Four Scenarios for Humanity's Future

Challenges in the 21st century

Big Picture View

Part 1

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The Purpose of This Presentation

- To review the big picture of challenges facing civilization in the 21st century
- To discuss the most likely scenarios and possible outcomes for each

Most Optimistic Future

Most Pessimistic Future

"The first step to solving a problem is to understand what you are faced with"

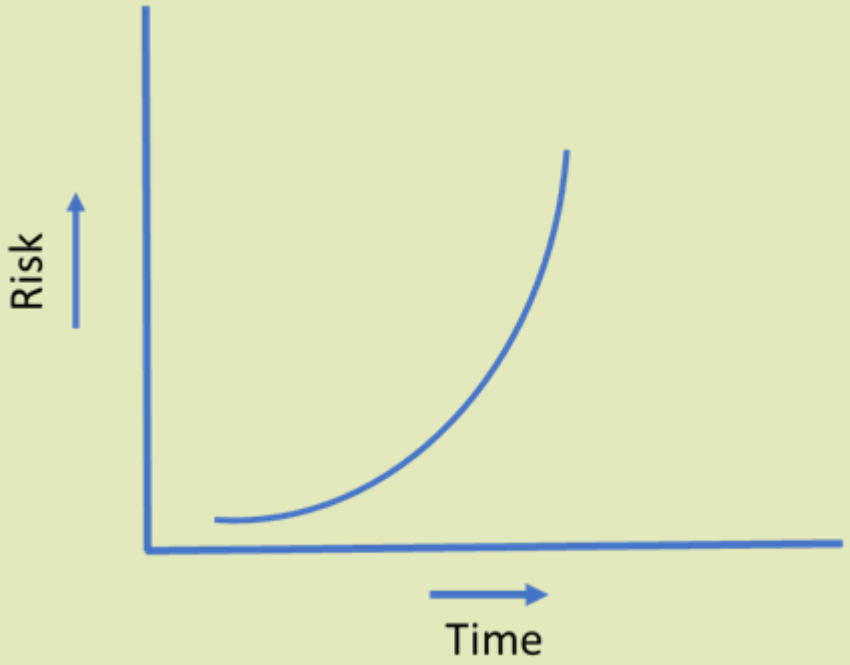
Predicting the Future of Humanity

- For the last 150 years or so “the past has been prolog”
  - Increasing standard of living
  - Continuous innovation
  - Technology supplanting human labor
  - Better educational opportunities
  - Longer life spans
  - More leisure time

- The future will not be a linear extrapolation of today

“Trying to predict the future is like trying to drive down a country road at night with no lights while looking out the back window.” Peter Drucker

The Canary in the Coal Mine: Property Insurance



- Why do we buy it?
  - We don't expect property loss and banks want to insure their investments
  - In the unlikely event that some kind of destructive event occurs, our assets are protected and we can repair or rebuild
  - It gives us peace of mind
- Why do insurance companies offer it?
  - Not as a public service but to make a profit
  - As risks go up, insurance premiums either get more expensive (so profit margins are maintained) or they stop selling it.
  - Property insurance premiums have already reached unaffordable levels
  - So, what do insurance companies know?

The Current Dilemma

- Western Civilization faces several major challenges in this century
  - Climate disruption
  - Ecological disruption
  - Resource depletion
  - Global increase in pollution
  - Plus, several others
- These challenges are converging
  - Most likely sooner than later (in this century)
- Why
  - Continuous growth in a finite system is not sustainable
    - Unconstrained population growth
    - Continuous growth oriented economic systems
    - Mentality of material greed and scarcity
    - Clash between those that have and those that don't
    - Not taking these threats seriously

