Discussion #6: Roadmaps for Success or Failure

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AT 5, Q 1: Describe the geography and diverse habitat of China, and relate the geography and diverse habitat of China to the themes of Diamond's book.

China has a very diverse geography and habitat that differs throughout the country. Geography wise, China has "the world's highest plateau, some of the world's highest mountains, two of the world's longest rivers (the Yangtze and Yellow Rivers), many lakes, a long coastline, and a large continental shelf" (Diamond 359). In terms of China's habitats, there are glaciers, rainforests, and deserts. As one can tell this country has a little bit of everything in it and that is important to Diamond and his book because China is a good example of many environmental issues stemming from its diversity that are all wrapped up in one. With all of this issues, it really shines light on fifth point of his framework (how the society responds) because with all this huge issues, it is interesting to see how China deals with it all.
AT 5, Q 1: Describe the geography and diverse habitat of China, and relate the geography and diverse habitat of China to the themes of Diamond's book.

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Because of the diversity of China's habitats, I would think that China's response to environmental issues would be more complex and challenging because of the environment's lack of uniformity. While one solution would apply in North China, it would be difficult to use the same approach in South China, which has a drastically different environment. A large part of improving China's environment comes with the creation of environmentally-friendly policies and the government's response to environmental issues. This will be more difficult because of China's size and diversity of environment.

In fact, China can be looked at like a microcosm of the world
AT 5, Q 2: Describe the evolution of China’s households and the impact on society and the environment.

China's households have transitioned from an average size of 4.5 to 3.5 from 1985 to 2000, with an overall growth rate in the number of households of 3.5%. With the addition of population limiting policies, couples have obviously had less children than before. However, this also led to a decrease in multigenerational housing, which customary in Chinese culture. This shows a drastic change in the moral values of Chinese society. As more and more households are needed to sustain China's population, the impact on the environment continues to worsen. More space and resources are continually needed to accommodate the country’s people, increasing the human impact on the environment.

Nice summary! Appreciate the use of numbers (good to be quantitative when possible) and nice connection to the environment.
Much of China's expanding economy is, according to Diamond, based on outdated, inefficient, or polluting technology. To back up his point he states that China's energy efficiency is only half of that of the first world, its paper production uses more than twice the water than in the first world, irrigation methods lead to water waste, soil nutrient loss, and other harmful environmental, 3/4 of energy comes from coal (which powers their production of fertilizer and textiles, through the production of ammonia, accounts for more than 42 times the natural-gas-based ammonia production of the first world. In my opinion Diamond's claim is spot on as the Chinese methods of economic growth are atrocious in terms of energy efficiency. Fortunately the Chinese government is somewhat active and can delay certain environmental atrocities (like that of Haiti), an example of this being their involvement in shutting down village enterprises that create huge amounts of waste through sulfur dioxide, water waste, and solid waste.

Thanks for noting that China's government is addressing this issue!

Folks can see for themselves, by exploring websites such as:

https://www.iea.org/policiesandmeasures/energyefficiency/?country=China
AT 5, Q 4: Using the book as a starting point and supplementing based on your own short internet-based research, briefly summarize some promising signs emerging from China during its rapid growth phase.

Since this book was written China has taken further measures to ameliorate its environmental problems. Some of these measures include verbal commitments made by the Chinese president to the international community to fight climate change, creating a carbon trading market, investing over $111 billion in renewable energy, among other measures. Some experts have began discussing the possibility of China becoming a global leader in fighting climate change. China according to a NY times article is currently "No.1 in the world in installed capacity of wind and solar power."

Increasing governmental action regulating fuel-efficiency in cars, to the implementation of a "green wall" surrounding Beijing all help, along with more recent actions such as the amending of the Environmental Protection Laws for the first time in 25 years which states that business leaders who fail to comply with basic environmental impact assessments can be detained for 15 days. They have also granted local authorities more power with regards to implementing these laws, "Companies who violate environmental standards may have their utilities cut, their equipment destroyed, or may be shut down all together. Firms found in violation will be given six months to comply, after which they will be closed" (International Policy Digest). Since the economy is maturing so fast, in order for it to continue to grow, the Chinese will have to implement tougher regulations or face catastrophic consequences impeding their progress to becoming a first world country.

