HB 2020 Testimony

focusing on the

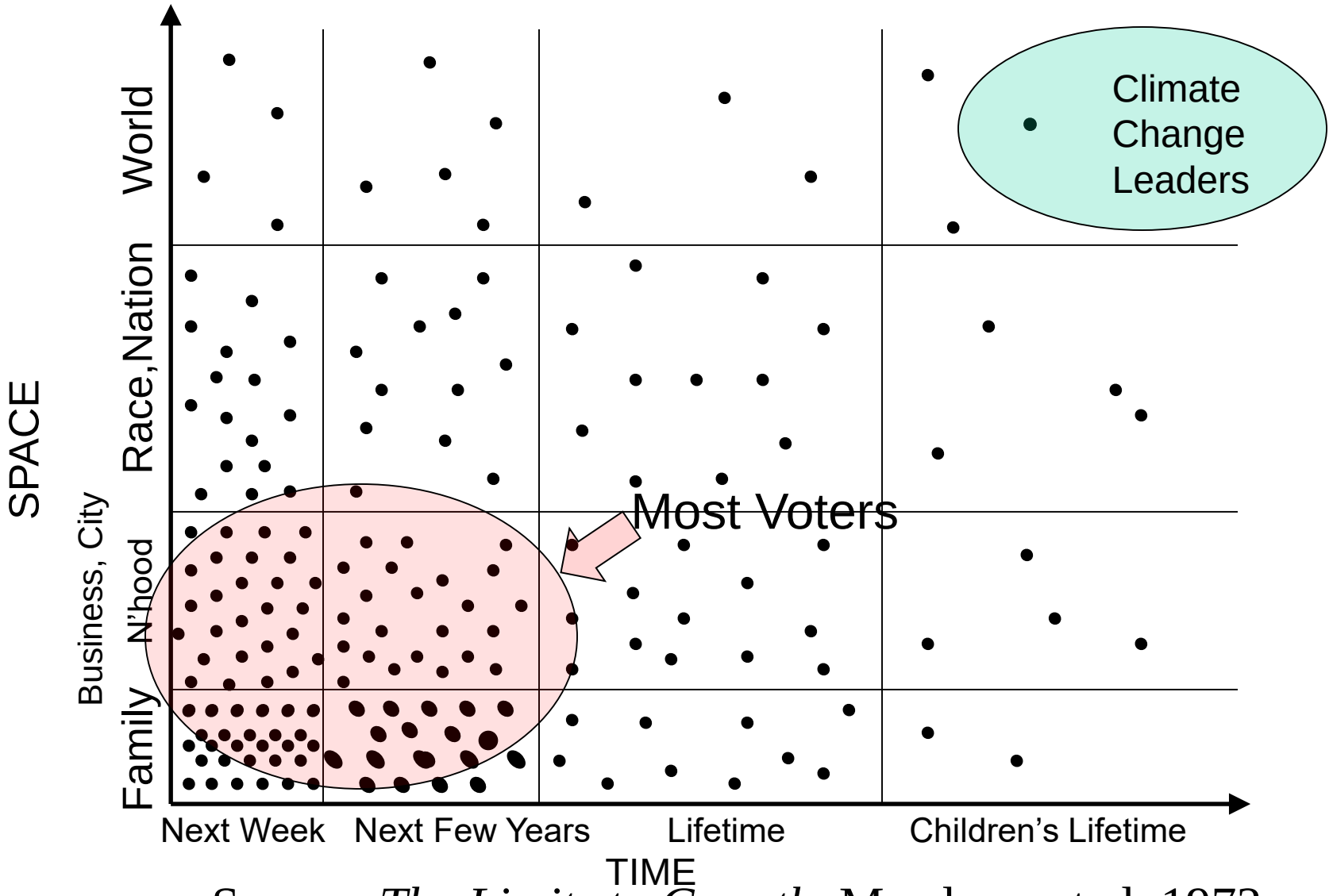
The Limits to Growth

John Weigant

Who am I?

- A Futurist, Urban Planner, Physics Teacher, Software Consultant, and Business Owner
- I became a Republican when Mark Hatfield was Governor, followed by Tom McCall.
- We need more of their vision today.
- **So I especially address my comments to fellow Republicans on the Committee**

Human Perspectives

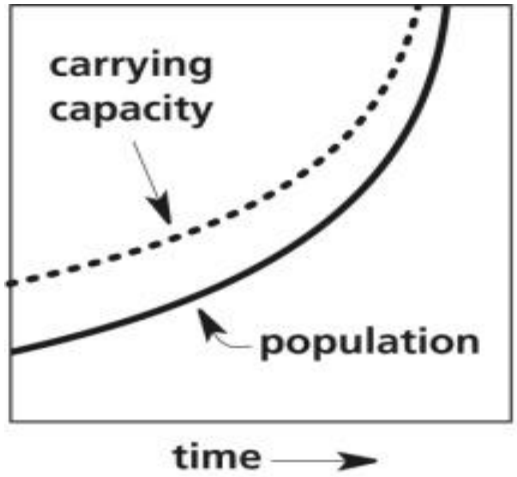


Source: *The Limits to Growth*, Meadows et al, 1972

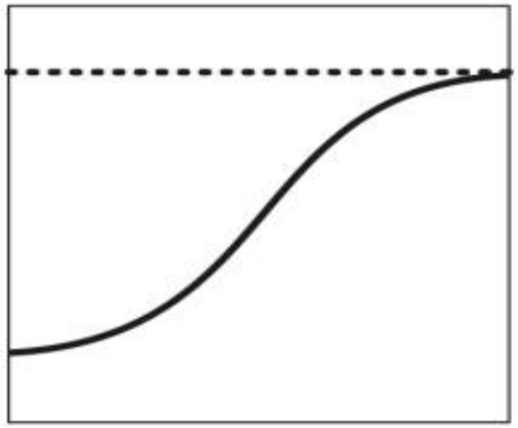
Our responsibilities...