California fire devastation

Florida hurricane damage

The Storm of Interconnected Global Crises - 1

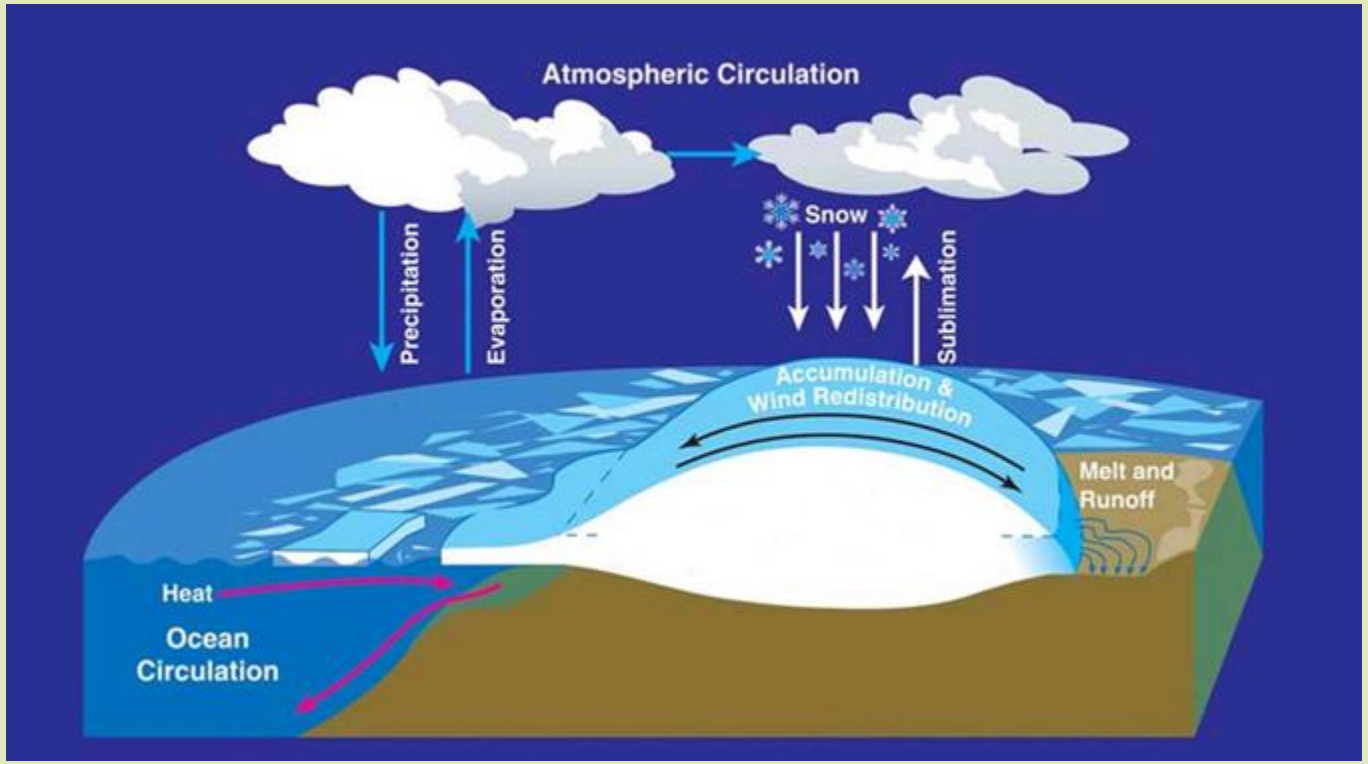
- **Climate change**
  - Rising temperatures, sea levels, and extreme weather events
  - Biodiversity loss (mass extinction underway)
  - Water and food insecurity
  - Potential for climate migration and conflict
- **Nuclear Threats & Global Wars**
  - Increasing tensions among nuclear-armed states (e.g., U.S., France, UK, Russia, China, N Korea, India, Pakistan, Israel)
  - States that could soon develop them (e.g. Iran, Saudi Arabia, S Korea, Japan)
  - Modernization of arsenals + AI in warfare = new risks
  - Possibility of accidents, miscalculations, or rogue actors
- **Artificial Intelligence & Emerging Tech**
  - AI used in military, surveillance, and disinformation
  - Job displacement and inequality due to automation
  - Risks of uncontrolled AI systems or misuse (especially with AGI on the horizon)
- **Biotechnology & Pandemics**
  - Synthetic biology could be used for bio-weapons
  - Future pandemics may emerge from lab leaks or natural spillovers
  - Uneven global health infrastructure

The Storm of Interconnected Global Crises - 2

- **Global Democratic Backsliding & Polarization**
  - Rise of authoritarian regimes, political instability
  - Disinformation weakening trust in science and institutions
  - Ethnic, religious, and ideological polarization
- **Economic Inequality & Resource Scarcity**
  - Widening gap between rich and poor (both within and between countries)
  - Tensions over resources (water, minerals, arable land)
  - Potential for mass migrations and societal unrest
- **Cybersecurity & Information Warfare**
  - State and non-state actors weaponizing cyberspace
  - Attacks on critical infrastructure, elections, and financial systems
  - AI-generated misinformation increasing rapidly
- **Space & Extraterrestrial Risks**
  - Space debris and militarization of space
  - Long-shot but real threats like asteroid impacts or solar flares (est. 2032)
  - Governance gaps in space exploration

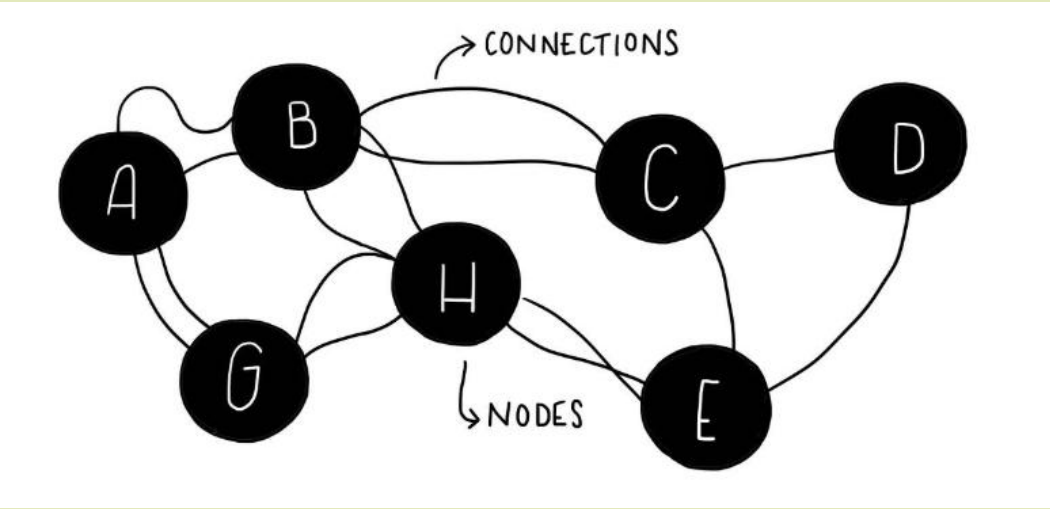
The Runaway Effect

Positive feedback is a process that amplifies or increases the effects of a small disturbance within a system, **leading to greater changes in the same direction**.



