Systems thinking, social marketing and sustainability

Prof. John Sterman
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Policy Resistance

- Forest fire suppression
- Road building
- Process improvement & organizational change programs
- Health care
- Antibiotic/pesticide resistance
- Economic Growth and Happiness
Income and Wellbeing

United States

Real GDP/Capita (thousand $/year)

GDP: BEA
Can’t buy me love

United States

Real GDP/Capita (thousand $/year)

% "Very Happy"

GDP: BEA; Wellbeing: GSS
Life Satisfaction in China

1-10 scale

% Very Happy*

* Very Happy = 7-10 (on 1-10 scale)

Human Ecological Footprint

Number of Earths used by humanity

One Earth

Wackernagel et al. (2002)
Updated at: http://www.footprintnetwork.org
How much is enough?

How much would you need to spend each year to be happy? That is, how much consumption would be enough to satisfy you? Consumption spending here means expenditure to provide for the lifestyle you wish to have, including food, clothing, shelter, travel, entertainment, and all other expenditures on goods and services. Consumption does not include charitable giving, but only what you spend on yourself and your immediate family. Consumption does not include saving or investment (for example to build future income for retirement). Consumption does not include payment of income taxes, but only the cost of the goods and services you purchase.

Choose one of the following options:

A. $__________ per year is enough.

B. At least $__________ per year, but more is always better.
How Much is Enough?

Desired Consumption:
Mean: $300,000/year
Max: $4 million/year

“At least this much, but more is always better:”

64%

N = 112
Imagine the following two worlds:

1. Last year you earned $150,000. This year you earned $200,000.

2. Last year you earned $200,000. This year you earned $150,000.

The prices of all goods and services are the same in both worlds.

The environmental impact of both worlds is equal and negligible.

“increase in salary represents the increase of my value and contributions to the world.” — MBA Student
Imagine the following two worlds:

1. You earn $150,000 per year. Everyone else earns $75,000 per year.

2. You earn $250,000 per year. Everyone else earns $500,000 per year.

The prices of all goods and services are the same in both worlds.
The environmental impact of both worlds is equal and negligible.

“It is better to be better off than the rest” —MBA Student

“I want to have more wealth compared to my peers” —MBA Student
My kids call the nanny Mom.

FILL THE VOID

The Pick-Me-Up Shoe
Isabel Marant suede pumps, $990

CHANGE THE WAY YOU SHOP THIS FALL
LUCKYMAG.COM/MYLUCKY
Climate Change: Confusion, Delay and Denial

Atmospheric CO₂ at Mauna Loa Observatory

Scripps Institution of Oceanography
NOAA Earth System Research Laboratory

Carbon Cycle

Global Mean Estimates based on Land and Ocean Data

NASA GISS
Result: **Fear, Anger, Denial, Helplessness, Despair**

Not another lecture on climate change!
Lecture is boring
World Climate
Negotiating a Global Climate Agreement
World Climate Role-play simulation

MIT

Hyderabad

Kuala Lumpur

Netherlands

Kenya

Vanuatu

Morocco

Paris

Germany
World Climate engages

Cambridge Rindge and Latin High School
World Climate uses the C-ROADS Climate Policy Model.
Typical First Round Results

Fossil Fuel Emissions – Stacked

Temperature Increase (°C)

<table>
<thead>
<tr>
<th></th>
<th>Emissions Peak Year</th>
<th>Reductions Begin Year</th>
<th>Annual Reduction Rate</th>
<th>Prevent Deforestation</th>
<th>Promote Afforestation</th>
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<td>25%</td>
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<tr>
<td>EU</td>
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<td>India</td>
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<td>1%</td>
<td>20%</td>
<td>30%</td>
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<tr>
<td>Other Developing</td>
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<td>2080</td>
<td>1%</td>
<td>33%</td>
<td>40%</td>
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</table>

+3.5°C
Temperature Increase by 2100
Shanghai +6 m
Developing Nations inundated by sea level rise

MIT Sloan, MBA students April 2015
Successful Policies after second round negotiation

Fossil Fuel Emissions – Stacked

Temperature Increase (°C)

<table>
<thead>
<tr>
<th>Country</th>
<th>Emissions Peak Year</th>
<th>Reductions Begin Year</th>
<th>Annual Reduction Rate</th>
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<tbody>
<tr>
<td>US</td>
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<tr>
<td>EU</td>
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+2.0°C
Temperature Increase by 2100
World Climate at COP21, Paris

Thango of South Africa (foreground right), representing developing nations in World Climate, negotiates for financial and technical aid from developed nations.

Chinese high school student Raymond Song represents the U.S. in the World Climate role-play, addressing delegates as President of the United States.

World Climate at COP21, Paris
World Climate Role-play simulation
660 events in 74 countries reaching
33,105 participants as of June 12, 2017

https://www.climateinteractive.org
C-ROADS and *World Climate* are freely available at:

climateinteractive.org

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