
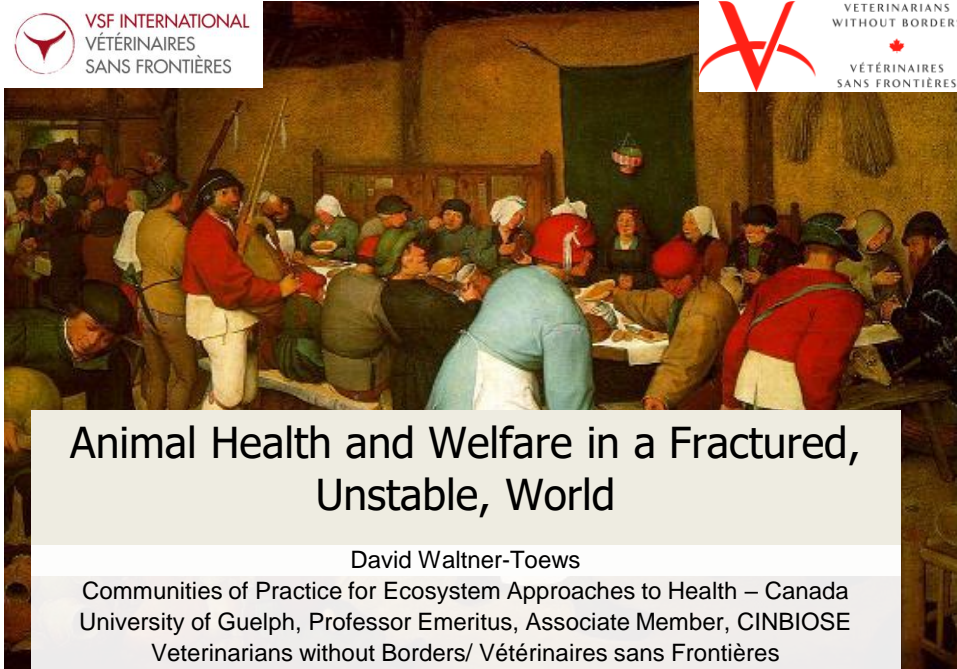


VSF INTERNATIONAL  
VÉTÉRINAIRES  
SANS FRONTIÈRES



VETERINARIANS  
WITHOUT BORDERS  
VÉTÉRINAIRES  
SANS FRONTIÈRES



## Animal Health and Welfare in a Fractured, Unstable, World

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Veterinarians without Borders/ Vétérinaires sans Frontières

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**Health is a state “... of complete physical, mental  
and social well-being and not merely the absence of  
disease or infirmity” WHO Constitution, 1948**

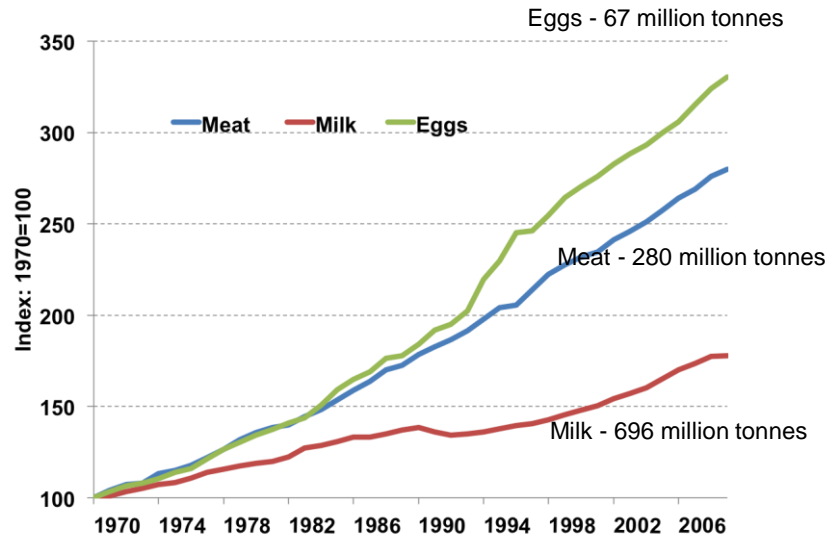


### Health is Three "F"s

**Health is a:** “modus vivendi enabling imperfect [people]  
to achieve a rewarding and not too painful existence  
while they cope with an imperfect world” Rene Dubos

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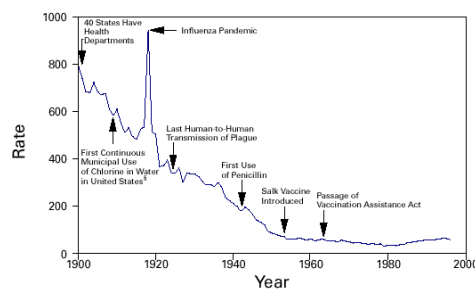
## F1 - Food: Success!