Biosphere's Potential for Chaotic Evolution

- Extensive interacting systems
- Widespread feedback and feedforward loops
- Extreme sensitivity to small fluctuations
- Outcomes from interactions are impossible to predict
- Living creatures will have great difficulty adapting

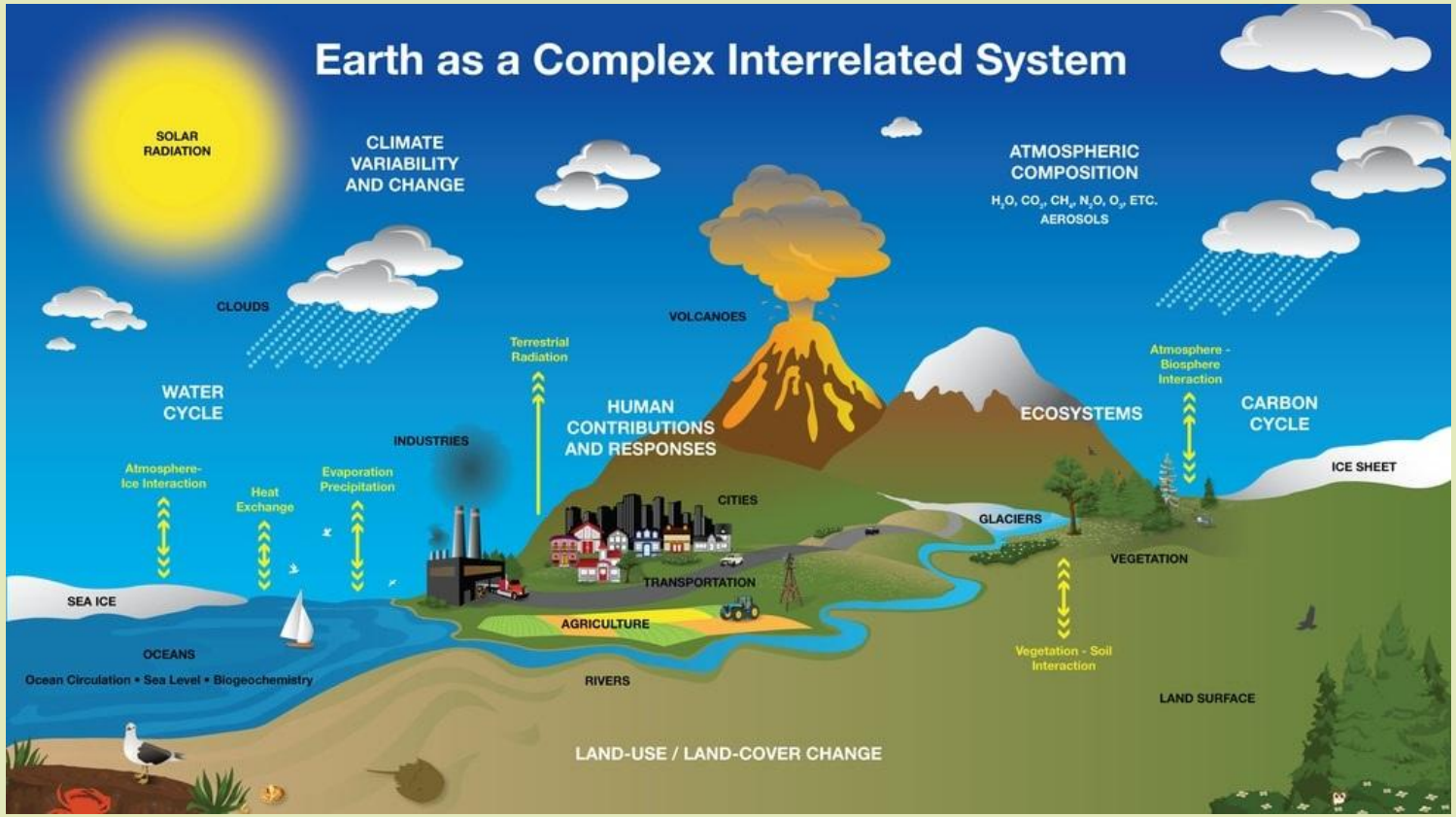


In chaotic evolution, no matter what the initial state of a system, it is impossible to predict (e.g. compute) how the system will evolve because you can't ever know all the interacting conditions perfectly enough.

The future can't be accurately predicted; it is non-computational; it just has to play out.

