

Home for 9 Billion

- ecological versus socioeconomic perspectives on how we may live

Jane O'Sullivan

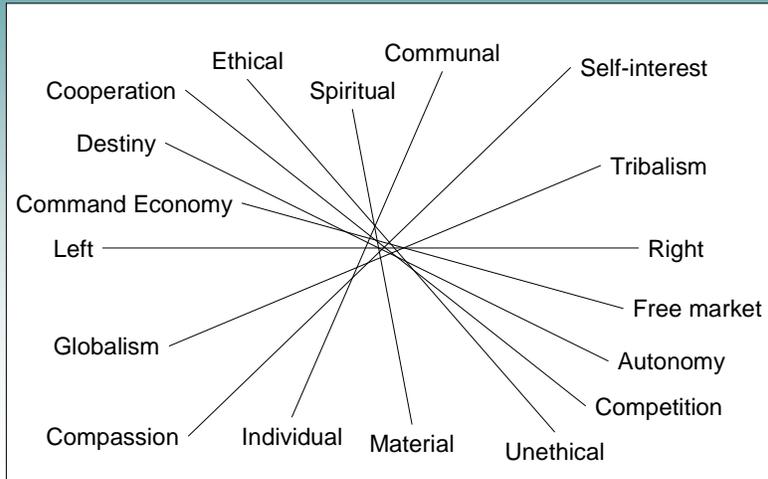
D3SJ – 3 August 2011

Some conceptual challenges

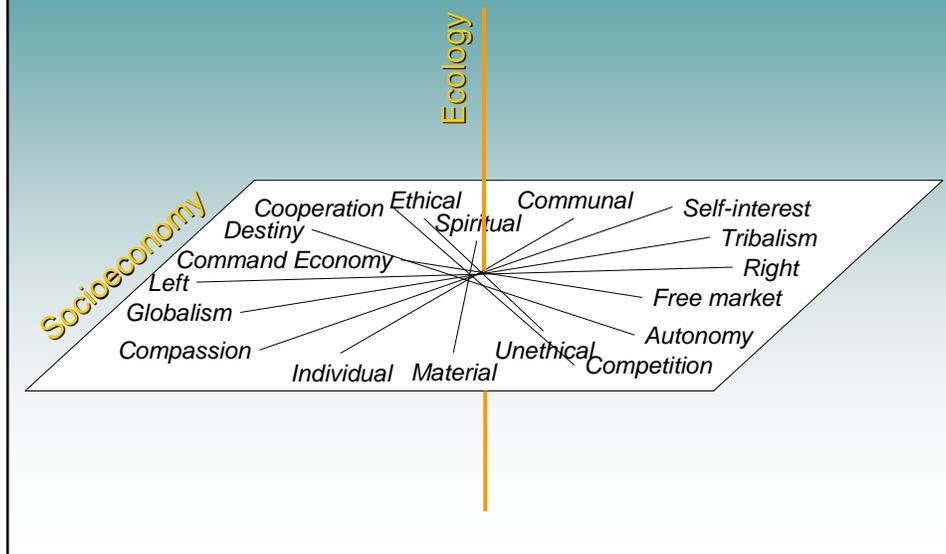
(or the things that most often exasperate me about 'environmentalists')

- The challenge of ecological thinking from a socioeconomic plane
- Extrapolating from niches
- Selective accounting
- Numeracy versus the appeal of silver bullets