- “Management has the responsibility to know the shapes of curves.” --Motorola exec.
- *Limits to Growth* plots the curves
- Based on “Systems Dynamics,” and computer modeling of 150 dynamic inputs.
- See also…

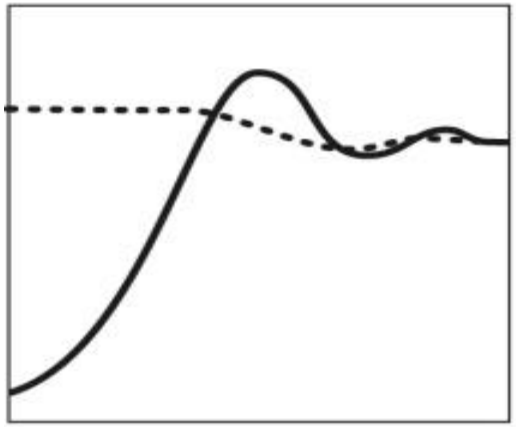
The shapes of growth curves



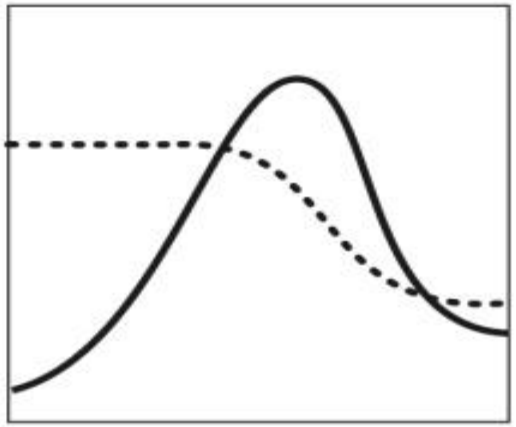
a) Continuous Growth



b) Sigmoid Approach to Equilibrium



c) Overshoot and Oscillation



d) Overshoot and Collapse

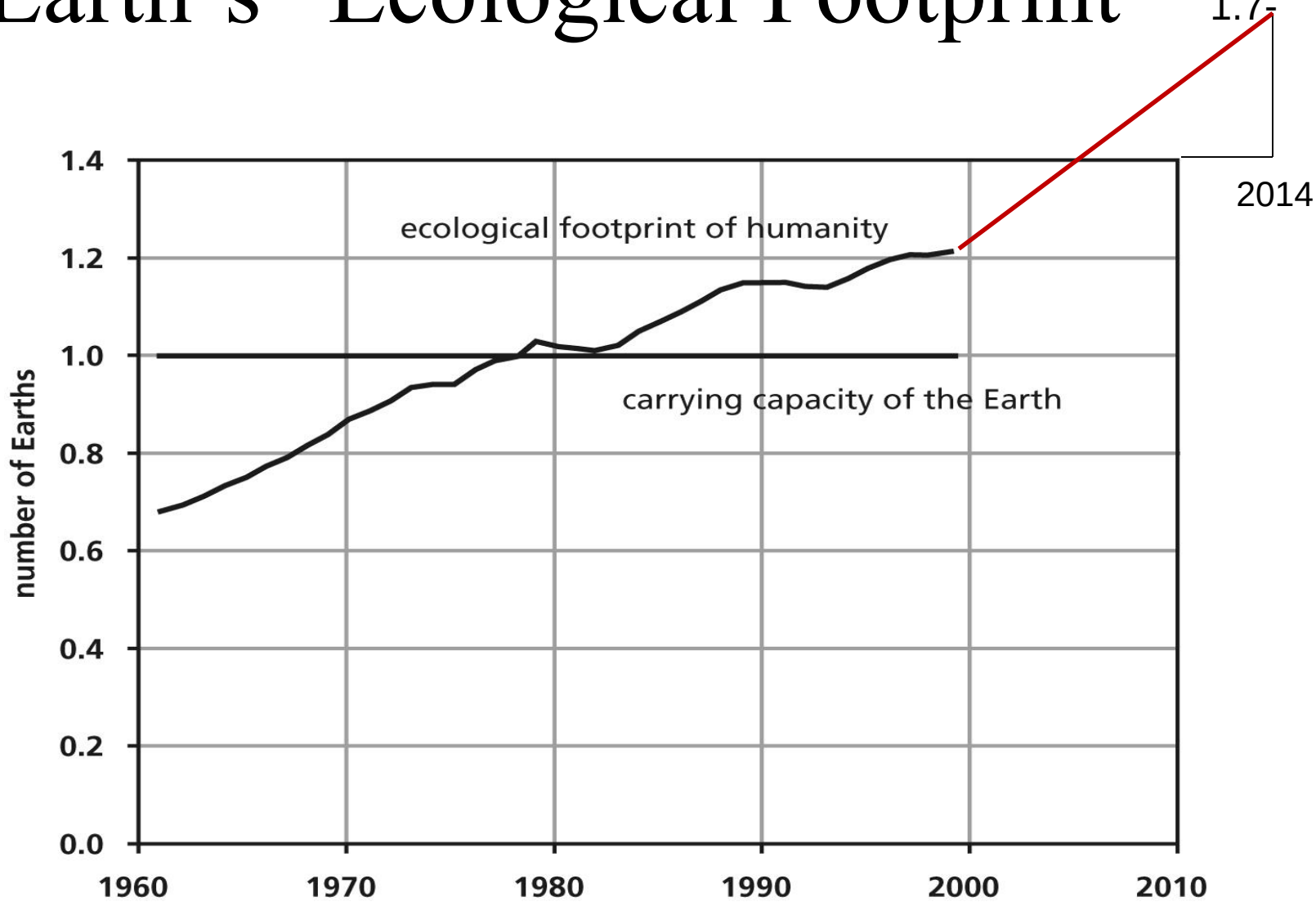
4.03

How to measure Earth's limits?