Major Influences on Earth's Biosphere

- Continual Population Growth
- Continual Economic Growth
- Ecological disruptions
- Climate disruptions
- Resource depletions
- Nuclear Threats and Global Wars
- AI & Emerging Tech
- Biotechnology & Pandemics
- Global Democratic Backsliding & Polarization
- Cybersecurity & Info Warfare
- Economic Inequality & Scarcity
- Space & Extraterrestrial Risks



All these are interrelated and affect each other creating interacting, and in some cases, positive feedback loops

Future Shock

1st Edition ~ 1970

- Explored the psychological effects of rapid societal and technological change
- Described it as overwhelming and disorienting for individuals and societies.
- Refers to the stress and confusion that arise from experiencing too much change in a short period of time.
- Done by extrapolating the headings from a variety of news sources around the world

Flipboard Climate Headlines 4/30/25

WHAT THE 2025 CLIMATE MODELS SAY ABOUT THE NEXT 10 YEARS

Faced with punishing heatwaves, help for kelp may come from protecting marine predators.

Old growth forests in eastern Canada show that the climate started changing almost 100 years ago

Published: April 29, 2025 1:06pm EDT

Climate change is making coffee more expensive. Tariffs likely will too

BBC NEWS | Science/Nature | African sands 'set for upheaval'

The Green Great Wall: China's 47 year effort at combating climate and land degradation

THIS NEW CLIMATE PATTERN COULD DISRUPT U.S. FARMING CYCLES

Severe weather slams a dozen states, bringing intense wind and rain

5 hours ago - Energy & Climate

From subs to bases, "climate change crap" has consequences for U.S. military

Warming Planting Zones | Climate Central

Climate Anxiety Is Taking Its Toll on Young People

Europe's Climate Goals Require a Green Power Grid

South Korea: Over 1,200 Evacuated as Massive Wildfire Rages in Daegu 3

'The ocean is overflowing' UN Chief Issues Warning for Impending Natural Disaster

The Blogs: Good news: climate change is tanking capitalism

Warm spell could surpass April heat record

Researchers study using planes to cool the earth amidst global warming

Thawing Permafrost Dots Siberia With Rash Of Mounds

Ghost forests are growing as sea levels rise

Pakistan may hit 120 degrees this week. It could be a global record.

Hurricane season is weeks away. Cooling in the Pacific could drive more activity.

Climate change drives increasing snow droughts worldwide, study finds

Hundreds of homes up for sale as residents flee coastal town: 'All the destruction'

What a "Megadrought" Could Mean for California's Future

Dry winter spurs national water company to integrate climate risks into operations

Hawaii plans to jack up hotel tax to 11% in first-of-its-kind move to pay for projects to cope with climate change

BY AUDREY MCAVOY AND THE ASSOCIATED PRESS

April 30, 2025 at 6:26 AM EDT

Dry winter spurs national water company to integrate climate risks into operations

'It's a huge loss': Trump administration dismisses scientists preparing climate report

Summer of heat, thunderstorms and drought to unfold for US in 2025

13 Drought-Tolerant Trees to Consider Planting in Your Yard

Could the Ogallala Aquifer Run Dry in Our Lifetime?

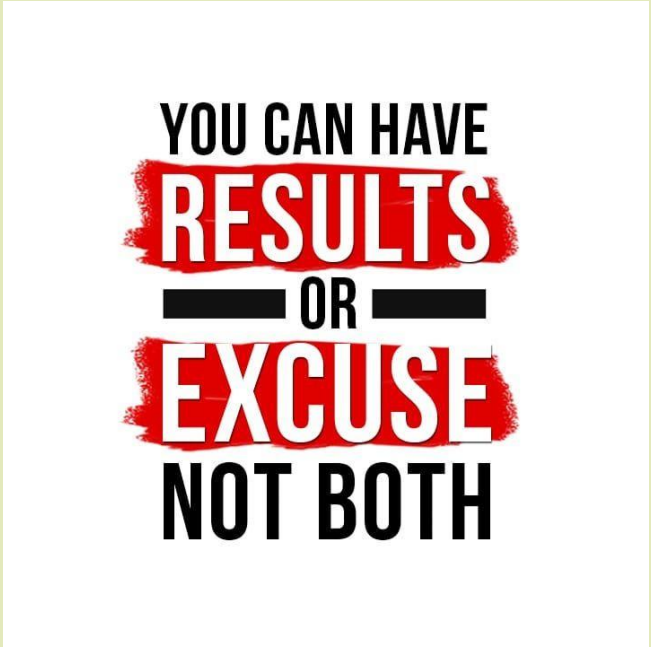
U.S. States Facing Extreme Weather by 2030

https://weather-fox.com/the-15-u-s-states-facing-the-most-extreme-weather-by-2030-1-325241/

