

# A discussion on the paper "The Tragedy of the Commons"

Garrett Hardin, published in Science, 1968

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# Author introduction:

- ▶ An American **ecologist**, **ecological economist** and **philosopher** who warned of the dangers of overpopulation.
- ▶ 1936, B.S. in **zoology** from the University of Chicago
- ▶ 1941, PhD in **microbiology** from Stanford University
- ▶ 1963-1978(retired), served as **Professor of Human Ecology** the University of California, Santa Barbara
- ▶ A major focus of his career, and one to which he returned repeatedly, was the issue of **human overpopulation**. This led to writings on controversial subjects which earned him political criticism.

## Garrett Hardin



Garrett Hardin (1986)

<b>Born</b>	21 April 1915 Dallas, Texas
<b>Died</b>	September 14, 2003 (aged 88) Santa Barbara, California
<b>Fields</b>	Ecology
<b>Known for</b>	<i>The Tragedy of the Commons</i> (essay)

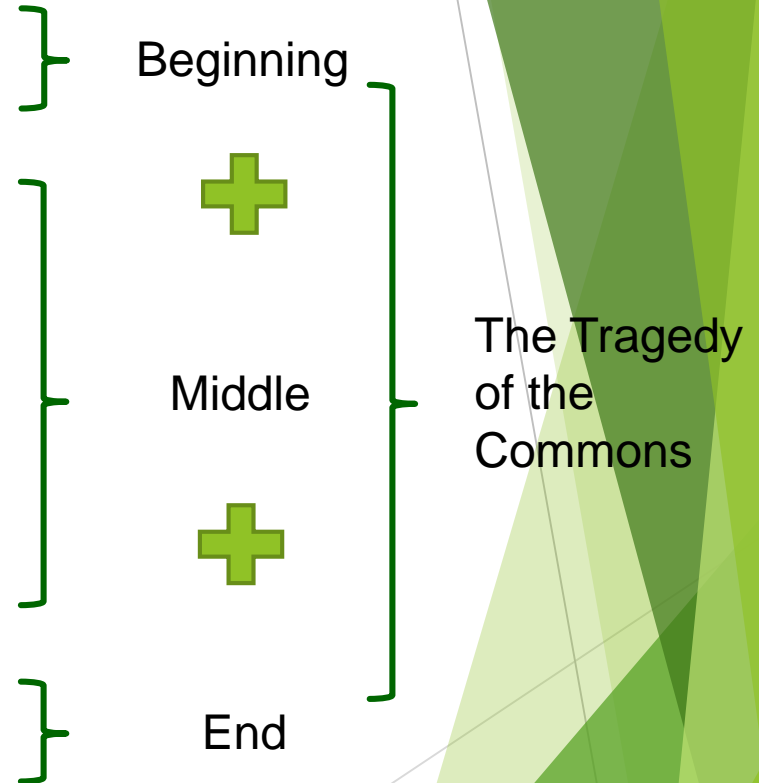
# Historical discussion on this article

- ▶ The tragedy of the commons is the best well known essay published in science, 1968, which is one of the **most cited** papers in academic circles in 20<sup>th</sup> century.
- ▶ After decades of development and evolution, Hardin's thought – Tragedy of the Commons, has been absorbed by the modern mainstream economics , and become an important part of many micro economics textbook.



# Outline of the essay

- ▶ Opening
- ▶ What Shall We Maximize?
- ▶ Tragedy of Freedom in a Commons
- ▶ Pollution
- ▶ How To Legislate Temperance?
- ▶ Freedom To Breed Is Intolerable
- ▶ Conscience Is Self-Eliminating
- ▶ Pathogenic Effects of Conscience
- ▶ Mutual Coercion Mutually Agreed upon
- ▶ Recognition of Necessity



# Outline of the essay

## Opening

- ▶ A concept : there is a class of human problems which can be called “no technical solution problems”.



- ▶ Take the game of tick-tack toe to prove that the class is not a null class.



- ▶ “Population problem” is a member of this class.




# Outline of the essay

## What Shall We Maximize?

- ▶ A finite world can support only a finite population.
- ▶ Can the goal of “the greatest good for the greatest number” be realized ?
- ▶ Two reasons: theoretical reason and biological facts.
- ▶ The optimum population is less than the maximum.