Extremely difficult--no single measure works

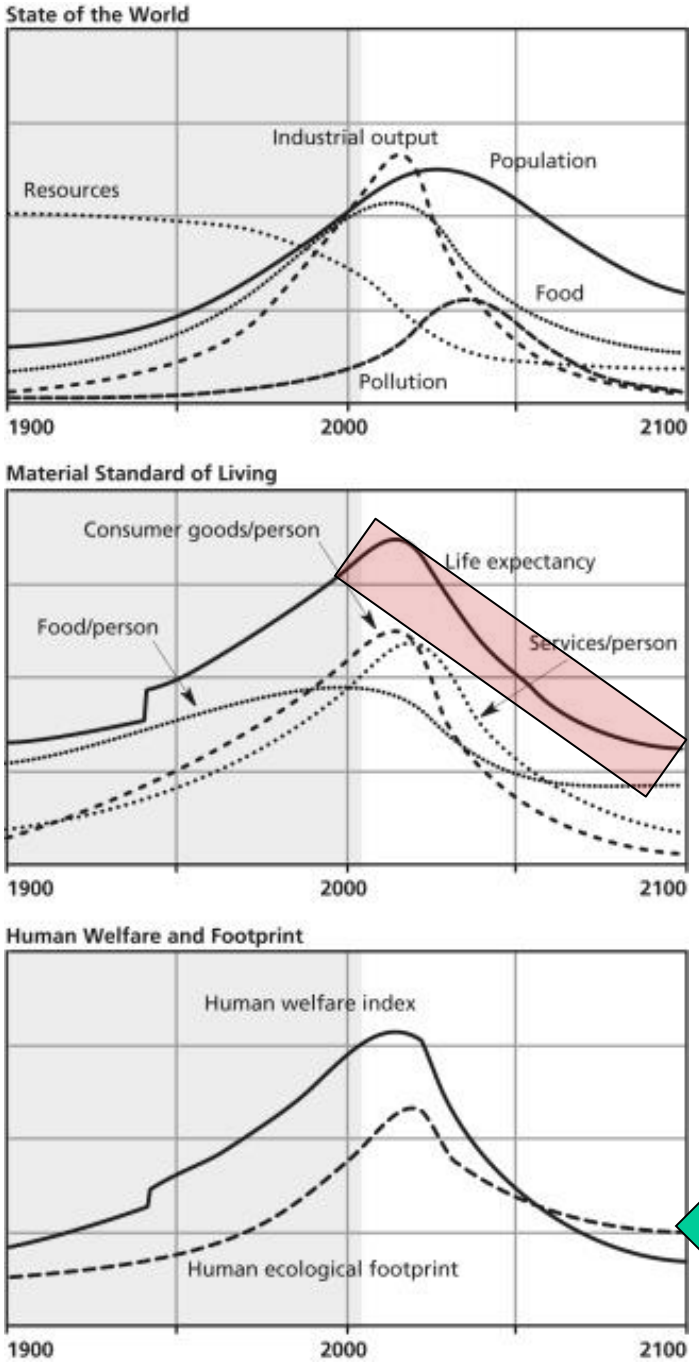
- "Ecological Footprint" is best so far…
  - Land area required to provide resources and absorb emissions ($C0_2$)
  - Mathis Wackernagle, 2002
- Any time usage exceeds carrying capacity, earth draws down its accumulated savings...
  - often producing waste and pollution.

Earth's "Ecological Footprint"



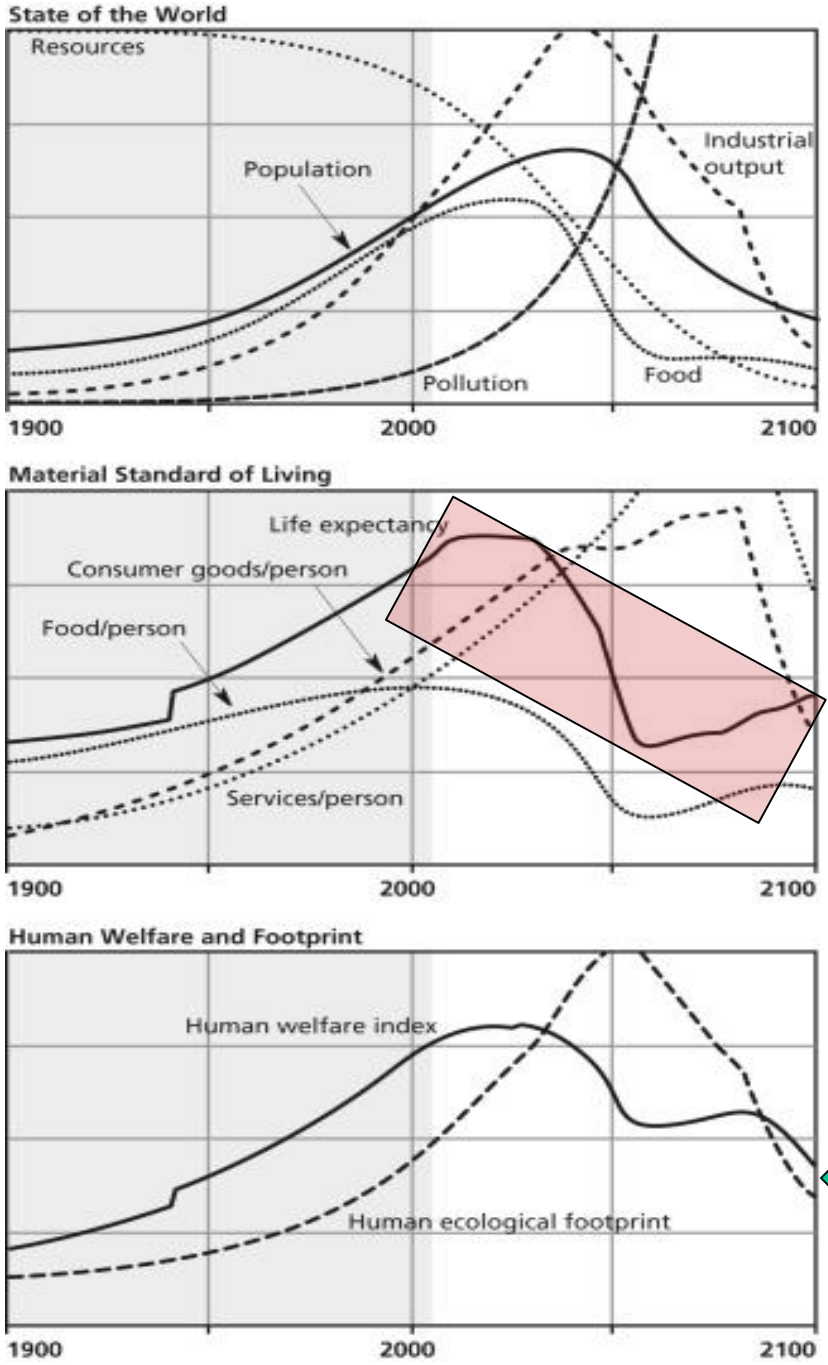
Integrating the issues

- World3-03: computer simulation with ~150 inputs. Allows increased understanding.
- Depending on how inputs are set, generates "scenarios," not predictions
- Scenarios assumed invalid after 1st collapse
  - Assumption: some action will finally be taken to invalidate remaining scenarios.
- Allows testing impact of different actions
  - Builds stronger mental models