- **Texas:** Battling Blistering Heat and Fierce Storms
- **Florida:** Rising Tides and Relentless Hurricanes
- **California:** Wildfires and Water Woes
- **Louisiana:** A Battleground for Hurricanes and Floods
- **Oklahoma:** Tornado Alley Gets Even Wilder
- **Mississippi:** Floods, Heat, and Hurricane Havoc
- **Alabama:** Storms, Floods, and Sweltering Summers
- **Georgia:** Sweltering Heat and Surging Storms
- **Iowa:** Floods, Drought, and Tornado Threats
- **Arkansas:** More Tornadoes, Floods, and Intense Heat
- **Nebraska:** From Blizzards to Heatwaves
- **South Carolina:** Rising Seas and Raging Storms
- **North Carolina:** Battling Floods and Fierce Winds
- **Arizona:** Extreme Heat and Mega-Droughts
- **Tennessee:** Tornadoes, Floods, and Sweltering Summers
- **Illinois:** Wild Swings Between Flood and Freeze
- **Kentucky:** Floods, Heat, and Stormy Skies
- **New York:** Nor'easters, Heatwaves, and Rising Waters
- **Missouri:** Tornadoes, Flooding, and Weather Whiplash
- **Colorado:** Wildfires, Snowstorms, and Rapid Shifts
- **Kansas:** Tornado Central and Drought Dilemmas

Is Humanity Surrendering to Existential Threats?

- Too many overstated threats
- Too difficult
- Too expensive
- Too many vested interests
- Too overwhelming
- Too much disinformation
- Too far in the future to worry about
- Too many ordinary people just don’t care
- Too many politicians/political leaders just don’t care



