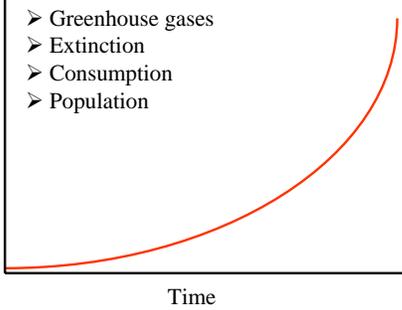


## Four spikes\*

- Greenhouse gases
- Extinction
- Consumption
- Population



\*Ed Ayres (1999, *God's Last Offer*)

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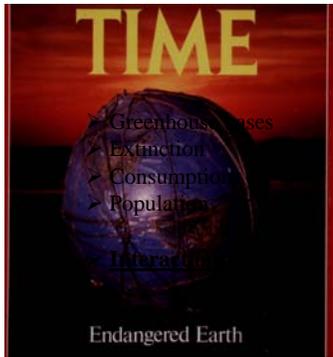
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## Through the bottleneck



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## Pessimism?

“There is no point to intellectual and political work if one were a pessimist. Intellectual and political work require, nay, demand, optimism.”\*

- Air pollution
- Water pollution
- Ozone depletion
- Veal consumption

\*Edward Said (quoted by Joseph Massad, 2003, *Al-Ahram*)

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## Greenhouse gases

Sources

- CO<sub>2</sub>—fossil fuels
- Methane
- CFCs
- NO<sub>x</sub>

Outcomes

- Temperature
- Precipitation
- Altered ecosystems

} Katrina, Rita, et al.

Solutions

- Kyoto et al.
- Energy policy
- Individual actions

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## GH gases—individual actions

- Transportation
- Energy

1 gallon of gasoline ~ 40 acres of wheat\*

*gbermensch*

*Selbstüberwindung*



\*Jeffrey Dukes (2003, *Climatic Change*)

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## Extinction

Drivers

- Loss of habitat
- Ecological footprint
- Homogenization

Outcomes

- Reduced ecosystem services (valued at \$33 trillion/year)
- Reduced inspiration
- Reduced flexibility
- Reduced beauty

Solutions

- \$30 billion\* (~70%)
- Individual actions

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## Extinction—individual actions

- Support conservation organizations
- Reduce ecological footprint (1% → 40%)
- Lifestyle change (as if lives depended on it)



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## Consumption

### Consume:

1. To do away with completely; destroy
- 2a. To spend wastefully; squander
- 2b. Use up
3. To waste or burn away; perish

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## Consumption

### Outcomes

- Intergenerational inequity
- Distinct social classes
- Economic “growth”

### Drivers

- Neoclassical economics
- Marketing
- Human desire

### Solutions

- Steady-state economy
- Shift subsidies
- Individual actions

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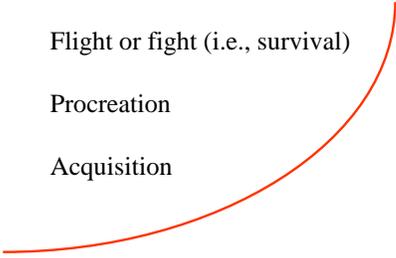
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## Hard-wired for simplicity

Flight or fight (i.e., survival)

Procreation

Acquisition



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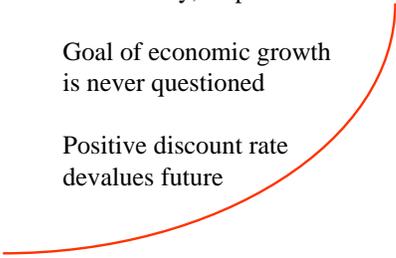
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## Neoclassical economics

“It’s the economy, stupid”\*

Goal of economic growth  
is never questioned

Positive discount rate  
devalues future



\*James Carville (Clinton administration)

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## Consumption

### Outcomes

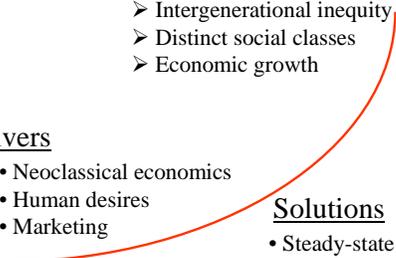
- Intergenerational inequity
- Distinct social classes
- Economic growth

### Drivers

- Neoclassical economics
- Human desires
- Marketing

### Solutions

- Steady-state economy
- Shift subsidies
- Individual actions



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## Consumption

- Enough paved roads in U.S. to circle globe 157 times\*
- U.S. military expenditures to protect Mideast oil: \$30-60 billion/year\*
- Value of Mideast oil: \$20 billion\*
- Water consumed by showering once/day for one year: 5,000 gal<sup>+</sup>
- Water required to grow one pound of beef in the U.S.: 2,600-5,000 gal<sup>+</sup>