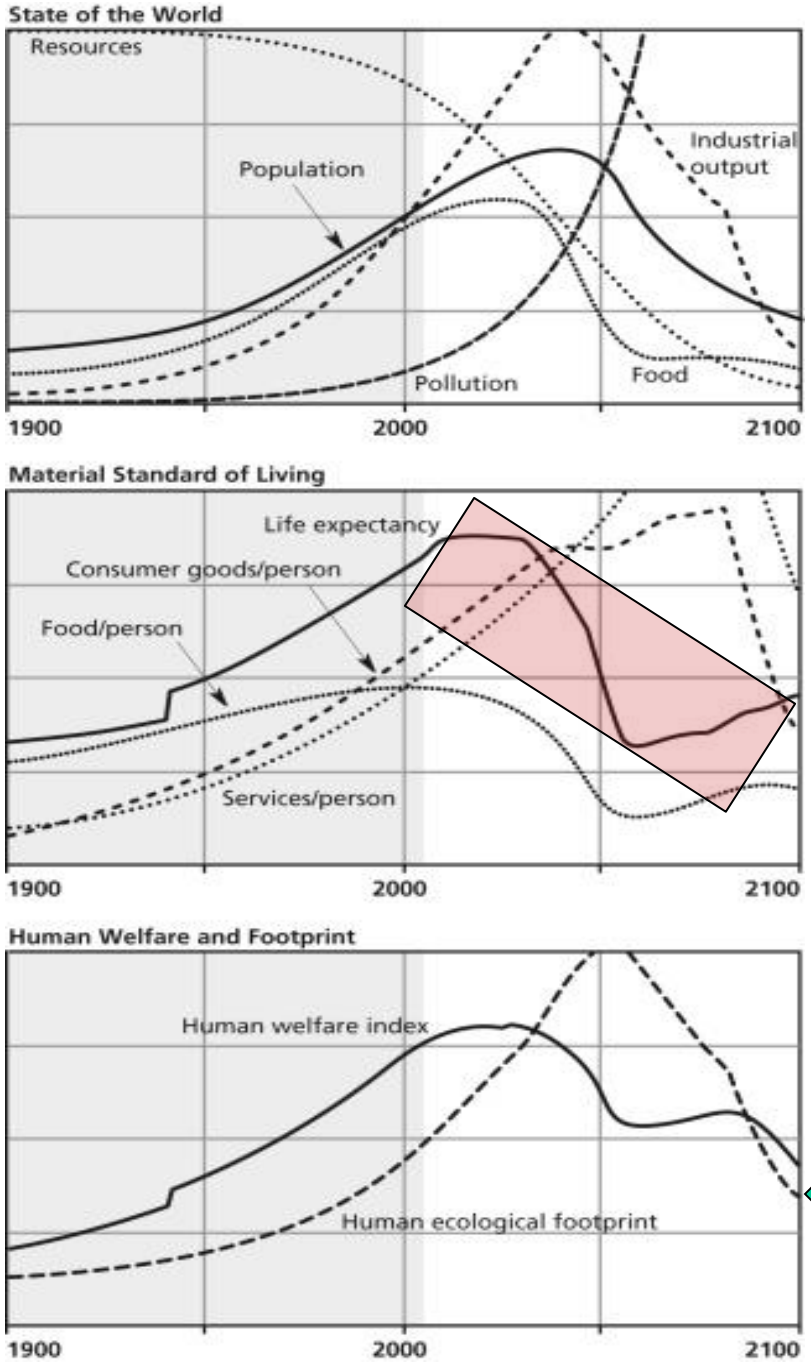
Scenario 1: a reference point

- The world society proceeds in a traditional manner, as during most of 20th century.
- Population & production increase until halted by increasingly inaccessible nonrenewable resources.
- Ever more investment maintains resource flows until lack of investment in other sectors of economy leads to declining output in industry and services. Food and health services drop, lowering life expectancy & raising death rates



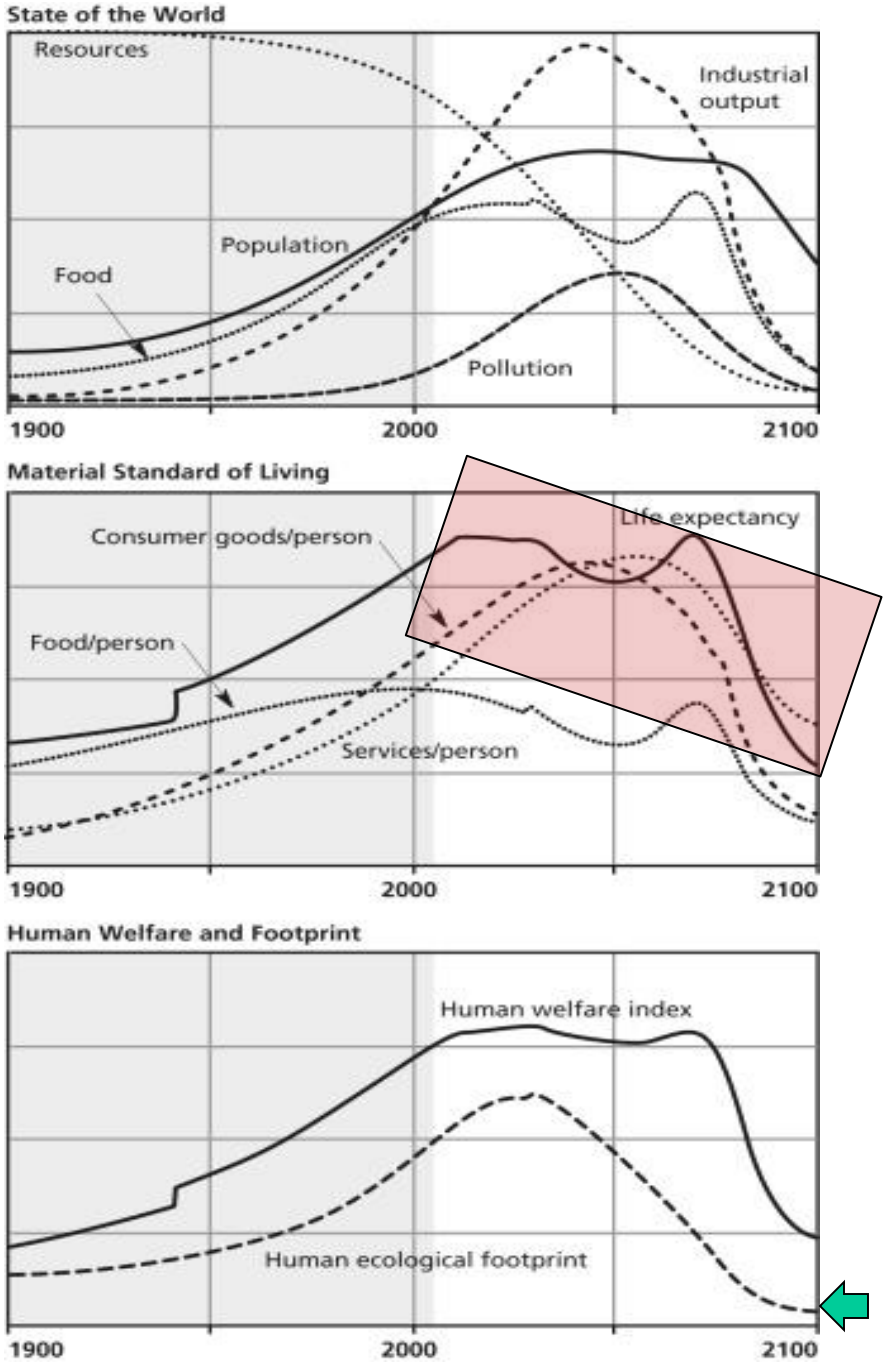
2: More abundant non-renewable resources