Four Scenarios for Humanity's Future

Challenges in the 21st century
Big Picture View
Part 2

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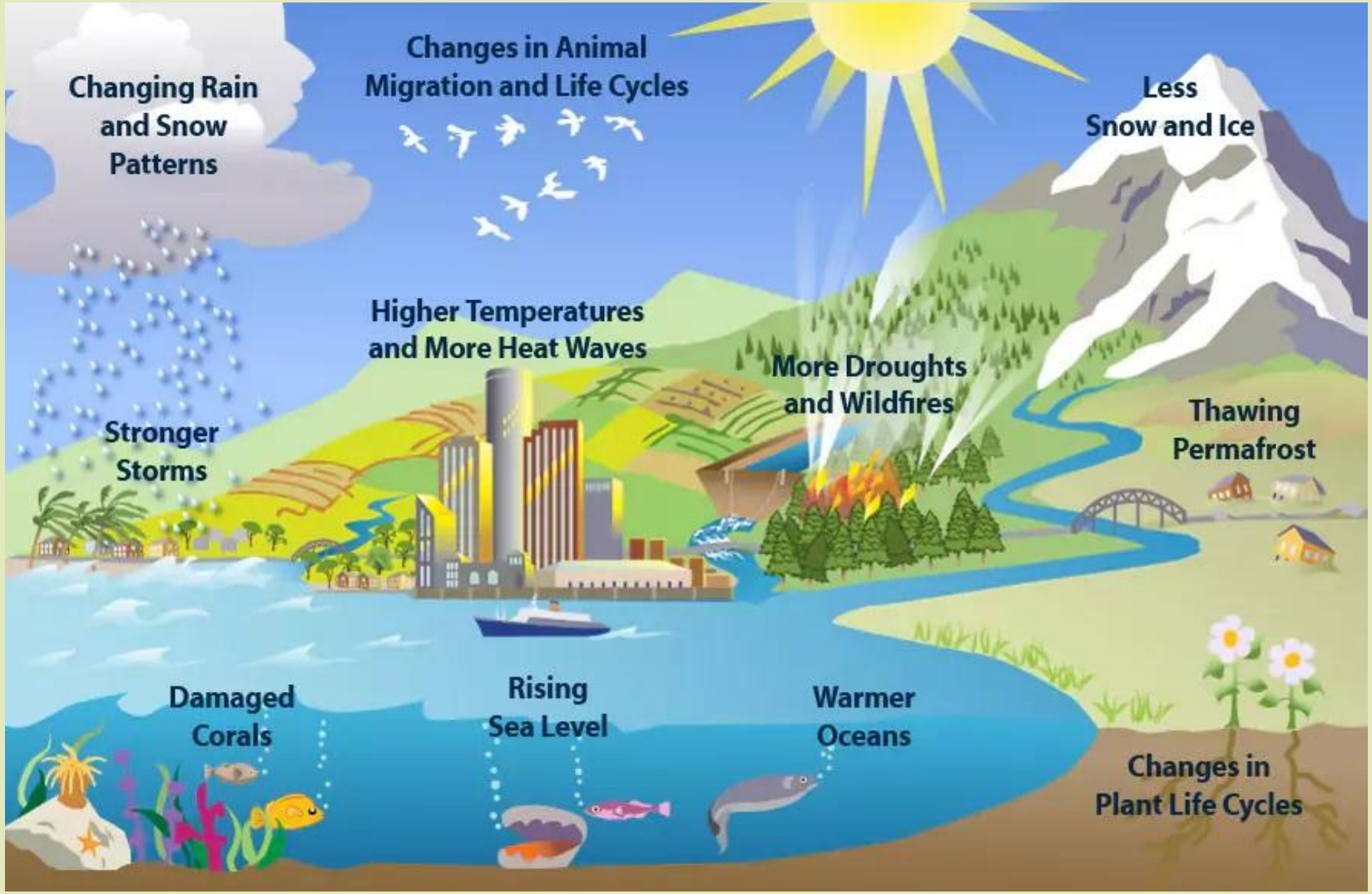
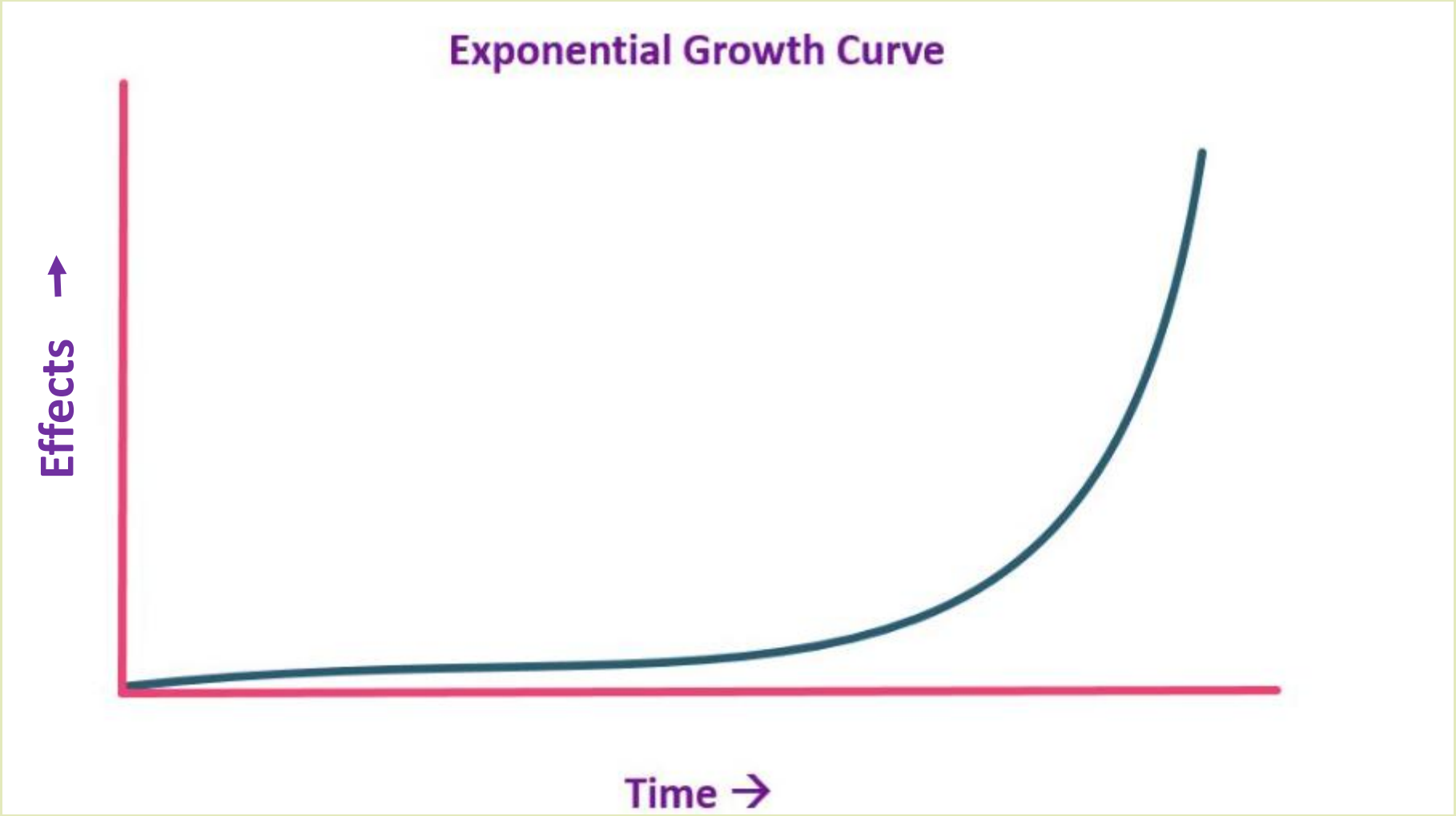
Challenges Facing Humanity in the 21st Century

- Unconstrained Population Growth
- Climate Change
- Nuclear Proliferation & Threats
- AI & Emerging Tech
- Biotechnology & Pandemics
- Global Democratic Backsliding and Polarization
- Economic Inequality & Resource Scarcity
- Cybersecurity & Information Warfare
- Space & Extraterrestrial Risks