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## F2 - Freedom from Disease: Success!

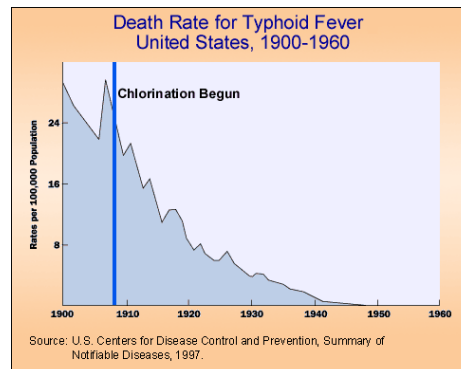
FIGURE 1. Crude death rate\* for infectious diseases — United States, 1900–1996†



\*Per 100,000 population per year.

†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA 1999;281:61–6.

‡American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

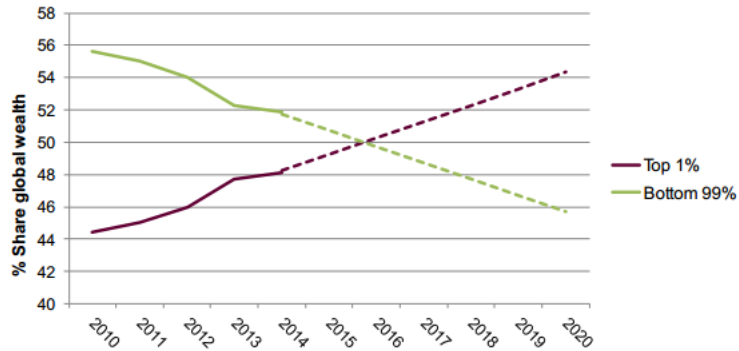


Source: U.S. Centers for Disease Control and Prevention, Summary of Notifiable Diseases, 1997.

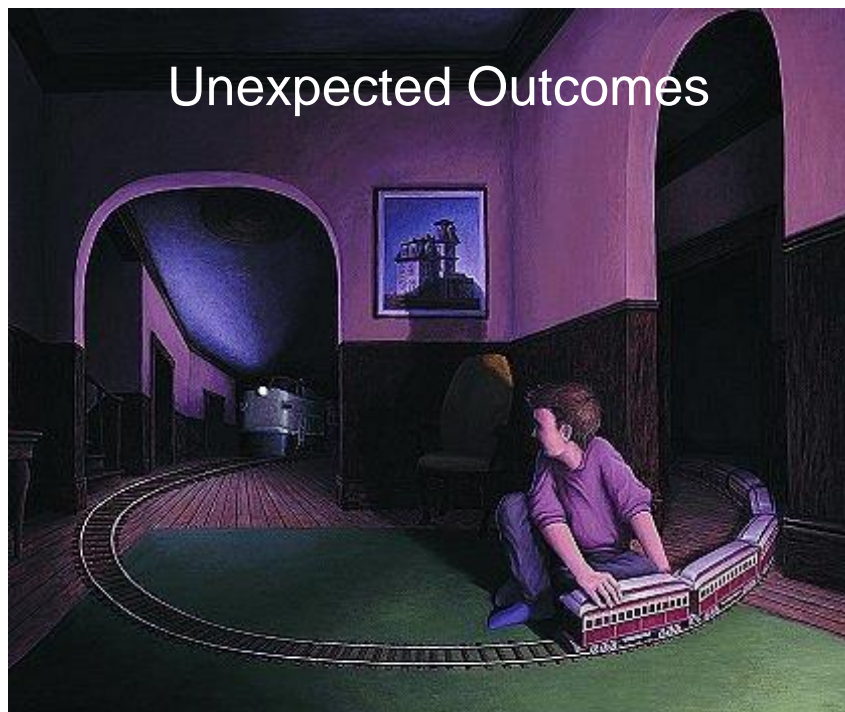
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## F3 Friends – Failure!