- Double resources of Scenario 1, and assume technology postpones onset of higher costs.
- Pollution goes off scale, forcing food shortages and negative health effects from pollution



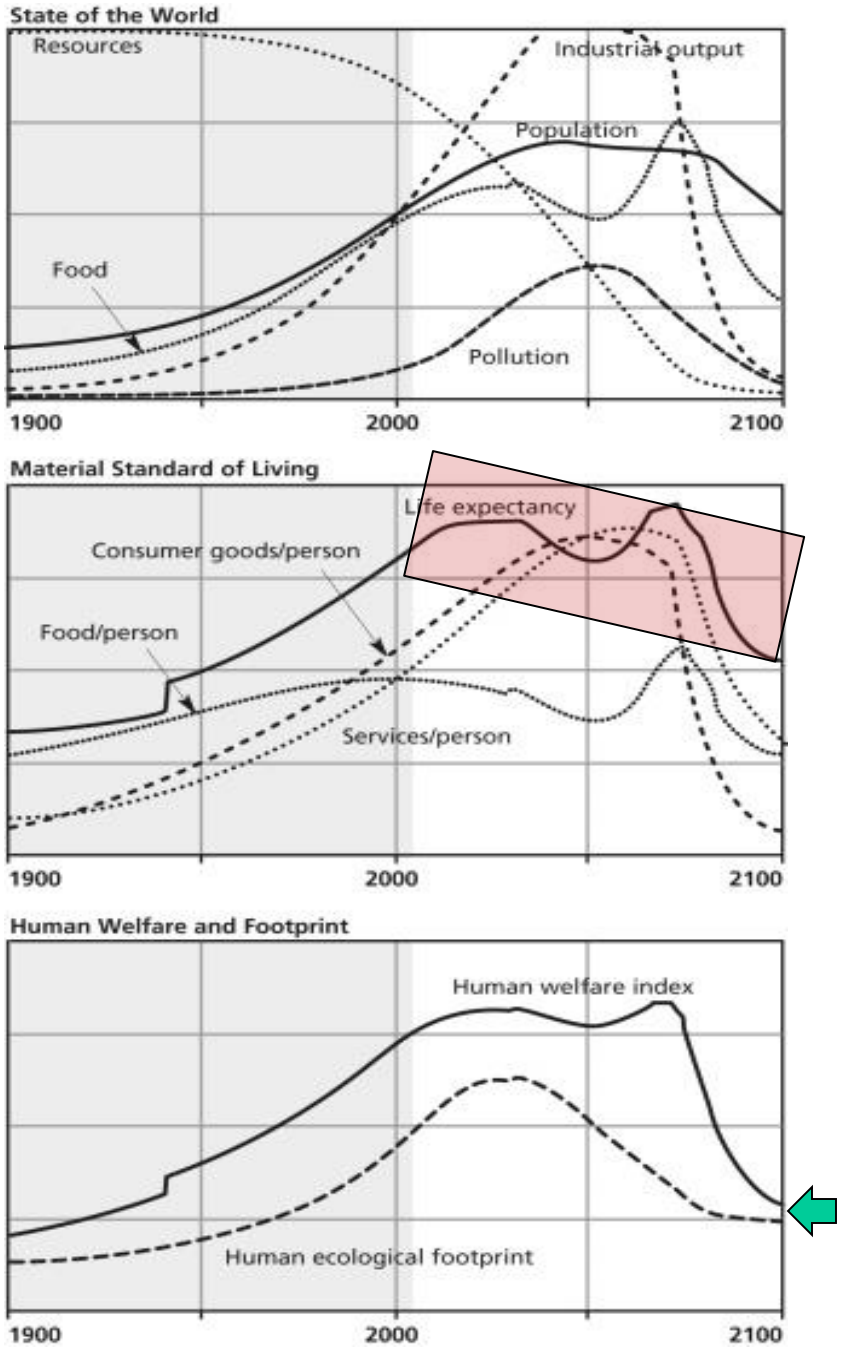
3. #2 + Pollution control technology

- Reduce amount of pollution per unit of output by 4%/yr starting in 2002.
- But food ultimately declines, drawing capital from industrial sector and eventually triggering collapse