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Top 10 countries in 2016 based on total PV installed capacity (MW)\(^3\)

- China: 78,100 MW (25.6%)
- Japan: 42,800 MW (14.1%)
- Germany: 41,200 MW (13.6%)
- United States: 40,300 MW (13.3%)
- Italy: 19,300 MW (6.4%)
- United Kingdom: 11,600 MW (3.8%)
- India: 9,000 MW (3.0%)
- France: 7,100 MW (2.3%)
- Australia: 5,900 MW (1.9%)
- Spain: 5,500 MW (1.8%)
- All others: 42,300 MW (14.0%)

Top 10 countries based on added PV capacity in 2016 (MW)\(^3\)

- China: 34,500 MW (45.8%)
- United States: 14,700 MW (19.5%)
- Japan: 8,600 MW (11.4%)
- India: 4,000 MW (5.3%)
- United Kingdom: 2,000 MW (2.7%)
- Germany: 1,500 MW (2.0%)
- South Korea: 900 MW (1.2%)
- Australia: 800 MW (1.1%)
- Philippines: 800 MW (1.1%)
- Chile: 700 MW (0.9%)
- All others: 6,900 MW (9.2%)

China planted trees all around Beijing to hopefully prevent natural disasters from having a big effect on the city.

“Green wall" of trees intended to shield Beijing from sand and dust (at a cost of $6 billion).

China addressed its most dire environmental issue, *air quality*, by spending 760 billion yuan on *creating new measures to improve air quality in Beijing* by 2017. Some of these measures include cutting coal burning, limiting car emissions, and setting yearly quotas for local governments and individual polluters. The government is implementing these measures by fining any individuals who do not meet the air pollution standards.

The country's clean energy consumption is at 12% of the national energy usage and China plans to have this number to 20% by 2030. By 2020, it plans to invest "2.5 trillion yuan ($367 billion) in renewable power generation" according to CNN.

China has been committed to the Paris climate Accord and reducing its carbon emissions, with it peaking in 2030, and aims to reduce emissions from that date onward …

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Just a couple of days ago President Xi put forth that China will look to accelerate their efforts on reducing greenhouse gas emissions in accordance to the Paris Climate Agreement.
AT 5, Q 4: Using the book as a starting point and supplementing based on your own short internet-based research, briefly summarize some promising signs emerging from China during its rapid growth phase.

According to the *Global Footprint Network*, China's per capita ecological footprint is 2.5 times its bio-capacity. This staggering consumption paired with a near disregard for nature has exposed China to health costs, environmental costs, and natural disasters. Although each of these consequences are tragic, they serve as a warning for officials and force them to address China's environmental issues. Also, China's involvement in the global economy places incentives on compliance with environmental regulations. Already the World Trade Organization and Olympics have forced China to implement changes. Finally, China's powerful leaders ensure rapid implementation of environmental regulations. For example, Chinese officials were able to ban further logging of natural forests, close the Yangtze to fishing, and implement a program that incentivizes the conversion of cropland to grassland. *As long as Chinese officials put the health of their citizens and home before economic gain, the future for China will be bright rather than smog-coated.*

China’s government is moving in an effective manner to address air and water pollution!

Please note the two most important GHGs, CO₂ and CH₄, do not lead to water quality issues and effect air quality in only indirect manner.

We can’t smell either compound in pure form and these gases are long-lived, which in fact is a huge reason why they pose a problem for Earth’s climate.
Roadmaps for Success or Failure

27 September 2017

Diamond’s Road Map of Factors for Failures of Group Decision Making

What are the four “road map of factors contributing to failures of group decision making” outlined at the start of the chapter?
Diamond’s Road Map of Factors for Failures of Group Decision Making

What are the four “road map of factors contributing to failures of group decision making” outlined at the start of the chapter?

1. Failure to anticipate the problem
2. Failure to perceive the problem
3. Failure to attempt to solve the problem
4. Failure to solve the problem
Diamond’s Road Map of Factors for Failures of Group Decision Making

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1. Failure to anticipate the problem
   The Maginot Line
2. Failure to perceive the problem
3. Failure to attempt to solve the problem
4. Failure to solve the problem
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   The Maginot Line
2. Failure to perceive the problem
   Soil nutrients; perhaps rats eating palm kernels
3. Failure to attempt to solve the problem
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1. Failure to anticipate the problem
   The Maginot Line
2. Failure to perceive the problem
   Soil nutrients; perhaps rats eating palm kernels
   Creeping normalcy
3. Failure to attempt to solve the problem
4. Failure to solve the problem
Slow Fluctuating Trends