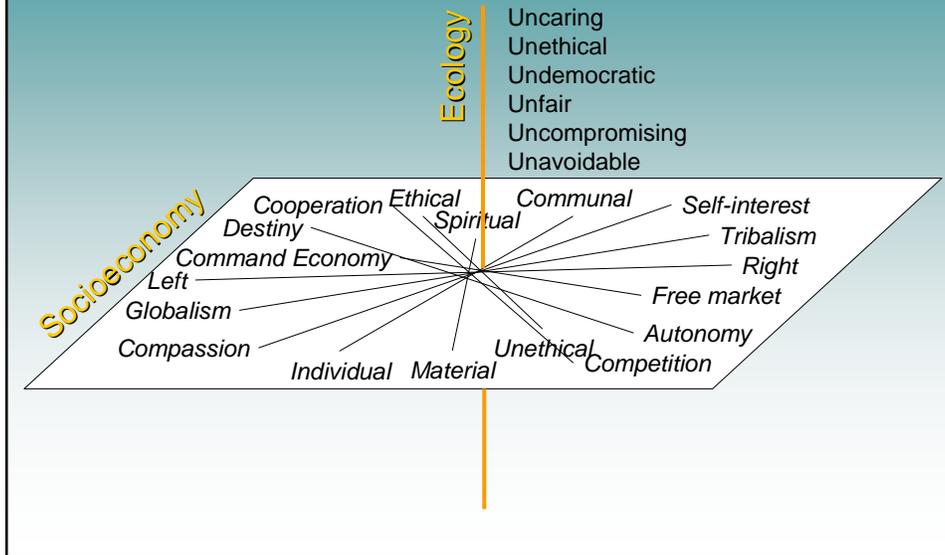
The Socioeconomic Plane



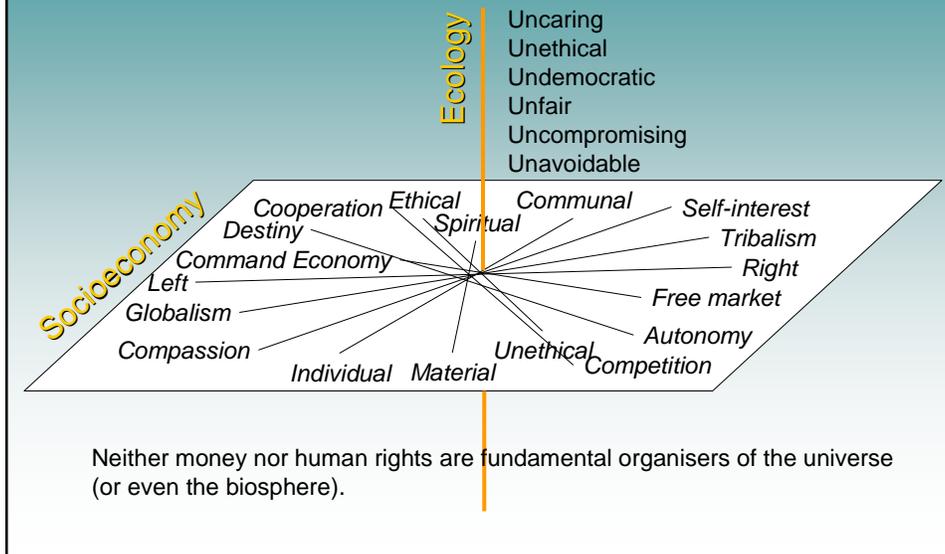
The Ecological Dimension



The Ecological Dimension



The Ecological Dimension



Extrapolating from Niches

- One degraded farm that increases production 200% under organic management doesn't mean all land will get a similar yield increase.
- One development project that increases livelihoods by irrigating crops means less water for others, not an example they can follow.
- One basket-weaving course that gives rural women alternative income won't also employ their neighbours, or even their daughters.
- One Green Revolution doesn't mean we have the ability to pull more out of the hat on demand.

The bigger picture

- Arable land is lost at around 1.5% per year while food demand is increasing at around 1.5% per year.
- Food demand has shifted production from more diverse and nutritious plants to more calorie-dense plants.
- At least a third of human nitrogen comes from the Haber-Bosch process. Biological nitrogen fixation can't substitute without taking a lot of land from cereals.
- The cost of food reflects the proportion of people employed in providing it. If energy scarcity increases labour-intensity, prices will rise.
- Trade can increase total food productivity and diet range by specialising where conditions best suit crops.
- BUT trade *dependence* is a measure of overpopulation.

Partial Accounting

- Yield from an organic field should count the land from which inputs are sourced.
- ‘Green’ buildings should count the impact of materials and construction process.
- Public transport doesn’t always run full.

Champions of Numeracy

- **Stephen Budiansky** - *Math Lessons for Locavores*
“Eating locally grown produce is a fine thing in many ways. But it is not an end in itself, nor is it a virtue in itself. The relative pittance of our energy budget that we spend on modern farming is one of the wisest energy investments we can make, when we honestly look at what it returns to our land, our economy, our environment and our well-being.”
- **David Pimental**
“I personally rank soil erosion, after population growth, as the most serious environmental problem worldwide.”
- **Norman Borlaug**
“Organic farming, however, can play only a minor role in producing the food for the world’s huge population that continues to grow at a frightening rate.”
- **David McKay** – *Renewable energy without the hot air*
“Every BIG helps.”

Silver bullets lacking numeracy

- Crops on/in buildings
- Ecocities
- Urban agriculture
- Biochar
- Biofuels
- Organics, Permaculture
- Global food distribution according to need
- Eliminating food waste

What have I got against organics or permaculture?

- The *practice* is not necessarily better or worse (or different) than 'conventional' agriculture, but the *process* is perverting.
- Defined by what it ISN'T rather than what it IS.
- Science versus ideology – can we improve outcomes by testing all available options, rather than limiting our pallet?
- Right to question potential harm from synthetic chemicals and monoculture; wrong to write these off, wrong to assume no harm in 'natural' products or systems.

Food Security: The Challenge of Feeding 9 Billion People

- H. Charles J. Godfray,* John R. Beddington, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Jules Pretty, Sherman Robinson, Sandy M. Thomas, Camilla Toulmin
- ScienceExpress
www.sciencexpress.org / 28 January 2010 / Page 1 / 10.1126/science.1185383
 - Closing the yield gap
 - Increasing production limits
 - Reducing waste
 - Changing diets
 - Expanding aquaculture
 - *(no mention of minimizing population growth)*

“Food Security: The Challenge of Feeding 9 Billion People”