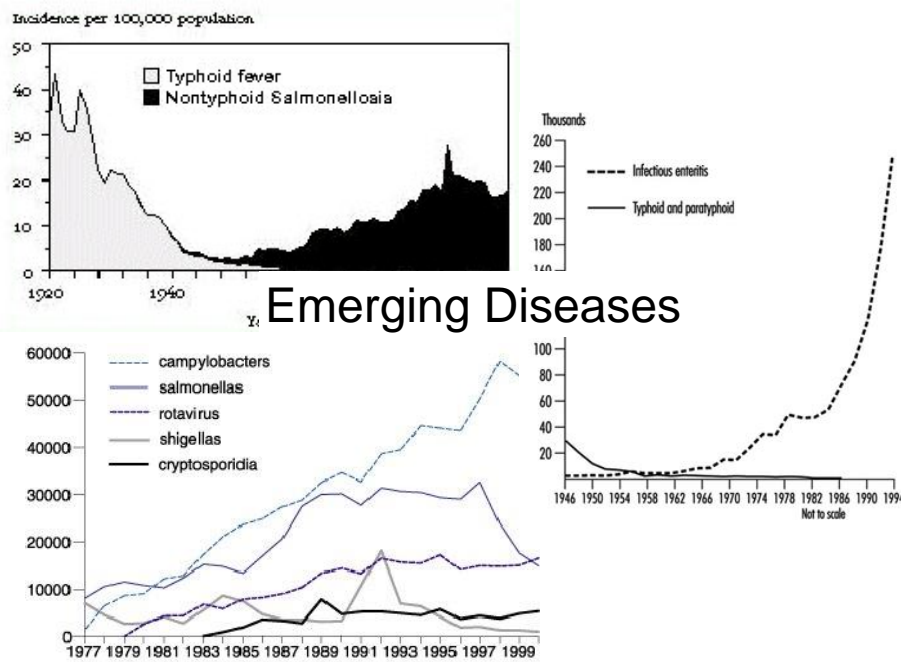
Figure 2: Share of global wealth of the top 1% and bottom 99% respectively; the dashed lines project the 2010–2014 trend. By 2016, the top 1% will have more than 50% of total global wealth.



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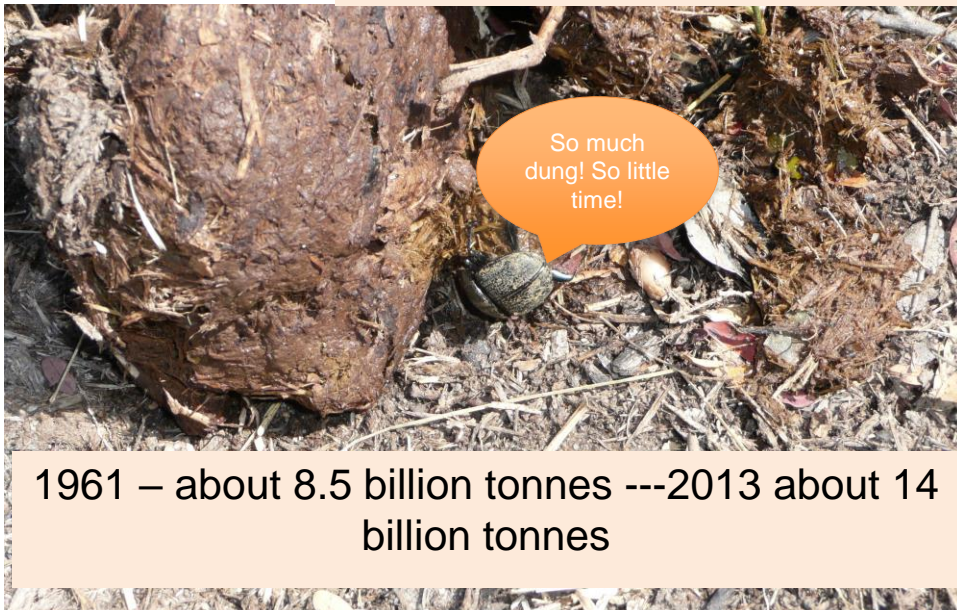
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## World Excrement Production



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## More unexpectedly related issues

- Uneven population explosions (people, rats) and extinctions (just about everything else)
- Environmental pollution
- Animal welfare
- Animal genetics/ health/ welfare
- Persistent residues
- Climate instability
- Increased social conflict

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## How did we get here?

*If God keeps me, I will make sure that no peasant in my realm will lack the means to have a chicken in the pot on Sunday!*  
- Henry IV circa 1600