**Population** VS **Goods**



**What Is  
Goods?**

- ▶ Lead to the discussion on the tendency to assume that decisions reached individually will be the best decisions for an entire society.



# Outline of the essay

## Tragedy of Freedom in a Commons / Pollution

- ▶ Proposed the "tragedy of the commons" theory model.
- ▶ In a reverse way, the tragedy of the commons reappears in problems of pollution.
- ▶ Instances are cited to explain the model and solutions are proposed as well.
- ▶ The law, always behind the times





# Outline of the essay

## How To Legislate Temperance?

- ▶ The morality of an act is a function of the state of the system at the time it is performed: the morality of an act can not be determined from a picture.
- ▶ The laws of our society follow the pattern of ancient ethics, and therefore are poorly suited to governing a complex, crowded, changeable world.
- ▶ Producing a government by men, not laws.



SONG CHEN / CHINA DAILY



# Outline of the essay

Freedom To Breed Is Intolerable  
Conscience Is Self-Eliminating  
Pathogenic Effects of Conscience



- ▶ The society is deeply committed to the welfare state.
- ▶ It is a mistake to think that we can control the breeding of mankind by an appeal to conscience, no matter in a long run or short run.

Mutual Coercion Mutually Agreed upon



- ▶ Take out a possible solution: make a rational decision.