“Perhaps the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and down fluctuations.” (Diamond 425)

Creeping normalcy:
Slow Fluctuating Trends

“Perhaps the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and down fluctuations.” (Diamond 425)

Creeping normalcy:

slowly changing problem is hard to notice
Slow Fluctuating Trends

“Perhaps the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and down fluctuations.” (Diamond 425)

Creeping normalcy:

slowly changing problem is hard to notice

how does this relate to climate change?
Slow Trends: Glacier National Park, Montana

Slow Fluctuating Trends

“Perhaps the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and down fluctuations.” (Diamond 425)

Other examples from book?
Slow Fluctuating Trends

- Rapa Nui (deforestation from 900 AD to 1400s or 1600s)
- Maya (droughts)

Why dis societies not realize these trends?
Diamond’s Road Map of Factors for Failures of Group Decision Making

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1. Failure to anticipate the problem
   The Maginot Line
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   Soil nutrients; perhaps rats eating palm kernels
   Creeping normalcy
3. Failure to attempt to solve the problem
4. Failure to solve the problem

What other examples are there?
Diamond’s Road Map of Factors for Failures of Group Decision Making

What are the four “road map of factors contributing to failures of group decision making” outlined at the start of the chapter?

1. Failure to anticipate the problem
   The Maginot Line
2. Failure to perceive the problem
   Soil nutrients; perhaps rats eating palm kernels
   Creeping normalcy
3. Failure to attempt to solve the problem
   People advance their own interests by behavior harmful to others
4. Failure to solve the problem

What other examples are there?
Tragedy of the Commons

What is the “tragedy of the commons”?

What examples are there?
Tragedy of the Commons


Tragedy of the Commons

What are the solutions for tragedy of the commons?
• Government or outside force steps in
• Privatize the resource
• Consumers design the solution themselves

Which solution do you think is most effective?
Crowd Psychology

What is crowd psychology?
Crowd Psychology

What is crowd psychology?

Examples?

- Crusades
- Salem witch trials
- Nazi propaganda
Crowd Psychology

What is crowd psychology?

Examples?

• Crusades
• Salem witch trials
• Nazi propaganda

How can crowd psychology be combatted?
Cuban Missile Crisis

President Kennedy and his advisors were able to reflect on the mistakes they made when launching the Bay of Pigs invasion:

- Groupthink
- Suppression of doubts
- Lack of critical thinking
- Premature consensus
Cuban Missile Crisis

They realized the mistakes they had made and fixed the issues from last time by:

- Free discussion
- Kennedy leaving the room
- Subgroups to have separate discussions
Sunk-Cost Effect

Hesitance to change something in which we are heavily invested
Sunk-Cost Effect

Hesitance to change something in which we are heavily invested

Relationships
Sunk-Cost Effect

Hesitance to change something in which we are heavily invested

Relationships

Poker

https://i.pinimg.com/736x/86/84/c0/8684c043a2790233bb211fafbde4561f--poker-night-casino-party.jpg
Rational Behavior

“Clashes of interest involving rational behavior are also prone to arise when the principal consumer has no long-term stake in preserving the resource but society as a whole does.” (Diamond 430)
Rational Behavior

“Clashes of interest involving rational behavior are also prone to arise when the principal consumer has no long-term stake in preserving the resource but society as a whole does.” (Diamond 430)

How does this apply to climate change?
Society’s Success

Provide an example of a society's *successful solution* of a vexing problem drawn either from:

- your own experience (i.e., please use an example from outside any of the assigned readings)

- something stated in a chapter of Diamond's book that has not been assigned

state the *key decision* that was essential for the society to overcome the problem.
Personal Success

Provide an example of a your personal success

state the *key challenge you overcame*, and why you think you were able to overcome the problem.
Diamond’s Hope

- Courageous leaders
- Courageous peoples
- Reflecting on our past
Roadmaps for Success or Failure: Last Word

Ross Salawitch
Diamond states “the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and-down fluctuations”

**AAWR:** Attributable Anthropogenic Warming Rate

*AAWR is slope of this line, over 1979 to 2010*

*AAWR = 0.109 ± 0.01 °C/decade*
Diamond states “the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and-down fluctuations”

AAWR: Attributable Anthropogenic Warming Rate

\[
\text{AAWR} = 0.109 \pm 0.01 \, ^\circ\text{C/decade}
\]

Does anyone remember the numerical value for global warming given in the reading?