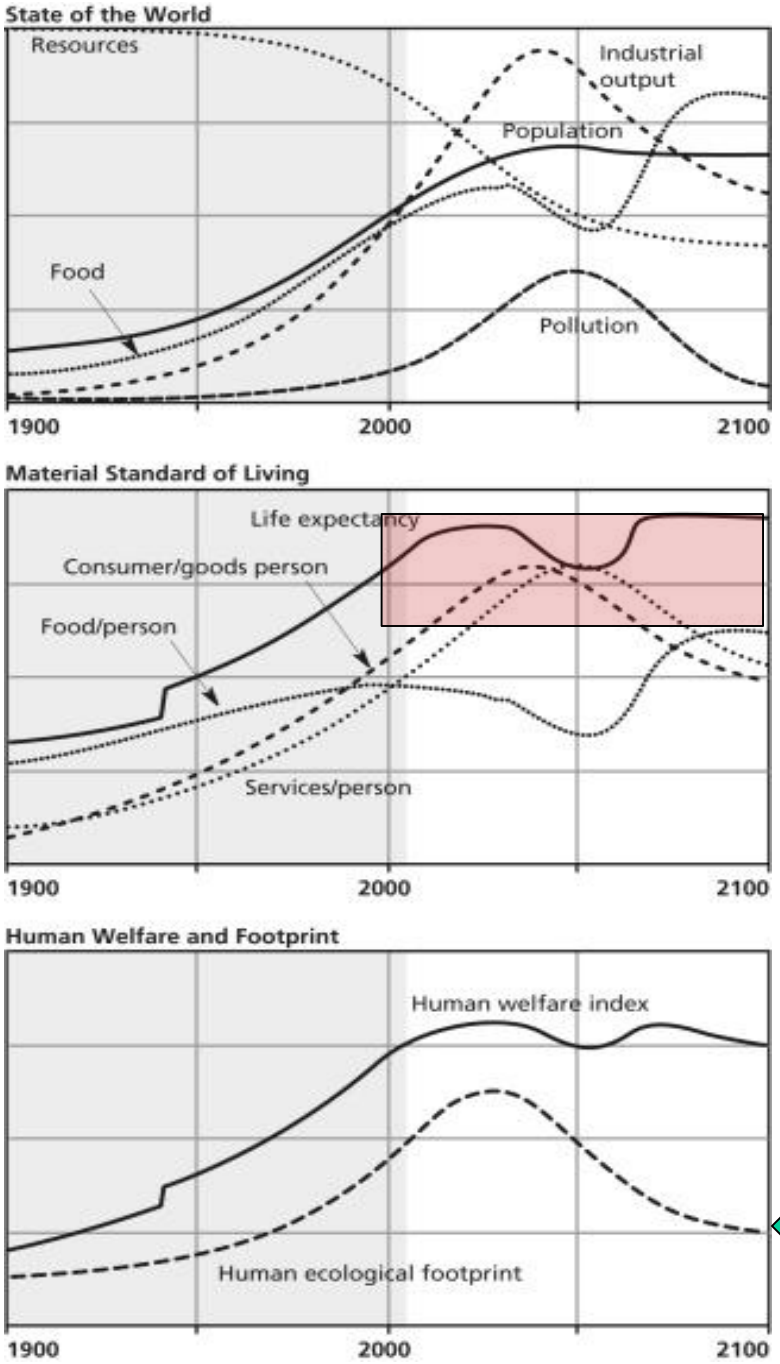
4: #3+Land yield enhancement

- Greatly increase food yield per unit of land
  - High agricultural intensity speeds up land loss.
- Eventually unsustainable



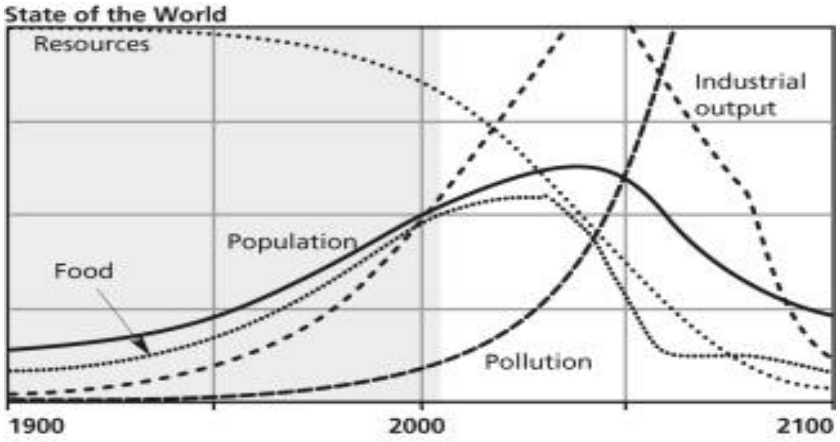
5: #4+Land erosion policies

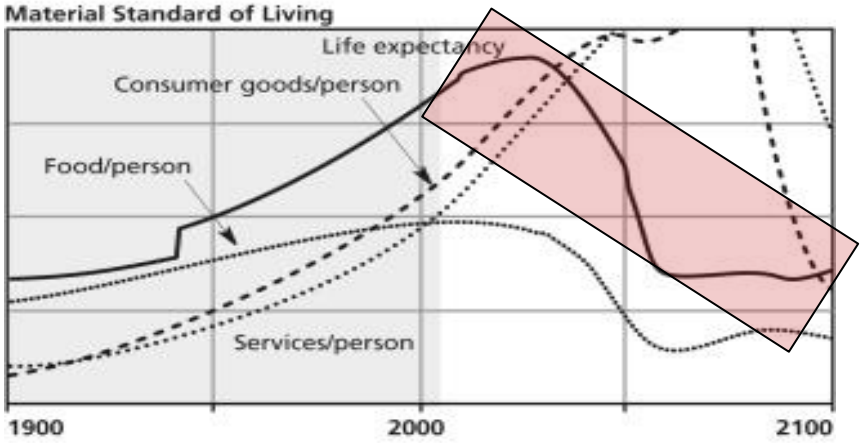
- Add land preservation technology
- Collapse postponed a few years

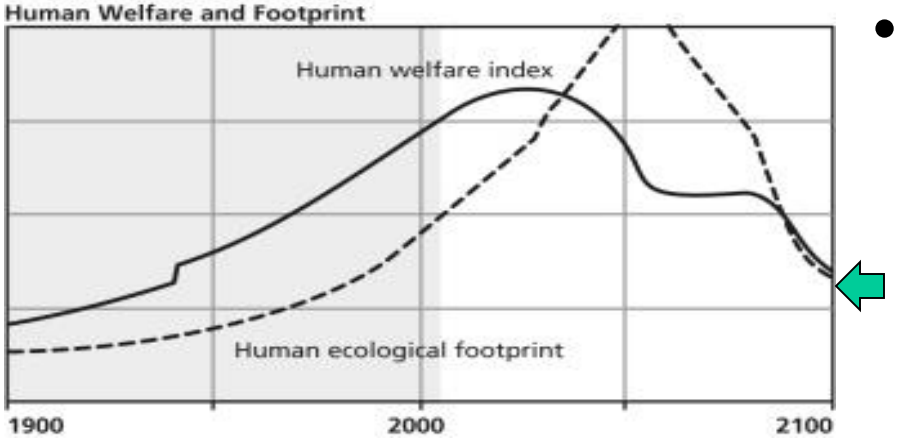


6: #5+Resource efficiency technology

- Develop powerful technologies in 4 areas
- Cost is substantial; delay is about 20 yrs
- Bliss starts declining due to accumulated cost of technologies.