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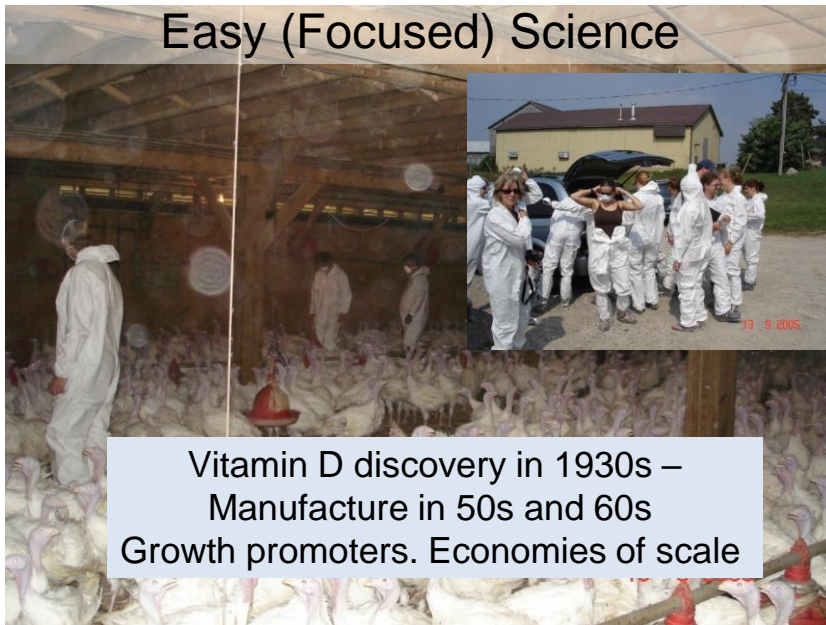


## Social Changes



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## Easy (Focused) Science

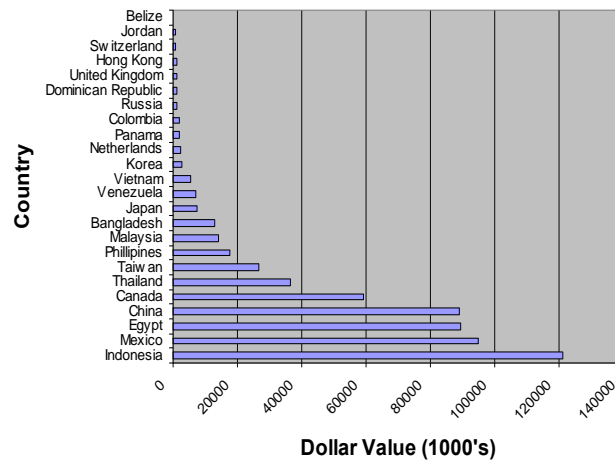


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## Intensive Recycling

**USA Meatmeal Tankage Exports 1999-2003**



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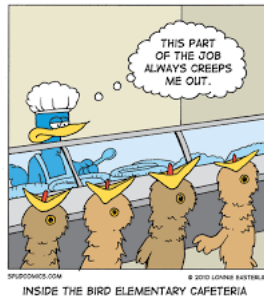
### Technological changes aimed at Efficiency

Processing is highly automated, efficient and targeted to a specific client.

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## How on earth can we feed 7 billion people?



**The assumption: there is one problem, one true story & one correct solution.**

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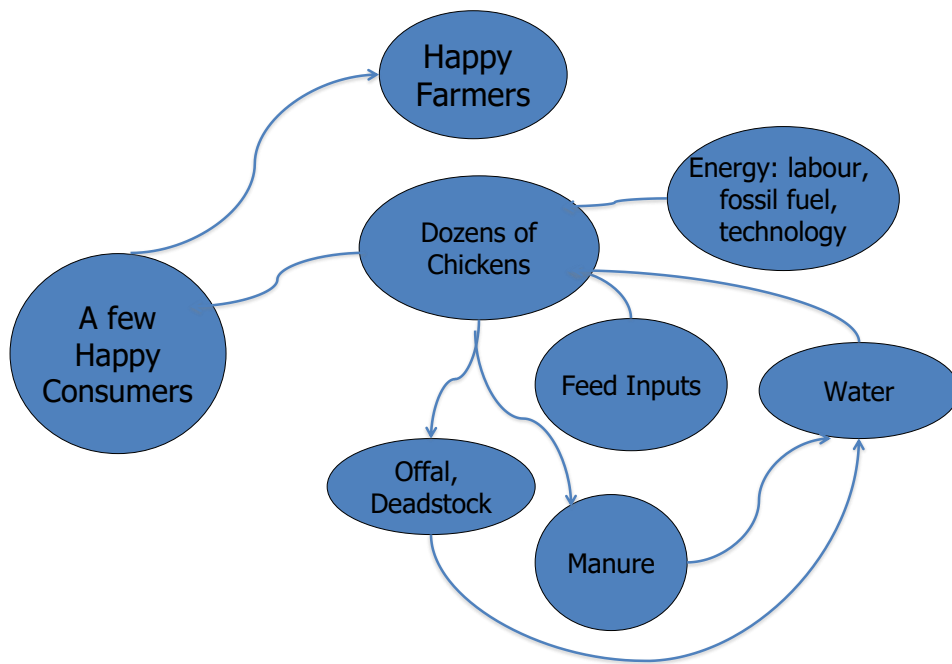
Problem with “one story”:  
there’s a villain and a hero.  
How the story ends: Blame  
the individual consumers  
&/or corporations (Monsanto  
vs the farmer).