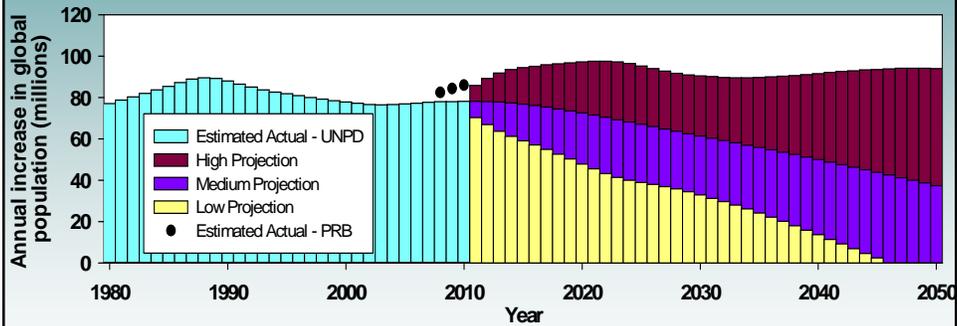
- H. Charles J. Godfray,* John R. Beddington, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Jules Pretty, Sherman Robinson, Sandy M. Thomas, Camilla Toulmin
- ScienceExpress
- www.sciencexpress.org / 28 January 2010 / Page 1 / 10.1126/science.1185383

“Any optimism must be tempered by the enormous challenges of making food production sustainable while controlling greenhouse gas emission and conserving dwindling water supplies, as well as meeting the Millennium Development Goal of ending hunger.”

Where is global population heading?

Annual Increment in Global Population

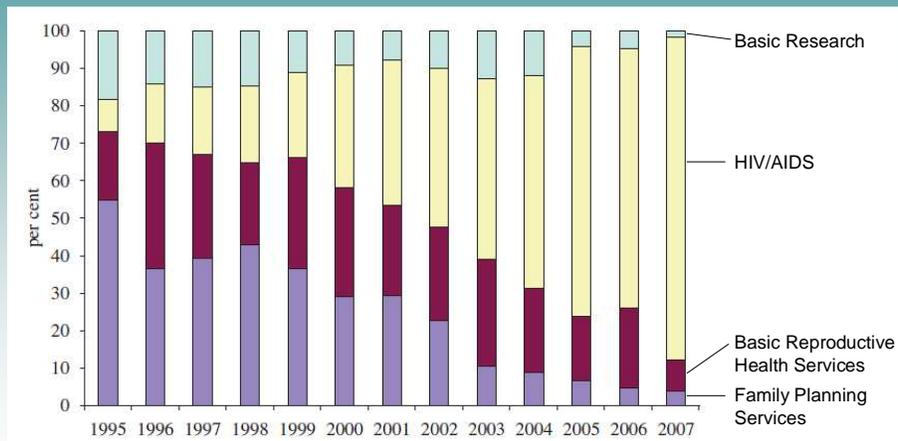
from UNPD 2010 Revision and Population Reference Bureau



For the past 7 years, growth has been rebounding.

If we keep neglecting the issue, the UN's high projection (10.6 billion by 2050) is more likely than the medium projection (9.3 billion by 2050).

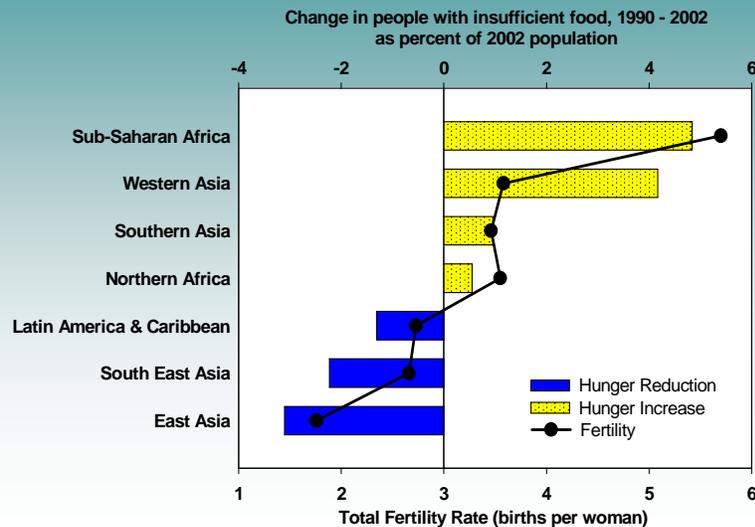
Why is population growth rebounding?



Allocation of international funding for "Population Assistance"

from S.W. Sinding 2009. *Population Poverty and Economic Development*.
Phil. Trans. R. Soc. B 2009 364, 3023-3030.

Why is family planning important?



Conclusions

- Does it matter how we arrange our settlements?
 - Only to the extent of land use change.
 - We can tread lightly at medium density as easily as at high density.
 - Our existing buildings are the greenest option we have, because they are already built – avoiding the need for a new structure is better than building it 'sustainably'.
- Is it a matter of distributing food to those who need it?
 - No: Lagos and Nairobi are miracles of food delivery already, but don't deliver quality of life. Only population stabilization can.
- Will more compassion be the key?
 - No: it is compassion that has circumvented nature's feedbacks, creating bigger problems than the ones we started with. What we need are social feedbacks to balance our compassion.
- We need to stabilize population by rapidly reducing birth rate in least developed countries.
 - Everything else we are doing will be enough, when it is not swimming against the tide.