Diamond states “the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and-down fluctuations.”

Diamond states “the commonest circumstance under which societies fail to perceive a problem is when it takes the form of a slow trend concealed by wide up-and-down fluctuations”

\[ \Delta T \text{ (°C)} \text{ from preindustrial} \]

**AAWR: Attributable Anthropogenic Warming Rate**

\[ \lambda = 1.05 \text{ W m}^{-2} \text{ °C}^{-1} \]

\[ \chi^2 = 0.81 \]

\[ \text{ECS} = 1.73 \text{ °C} \]

**Human Activity: Total**

\[ \text{AAWR} = 0.109 \pm 0.010 \text{ °C/decade} \]

**RCP 4.5**

\[ \text{AAWR is slope of this line, over 1979 to 2010} \]

\[ \text{AAWR} = 0.109 \pm 0.01 \text{ °C/decade} \]

“It has taken a long time to discern the average upwards trend of 0.01 degree per year within that noisy signal”

\[ 0.01 \text{ °C/year} \times 10 \text{ years/decade} = 0.1 \text{ °C/decade} \]

What was the world’s first modern, global environmental crisis?

https://en.wikipedia.org/wiki/DDT
What was the world’s first modern, global environmental crisis?

DDT: dichloro-diphenyl-trichloro-ethane

As early as the 1940s, scientists in the U.S. had begun expressing concern over possible hazards associated with DDT, and in the 1950s the government began tightening some of the regulations governing its use.[18] However, these early events received little attention, and it was not until 1957, when the New York Times reported an unsuccessful struggle to restrict DDT use in Nassau County, New York, that the issue came to the attention of the popular naturalist-author, *Rachel Carson*. William Shawn, editor of The New Yorker, urged her to write a piece on the subject, which developed into her famous book *Silent Spring*, published in 1962. The book argued that pesticides, including DDT, were poisoning both wildlife and the environment and were also endangering human health. *Silent Spring* was a best seller, and public reaction to it launched the modern environmental movement in the United States.

What was the world’s first modern, global environmental crisis?

DDT: dichloro-diphenyl-trichloro-ethane

Bald eagles found dead and studied for pesticide residue in 1963, soon after the debut of *Silent Spring*. As national icons, their fall in numbers was worrisome. Carson blamed DDT. (Seney Natural History Association/CC BY)

http://policu.com/cms/?p=346
What was the world’s second modern, global environmental crisis?

http://policu.com/cms/?p=346
What was the world’s second modern, global environmental crisis?

**Antarctic Ozone Hole**

**Discovery of the ozone hole:**

First view of ozone hole from space:


The paper showed data for Octobers of 1979 through 1985 in black & white contour diagrams.

This image, produced soon after, showed color plots of total column ozone during Antarctic spring, including measurements for year 1986.
What was the world’s second modern, global environmental crisis?

Scientific evidence ozone hole was caused by humans:

Anderson et al., *Science*, 1991

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What was the world’s second modern, global environmental crisis?

Scientific evidence ozone hole was caused by humans:
Montreal Protocol recently celebrated its 30th anniversary

The ozone layer, a fragile shield of gas, protects the Earth from the harmful portion of the rays of the sun, thus helping preserve life on the planet.

The phase-out of controlled uses of ozone depleting substances and the related reductions have not only helped protect the ozone layer for this and future generations, but have also contributed significantly to global efforts to address climate change; furthermore, it has protected human health and ecosystems by limiting the harmful ultraviolet radiation from reaching the earth.

Caring for all life under the sun

This year marks the 30th anniversary of the Montreal Protocol. As part of the anniversary celebrations, the Ozone Secretariat will launch a communication campaign ahead of World Ozone Day to be marked on 16 September 2017.

The #OzoneHeroes campaign to be launched on 14 September will seek to celebrate the major accomplishments of the Montreal Protocol in protecting the ozone layer and the climate, to increase public recognition of the success and impact of the Protocol, and to generate further support for the Protocol and its new mandate to phase down climate-warming hydrofluorocarbons under the Kigali Amendment, adopted in 2016.

Campaign materials and further information on how everyone can participate in celebrating this important milestone will be available from 14 September at www.ozoneheroes.org.

Without the Ozone Treaty You'd Get Sunburned in 5 Minutes

Turning 30 this month, the Montreal Protocol was a landmark environmental success that serves as a model for addressing other problems, although it also has some unfinished business.