It’s always “your” fault.

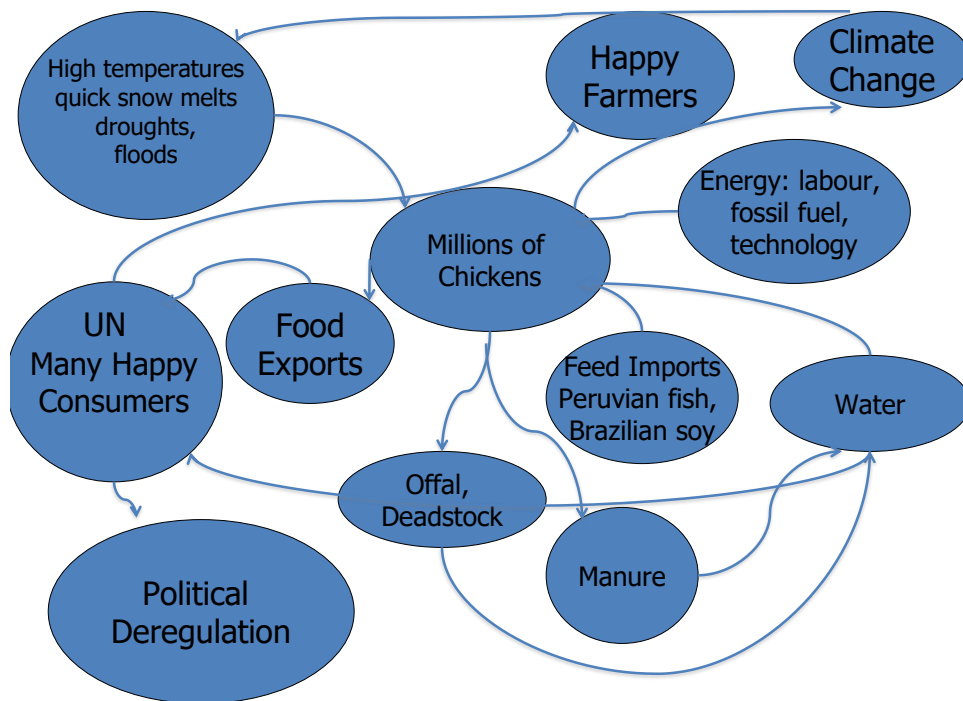


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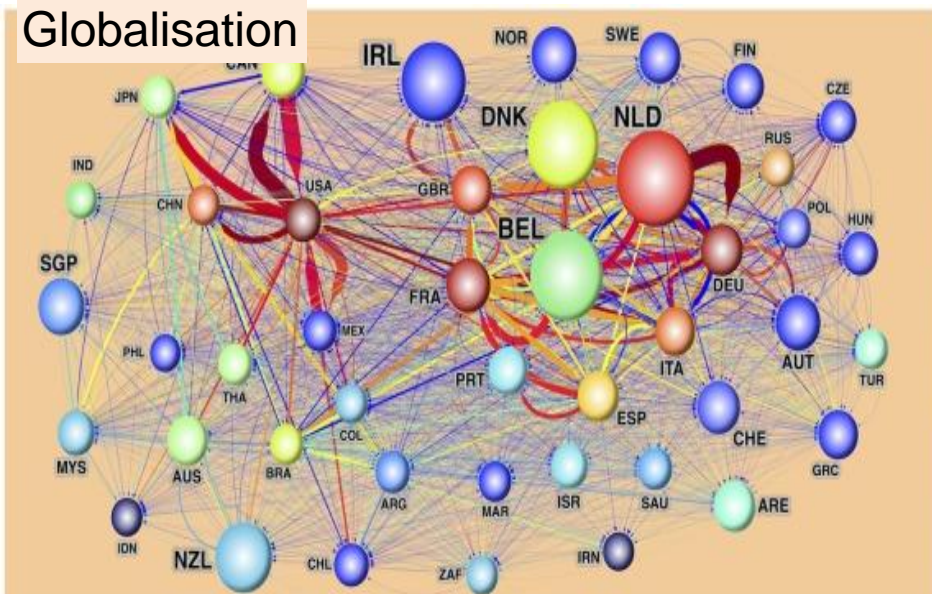