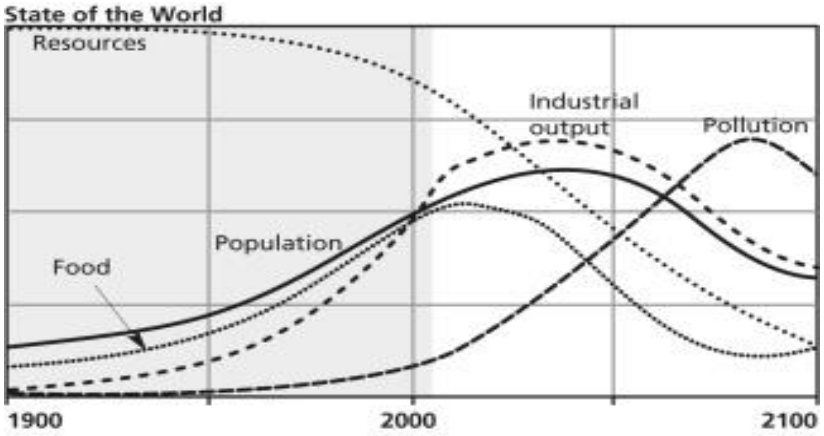


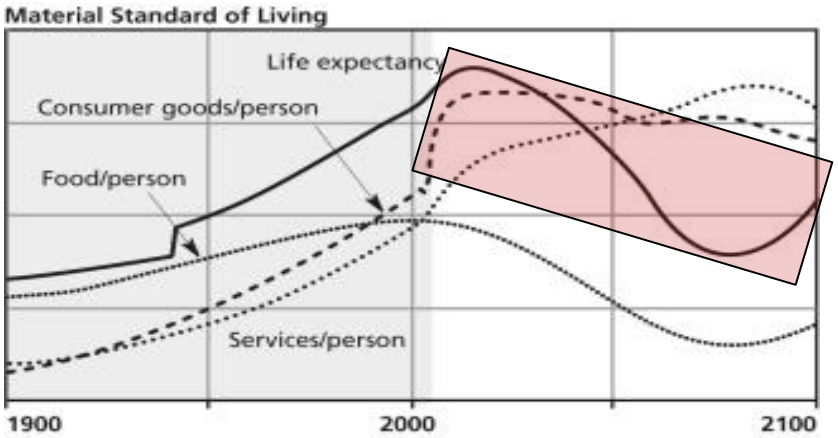


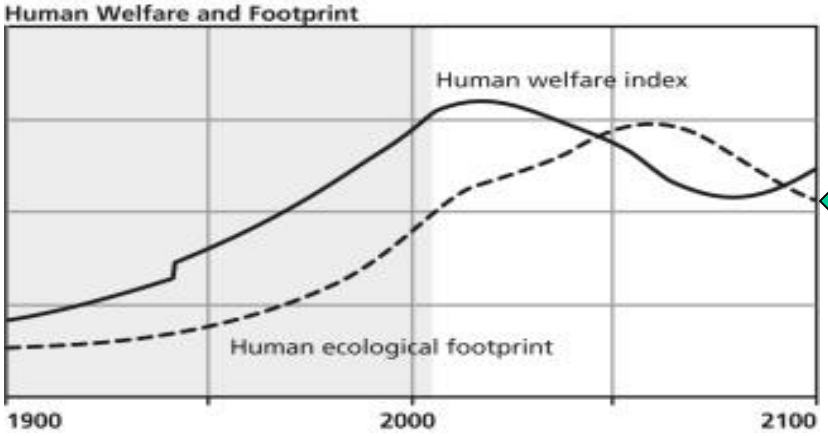


7: **#2**+World seeks stable pop from 2002

- World wide, 2 surviving children, health care, social security, birth control, attitude.
- Age structure momentum just 10% below peak.
- Increased industrial output finally stopped by increasing pollution (as in #2)

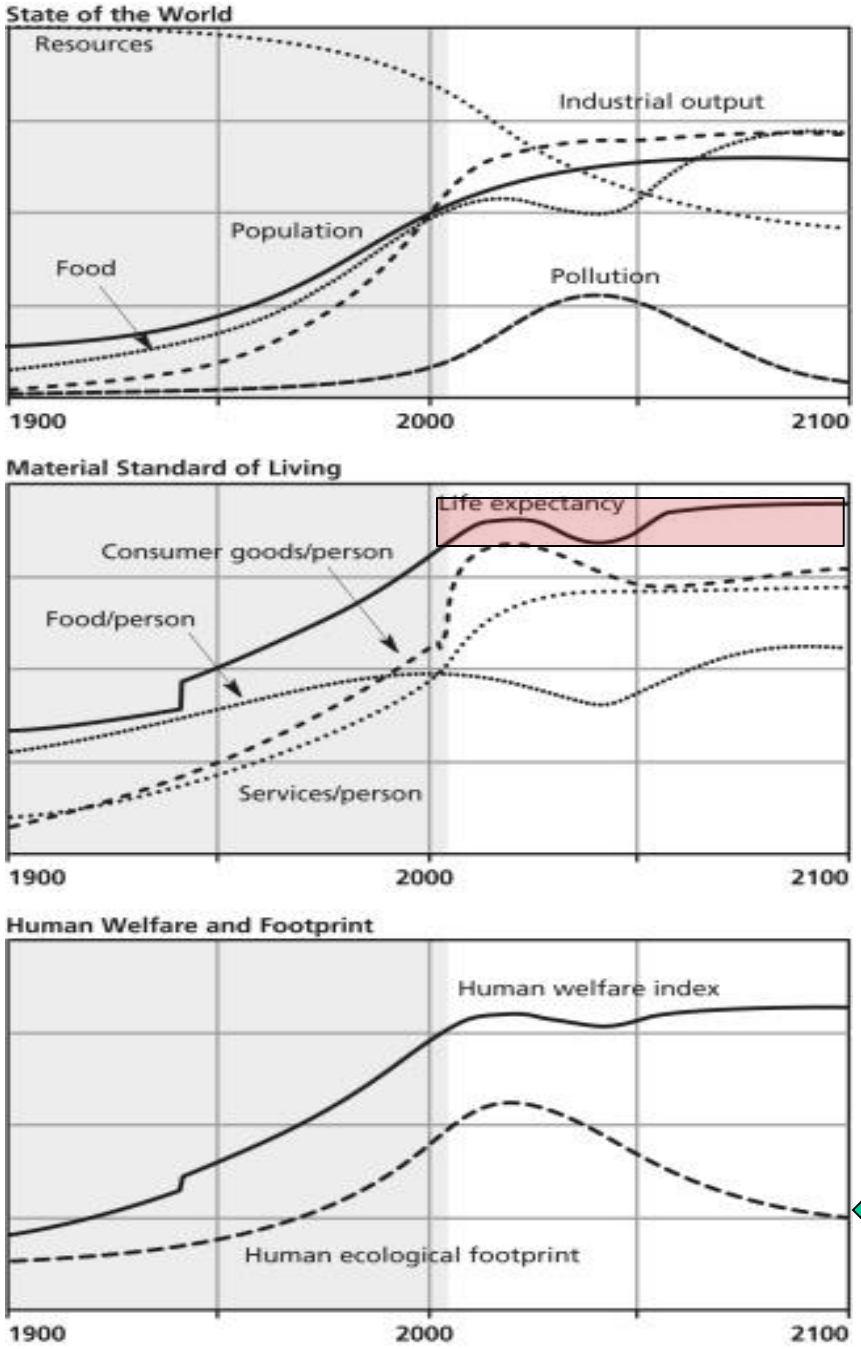






8: #7+Stable industrial output/cap

- But pollution stresses ag output
  - food production/cap declines, bringing down life expectancy and population



9: #8+pollution, resource & ag technologies

(#6 + stable population and industrial output)

- Finally sustainable by 2100

Some things to look at...

