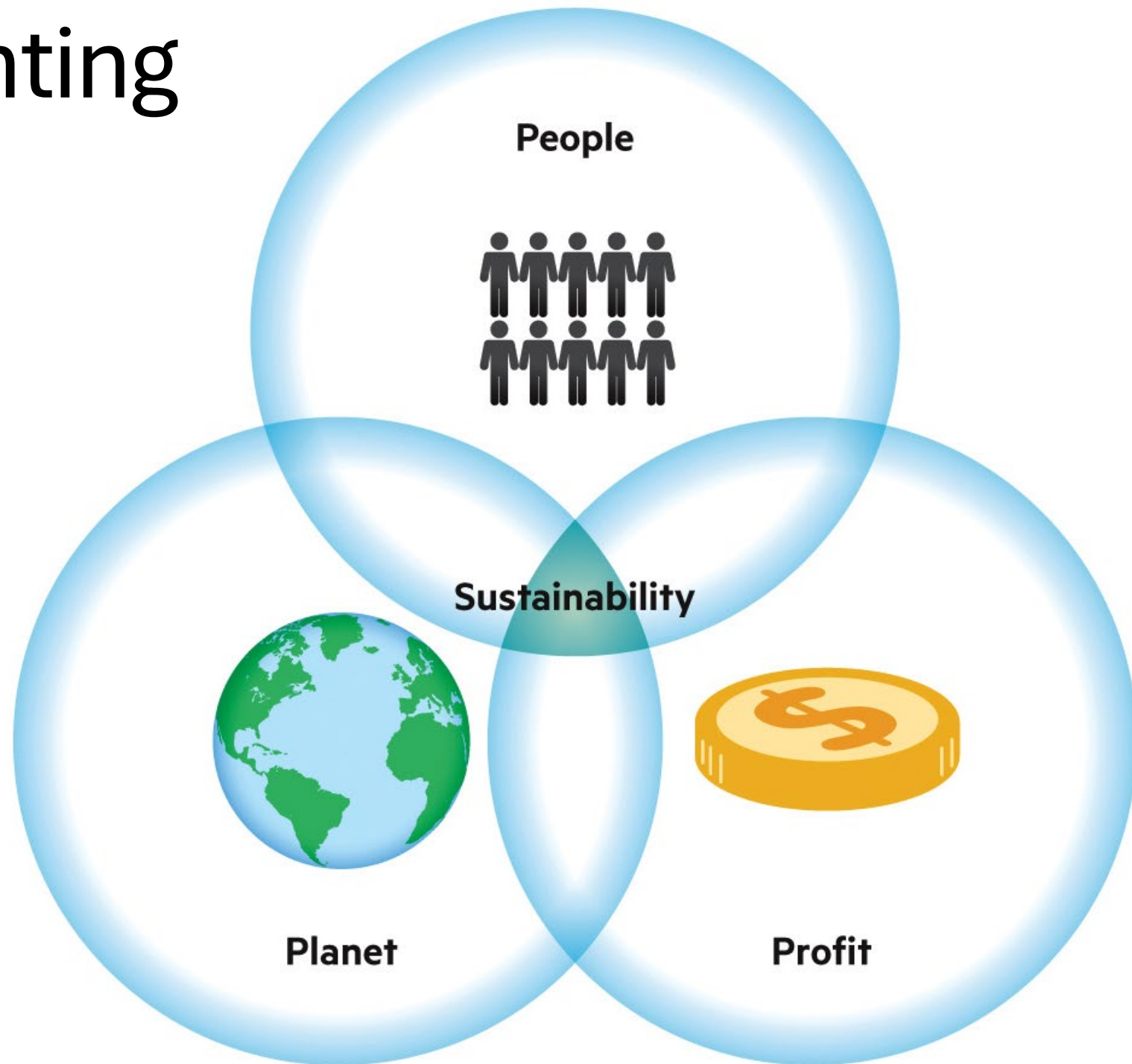
*Determine price*

*Buy low / Sell high = maximized profit*

- Economic systems shape the production, distribution and consumption of products and services.
- Markets bring buyers and sellers together.
- Governments try to adjust prices by regulating production and/or the distribution of products.



# True Cost Accounting





# Tragedy of the Commons / Negative Externality

- A socioeconomic dilemma
- A situation where there is open access to a resource without adequate social structures, formal policies or costs to limit individual use. This often leads to the degradation of the common benefit provided by the resource.



Ross Anania/Getty Images



# Ethics

- A set of moral principles that provides guidelines for personal to collective behaviors
- Ideally ethics are a major component to decision making processes.
- Utilitarianism
- Biocentrism/Ecocentrism

- **PHIL/RELS** 2550 T/Th @2-3:15

- Environmental Ethics
- Prof. Robert Earle



# Using Economics to help Frame Environmental Problems

- Externalities – market failures that do not account for all of the costs and benefits of products or services.
- Negative
  - Unintentional adverse impacts to a person or community
- Positive
  - Unintentional favorable impacts to a person or community
- *Unintended consequences*





# Keys to doing well in life & your career – 2025

## *Being...*

- Critical/Systems Thinkers
- Resilient, adaptive
- Effective communicators
- Creative
- Socially engaged & empathetic
- Technologically skilled
- Sustainably minded – True cost accounts