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## Globalisation

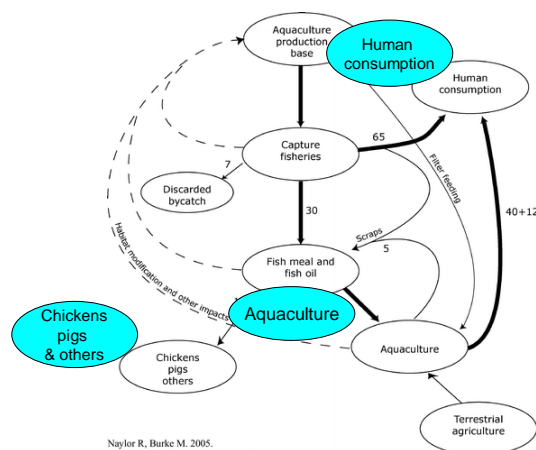


Ercsey-Ravasz M, Toroczka Z, Lakner Z, Baranyi J (2012) Complexity of the International Agro-Food Trade Network and Its Impact on Food Safety. PLoS ONE 7(5): e37810. doi:10.1371/journal.pone.0037810

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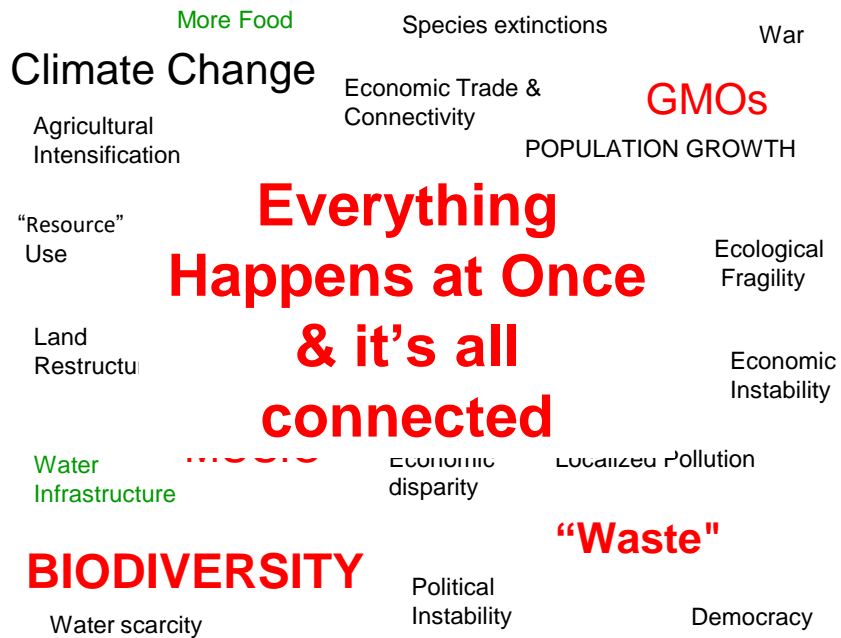