- Resource efficiency technology:
  - Without it resouces gone by 2100.
  - With it, resources gone in another 200 years.
- China's 1-child policy:
  - More austere than pop. stability assumptions.
  - New 2-child policy: fertility hasn't increase much
  - Decisions are political; e.g., a new Pope
- Consumer goods/cap linked to resources & industrial output goals. So substitute quality and beauty for quantity. Now.

Loving

"One is not allowed in the industrial culture to speak about love… . Anyone who calls upon the capacity of people to practice brotherly and sisterly love, love of humanity as a whole, love of nature and our nurturing planet, is more likely to be ridiculed than to be taken seriously. The deepest difference between optimists and pessimists is about whether humans are able to operate from a basis of love. …the pessimists are in the vast majority." --pg 281

"Individualism and shortsightedness are the greatest problems of the current social system, and the deepest cause of unsustainability."

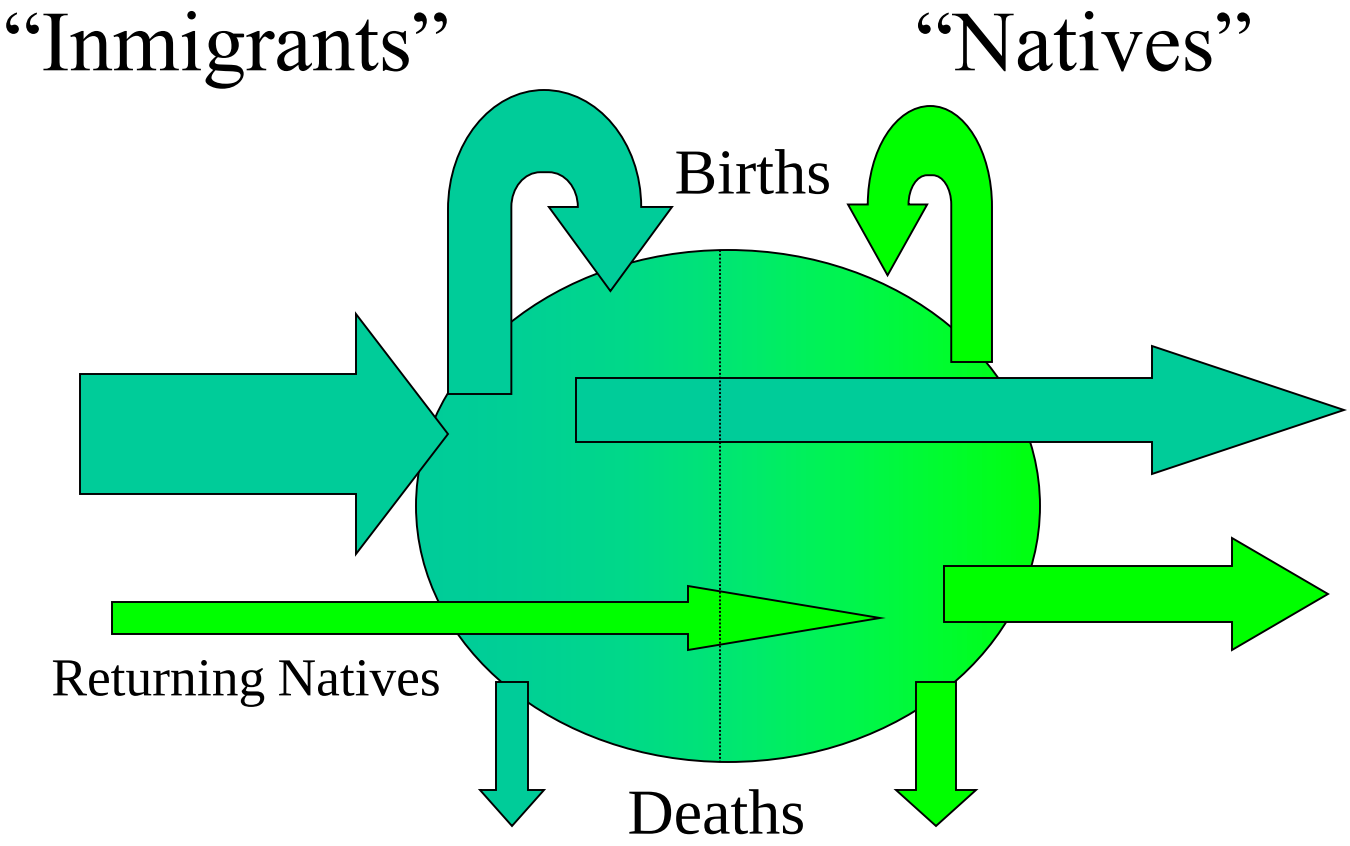
Summary: Choose a mental model

1. The earth has no practical limits.
   - Result: Collapse
2. Limits are real and close, but people can't respond in time. A self-fulfilling prophesy.
   - Result: Collapse
3. Limits are real and close, but there is just enough time, with no time to waste.
   - Result: A much better world for the vast majority
   - But that was 15 years ago; not likely now.

A secular religion?

"The genius of the consumer society is that it captures religious needs largely disenfranchised by modern Western life, and translates those spiritual longings into material appetites,the satisfaction of which through purchases further expands the consumer society's reach. In effect, the consumer society is a system that integrates both religion and economics into a culture in which material wealth is valued far more than spiritual wealth. … Can the consumer society evolve into its successor without upheaval? I believe that it cannot." --Eugene Linden, 1998, *The Future in Plain Sight*, pg 254

Population Flows



Pushers ⟶ ⟶ Pullers

The Attractiveness Principle

--Jay Forrester, MIT Systems Professor

"In a free society if any place is unusually attractive, folks will--no surprise--be attracted there. The most mobile people (the young, the rich, the well informed) will get there first. The place will grow until its attractiveness has been reduced by crowded highways, or unemployment, or scarce housing, or pollution, or just plain visual blight. (The most mobile people will have moved on by then.) When the place is no more attractive than anywhere else, then and only then will it stop growing." --D. H. Meadows, *The Global Citizen*, 1991

Controlling Growth by Controlling Attractiveness: Three choices

1. Attract newcomers, and let them choose how to make our place less attractive
2. Seek to make other places more attractive, so they won't come.
3. Choose *how* to be unattractive, to discourage growth.

- What's your choice?
- If #3, how would you like to be less attractive?