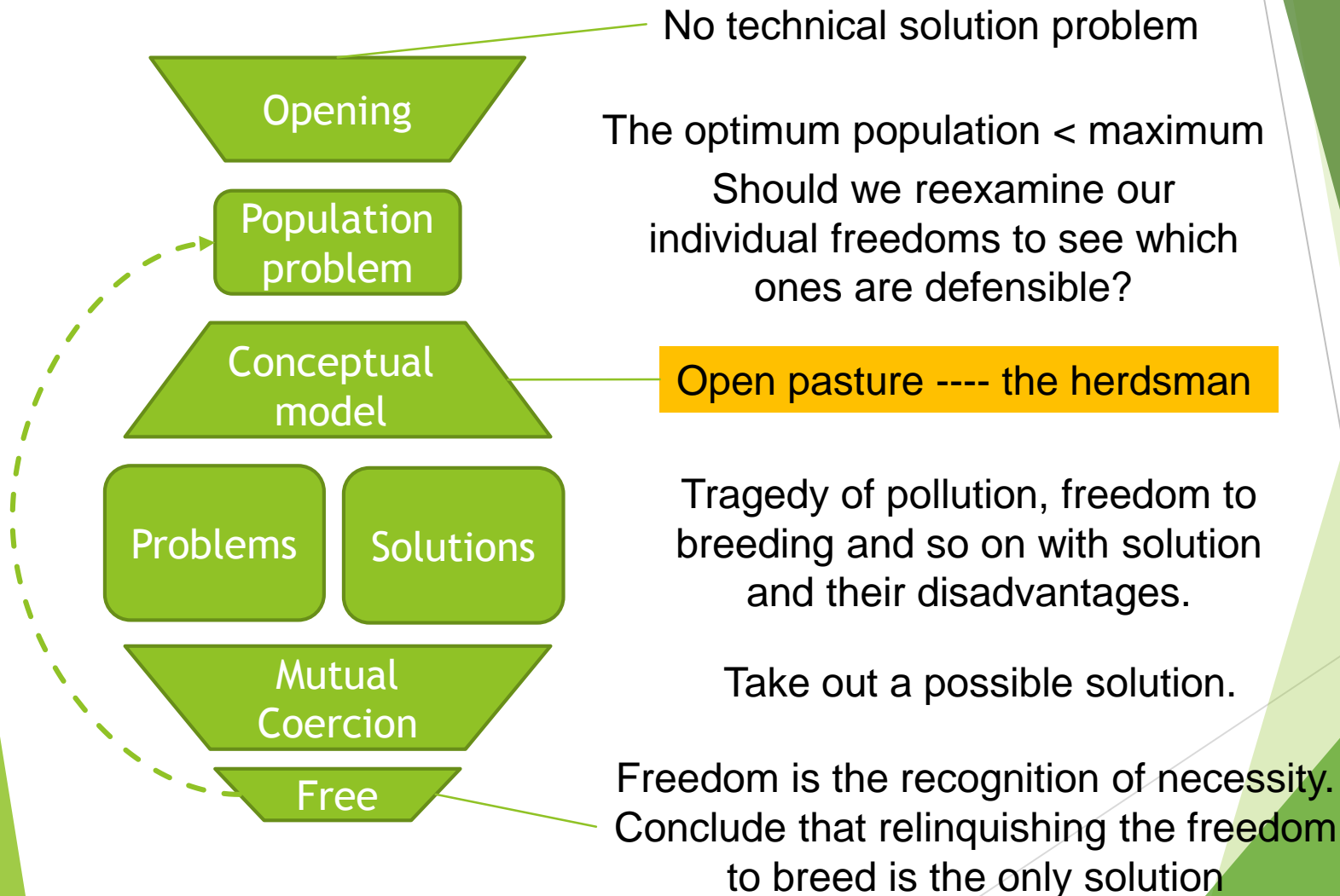
# Outline of the essay

## Recognition of Necessity

- ▶ *Freedom is the recognition of necessity. (Hegel)*
- ▶ Draw the conclusion:
  - a) No technical solution can rescue us from the misery of overpopulation.
  - b) Freedom to breed will bring ruin to all.
  - c) The only way we can preserve and nurture other and more precious freedoms is by relinquishing the freedom to breed, and that very soon. Only so, can we put an end to this aspect of the tragedy of the commons.



# Thoughts sharing



# Thoughts sharing

## Artical structure



*Introduction:* Introduce characters and question. Narrow down to the specific questions.

*M&M and Results:* Describe what you did and what you found.

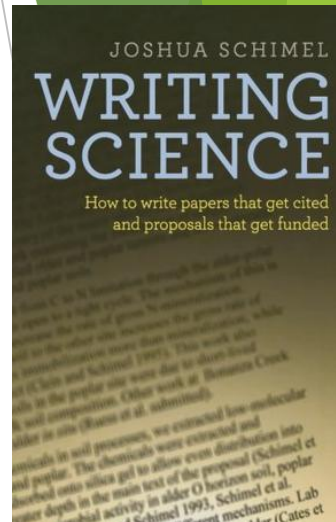
*Discussion:* What it means .

*Conclusions:* What did you learn from your work?

The hourglass structure of a scientific papers.(Joshua, writing science, 2011)

## Rigorous logical thinking

Helps refine the experiment(from some new aspects)



# Thoughts sharing

How to judge whether the viewpoint of a paper is credible ?

- ▶ Reading with caution
- ▶ Keeping an attitude of suspicion
- ▶ Abundance reading of related literatures
- ▶ Experiment of observation
- ▶ Understanding of the theory

Welfare state

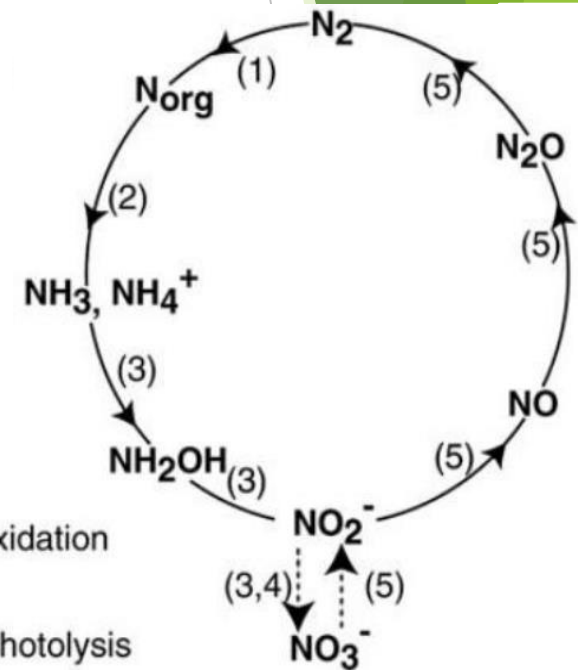
Ignoring the decisive influence of social production mode on the process of population development, which covers the essence of the western social population problem.



# Answer of the question in last presentation

## Characteristics of $\delta^{15}\text{N}$ in different atmospheric environment

- ▶ Kinetic and equilibrium isotope fractionation effects
- ▶ The product of a reaction is depleted in its heavier isotope compared to the reactant.
- ▶ For isotope exchange equilibria between oxinitrogen species the heavier isotope is enriched in the more oxidized form.



# Thanks!

And any questions are  
welcomed to discuss here.