## Global resource re-distribution

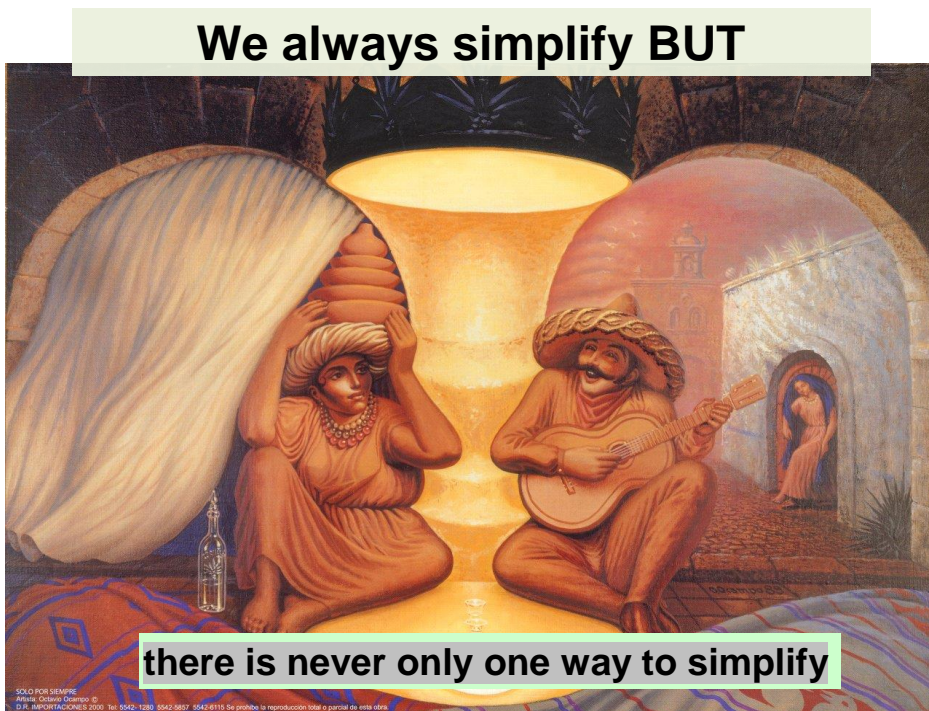


Naylor R, Burke M. 2005.  
Annu. Rev. Environ. Resour. 30:185–218

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# Multiple Perspectives

- § Livestock, insects, soybeans, GMOs, economies of scale, industrialization...[pick your solution] are:
  - § the sources of world's worst environmental problems
  - § the major drivers of emerging infectious diseases
  - § the best solution to protein insufficiency
  - § a way out of poverty for women
  - § a way to improve childhood learning
  - § a way to reinforce gender inequity
  - § a way to reinforce the power of multinational chemico-agro-industries
  - § a way to solve social problems (economic inequity - access to adequate food) with "neutral" agricultural technologies

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## Multiple contradictory "science-based" solutions

- 2007 Meat Supplementation Improves Growth, Cognitive, and Behavioral Outcomes in Kenyan Children. Neuman et al *The Journal of Nutrition*
- 2014 Vegetarian diets confer protection against cardiovascular diseases, cardiometabolic risk factors, some cancers and total mortality. Lap Tai Le & Joan Sabaté *Nutrients*
- 2018 The best way to save the planet? Drop meat and dairy. George Montbiot, *The Guardian*
- 2018 Entomophagy: How... eating bugs can help save the planet. Charlotte Payne, *The Independent*
- 2019. 'News flash: Red meat isn't bad for you after all, according to a new set of analyses published in the Annals of Internal Medicine that recommend "adults continue current processed meat consumption."
- 2008. Eat food, not too much, mostly plants. Michael Pollan

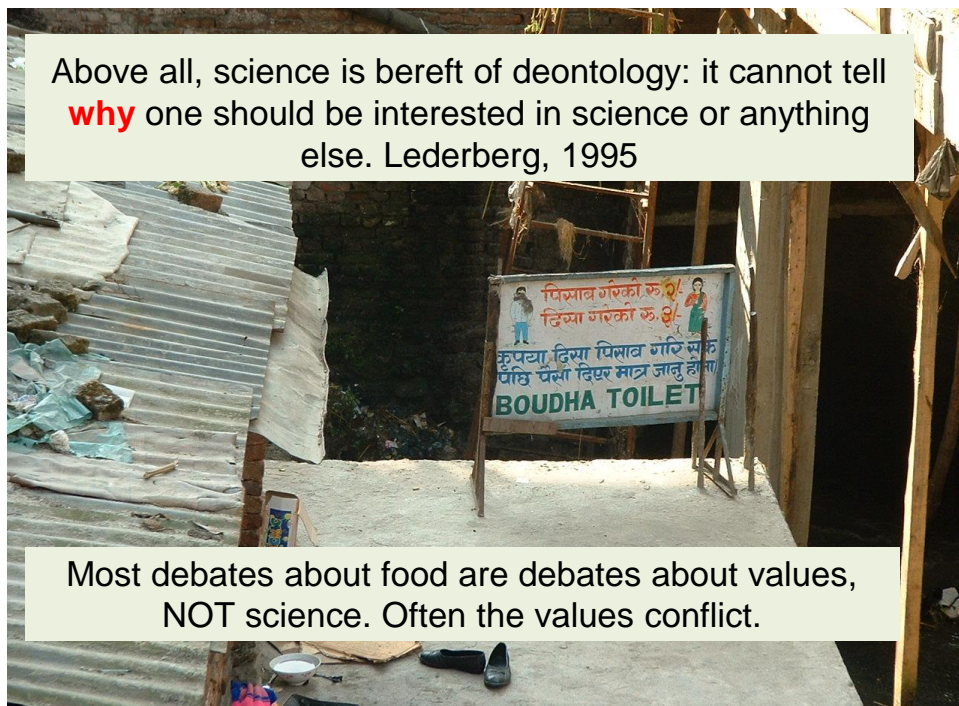
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## Wicked problem

- A problem that is difficult to resolve because of incomplete, contradictory, and changing requirements that are often difficult to recognize.
- Because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems

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## What is the Value of a Chicken?



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What is the value of Excrement?