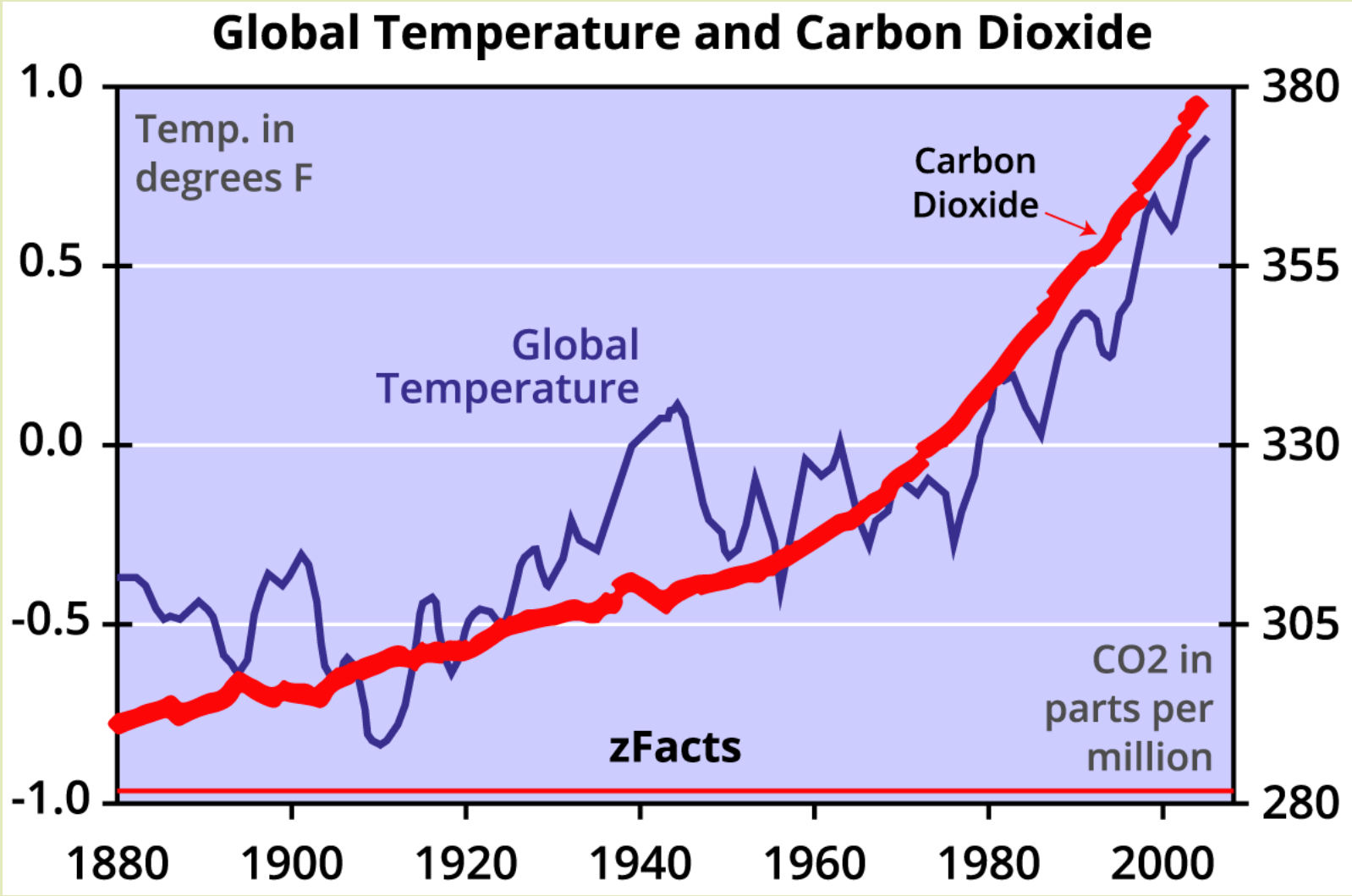
Climate Change – Interacting Components



The Problem with Positive Feedback



Global Temperature Increase



https://www.joboneforhumanity.org/

Which Future Scenario is More likely?

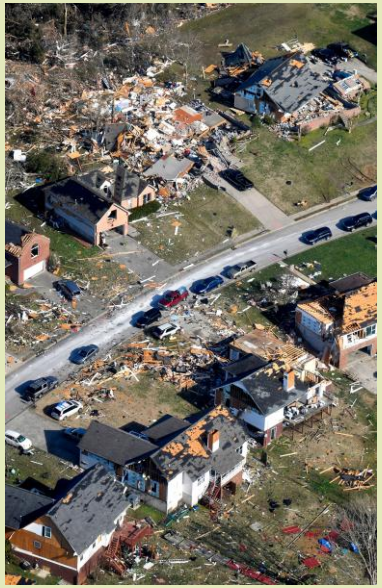
Optimistic future

Forest fire

Pandemic

Drought

Nuclear holocaust



Tornado

Hurricane

Flooding

Modern Civilization is Vulnerable in Ways Never Before Seen

- Energy Grid Example
  - EMP Pulse
  - Solar (CME) or other Steller outbursts
  - Massive cyberattack on energy grid
  - Widespread technology failure due to extended heat waves or cooling
- Impacts
  - Industrial transformers wiped out (built to order)
  - No Internet, no cell phones, no POS, no refrigeration, No lights, etc.
  - 12 hours – backup generators start running out of fuel
  - 24 hours – people in hospitals start dying
  - 48 hours – many start running out of water and food
  - 72 hours – Civilization on the brink of collapse

Doomsday Clock

A metaphor, not a prediction, for threats to humanity from unchecked scientific and technological advances. Updated by Bulletin of Atomic Scientists. Created in 1947

As of Jan 28, 2025 – clock set to 89 sec to midnight

“In 2025, humanity edged ever closer to catastrophe. Trends that have deeply concerned the Science and Security Board continued, and despite unmistakable signs of danger, national leaders and their societies have failed to do what is needed to change course,"

Can the Momentum be Reversed?