\*Lester Brown (2003, *Plan B*)  
\*John Robbins (2001, *Food Revolution*)

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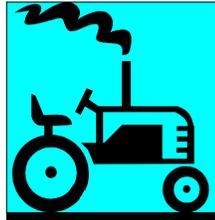
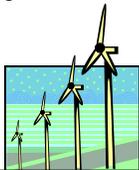
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## Consumption—shift subsidies

- Prices reflect total cost (e.g., gasoline > \$8/gal; coal ~ \$0.60/Kwh vs. solar ~ \$0.05/Kwh)
- Stop subsidizing destructive practices
- Begin subsidizing constructive practices



ANWR oil vs.  
North Dakota wind

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## Consumption—individual actions

- Reduce/Reuse/Recycle
- Think globally, eat locally
- Re-connect with nature



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## Human population

Outcomes

- Increased demands on ecosystem services
- Reduced quality of life
- Underlies other forces

Solutions

- Socioeconomic policies
- Revised worldview
- Individual actions

Drivers

- Natural selection
- Individualist ethic
- Denial

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## Denial?

Human population can grow  
“for the next 7 billion years”\*

\*Myers & Simon (1994, *Scarcity or Abundance: A Debate on the Environment*)

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## The energy myth

Biosphere II – unlimited energy, human carrying capacity of 6-8\*

Global carrying capacity of 6-9 billion hard-working vegetarians

\*Odum and Odum (2001, *A Prosperous Way Down*)

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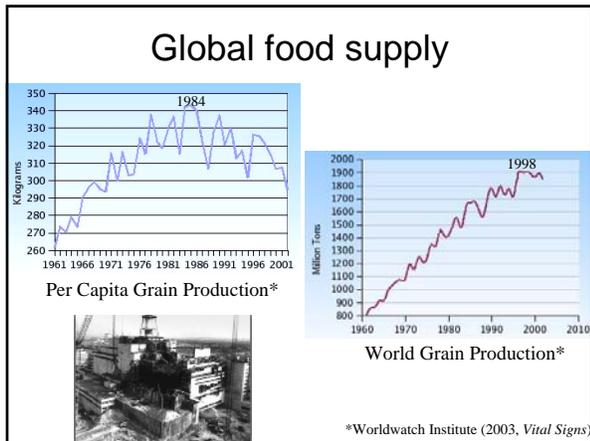
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### Individualistic ethic

Formalized in our founding documents:  
 e.g., *unalienable* right to life, liberty,  
 and the pursuit of happiness

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### Human population

Outcomes

- Increased demands on ecosystem services
- Reduced quality of life
- Underlies other spikes

Drivers

- Natural selection
- Individualist ethic
- Denial

Solutions

- Socioeconomic policies
- Revised worldview
- Individual actions

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## Population—individual actions

- Minimize reproductive output
- Support alternative lifestyles
- Find community




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## Population—two paths

Stabilizing population

- Decrease fertility
- Increase mortality




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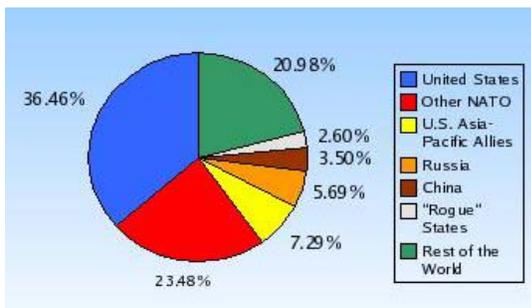
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## Military expenditures\*



\*Worldwatch Institute (2003, *Vital Signs*; 2001 data)

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## U.S. expenditures, world needs\*

Military: >\$450 billion/yr

International aid: \$10 billion/yr

Needed to reach basic social goals:  
\$62 billion/yr

- Education
- Nutrition
- Health care
- Reproductive services

\*Lester Brown (2003, *Plan B*)

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## Envisioning the future

- Environmental protection
- Social justice
- Human economy
- Building design, livable space

Conservation biologists  
Political scientists  
Sociologists  
Anthropologists  
Economists  
Environmental scientists

Engineers  
Architects  
Urban planners

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## Envisioning the future

Suppose you had had the revolution ..., and you had the kind of society you wanted. How would you live, you personally, in that society? Start living that way now! Whatever you would do then, do it now. When you run up against obstacles, people, or things that won't let you live that way, then begin to think about how to get over or around or under that obstacle, or how to push it out of the way, and your politics will be concrete and practical.\*



\*Paul Goodman (1970, quoted by John Holt, *What Do I Do Monday?*)

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