Anaerobic Biodigester Flowchart

Biogas

Gas

Digestate

Skur

Elephant Dung Fertilizer Factory

CHILDREN WILL PUT ANYTHING IN THEIR MOUTHS

Pick it up or face a £1000 fine

REPORT THOSE WHO DON'T

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**Whose values count? Which animals/ plants matter?**

People: which ones?

Mega fauna: Which ones? Wild? Farmed? Prey? Predators? Ugly? Cute?

- Tree communities: Which ones? Almonds? Castana? Old Growth?
- Insects: which ones? bees, maggots, triatominae
- Microbiota: which ones? guts, foods, landscapes, spaceships

**Who decides? and how?**

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## Values and Agriculture 1

- *If we win, **there will be a chicken in every pot** (and a car in every garage).* Herbert Hoover, Republican Party Presidential candidate, 1928.
- If we see the chicken-in-pot problem only as a production problem, we focus on technological efficiency and critical control points.
- Footnote (early warning shot): 1929 was the great stock-market crash followed by The Great Depression.

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## Values and Agriculture 2

- *If God keeps me, I will make sure **that no peasant in my realm will lack the means** to have a chicken in the pot on Sunday!* Henry IV of France, circa 1600.
- If we see food sufficiency only as an economic/ political issue then control and distribution are key.
- Footnote (early warning shot): Henry IV was assassinated May 14, 1610.

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## The Problems with Single Stories

- They assume global economic, ecological, climatic and political stability.
- They assume that focused lab science can solve complex, wicked, problems.
- They assume Marvel Comic Super Heroes and silver bullets will “save” us.
- Above all, they assume science is value neutral and that control is possible.

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## Values & Agriculture 3

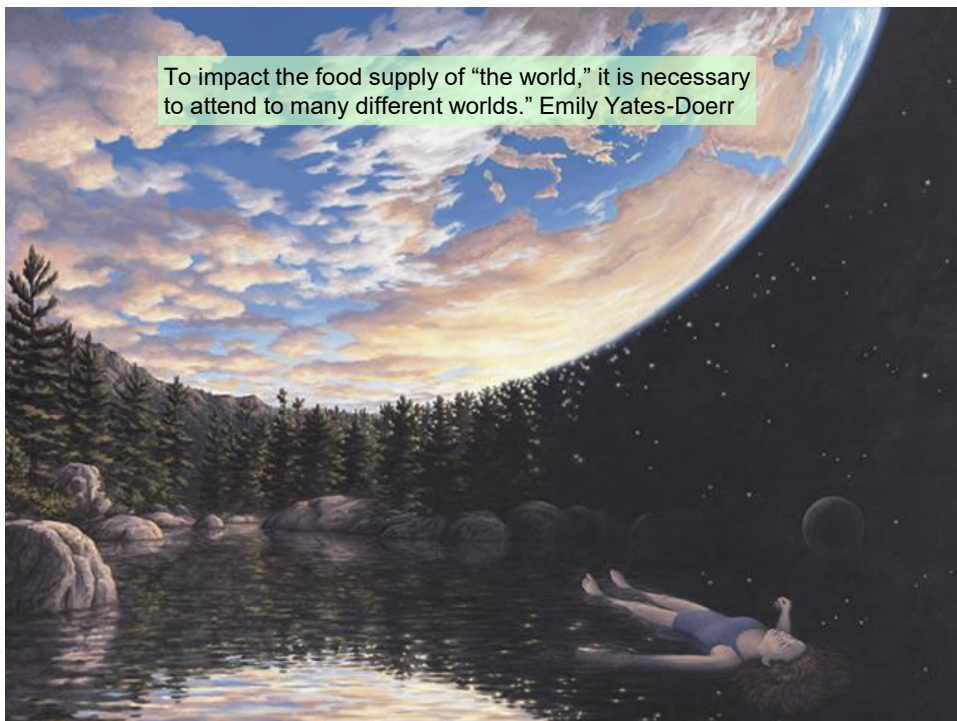
- Welfare & Disease issues are emerging under circumstances where "facts are uncertain, values in dispute, stakes high and decisions urgent." (Post Normal Science)
- There are many conflicting answers, and we may need all of them.
- eg Raise soldier flies on organic waste – cuts out imports of fishmeal and soy – cost savings? Ecological & climate resilience?
- eg Raise prices of chickens but argue for guaranteed basic income (increase the means to have a chicken in every pot).

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## The Challenge for Policy & Management in a world of Out-of-Control “Wickedness”

**How to work with** actors with conflicting goals, who don't trust or like each other, who have unequal power, working at different temporal and spatial scales, and where outcomes and processes need to be continually renegotiated in the context of dynamically changing technological, political and ecological landscapes.

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