Three categories of reactions

- Those who know we are in trouble
  - They are in despair – its already too late
  - They don't know where to begin
  - Those who want "all hands-on deck"
- Those with influence, power and/or control
  - Many want to keep things as they are
  - A few want to change things for their progeny
- Those who don't care
  - They won't be around to see the suffering
  - They are just trying to survive
  - They just don't believe it or care what's happening
  - They are being misled by disinformation campaigns

Four Scenarios for Humanity's Future

All scenarios may play simultaneously out in this century across various geographic areas*:

1. Humanity avoids collapse
2. Partial collapse followed by rebound
3. Collapse with pockets of survival
4. Extinction

* Reference: *Life After Doom* – Brian D. Mclaren

Scenario #1

Collapse Avoidance

- Humanity will wake up and respond with sufficient urgency and resources
- Some downward spiral in environment and civilization
- Resource wars become more common
- Some suffering and reduction in standard of living
- Some scarcity and high-tech enclaves
- Industrial/ Informational society will continue as before

Scenario #2

Partial collapse / rebound

- Society will not wake up in time
- Social turbulence, civil unrest and scarcity
- Civilization fragments
- Partial environmental collapse
- Some regions become climate resilient “eco-enclaves”
- Established institutions will not be effective at mitigation
- Rise of authoritarian regimes
- Moderate to high degree of suffering
- Industrial / informational society will suffer a long slow decline
- Some post industrial feudal systems
- Those that survive will grow in wisdom from failures experienced

Scenario #3

Collapse / Pockets of Survival

- Society will ignore the crisis until it is too late
- Civilization as we know it will collapse
- Widespread violence and civil unrest
- Loss of technological cultural advances
- High degree of suffering
- Mass climate migrations
- Extensive environmental collapse
- Rapid decline to localized feudalism
- Species extinction with pockets of humanity surviving
- Loss of knowledge, generational trauma
- Those that survive will live in a preindustrial societies

Scenario #4

Total Collapse/ Extinction

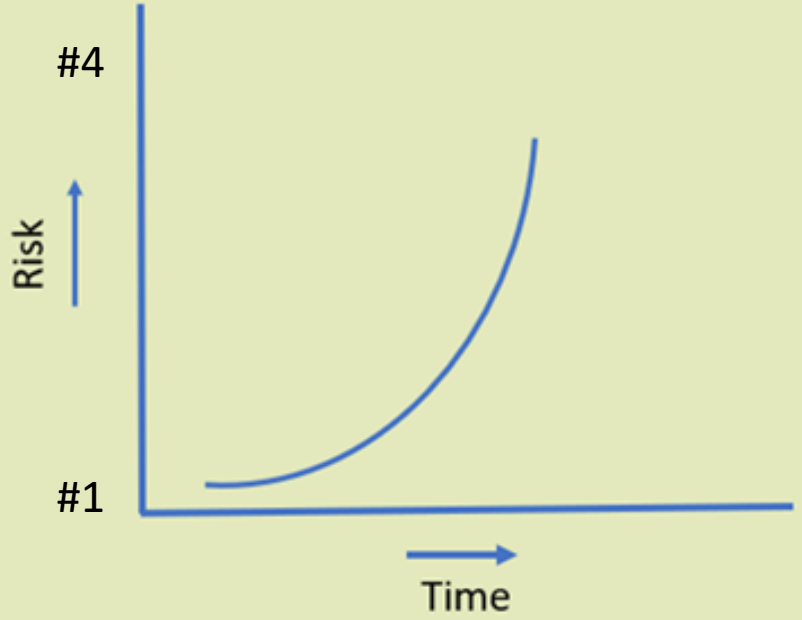
- Civilization will descend into chaos
- Widespread environmental collapse
- Catastrophic destruction
- Extensive suffering
- Rapid decline to extinction - humans and nonhumans alike

The Earth will survive

- Regeneration in a million years

Summary of Likely Scenarios For Humanity in the 21st Century

1. Collapse is avoided
   – very close to being too late
2. Partial collapse followed by rebound
   – window is closing
3. Collapse with pockets of survival
   – likely possibility
4. Total Collapse / Extinction
   – increasingly a more likely possibility



One or several (pockets) of these scenarios for humanity's future will play out in the next few decades and certainly in the 21st century

The longer humanity waits in taking serious mitigating actions, the more likely scenarios 3 and 4 become

Final Thoughts

- The projections are way too pessimistic
  - We can be complacent
  - Wait and see
  - Act at some point in the future
- The projections are reasonably accurate:
  - Some say we have a few decades to course correct
  - Some say we may only have a few years
  - The actual time remaining is impossible to accurately predict
- The projections are way too optimistic
  - The consequences of inaction are catastrophic
  - There is no Plan B (there are no other earths in this solar system)

Nature will always have the last word on what ultimately happens regardless of the beliefs or opinions of our leaders, politicians or anyone else

For more info: https://www.joboneforhumanity.org/learn_about_global_warming_and_climate_change