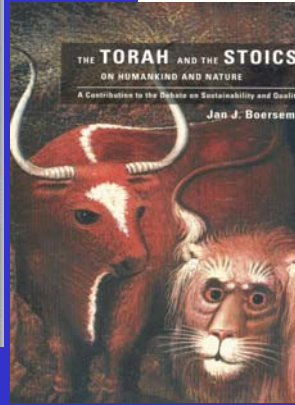
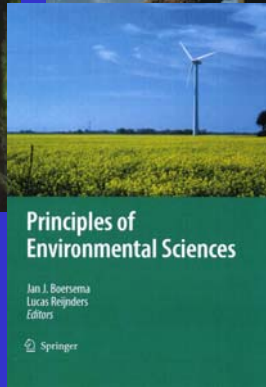


Sustainability, Worldviews and Behaviour

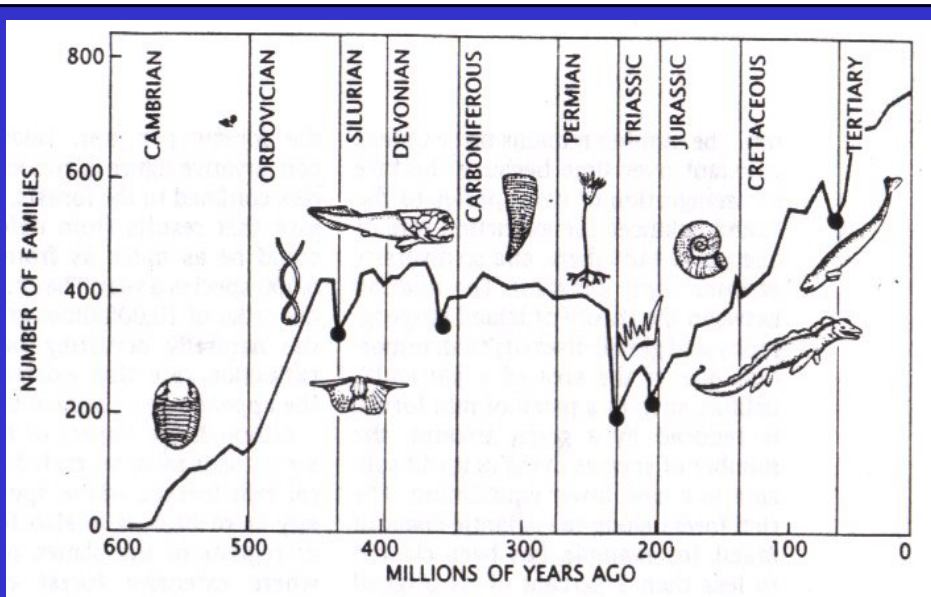


ECOLOGY, TECHNOLOGY AND CULTURE

edited by
Wim Zeevts
and
Jan J. Boersema



Prof. dr. Jan J. Boersema
IVM - VU



Evolution and Extinctions of Marine Families (Sepkoski, 1992) Vaporizing the problem?

Sustainability & Quality

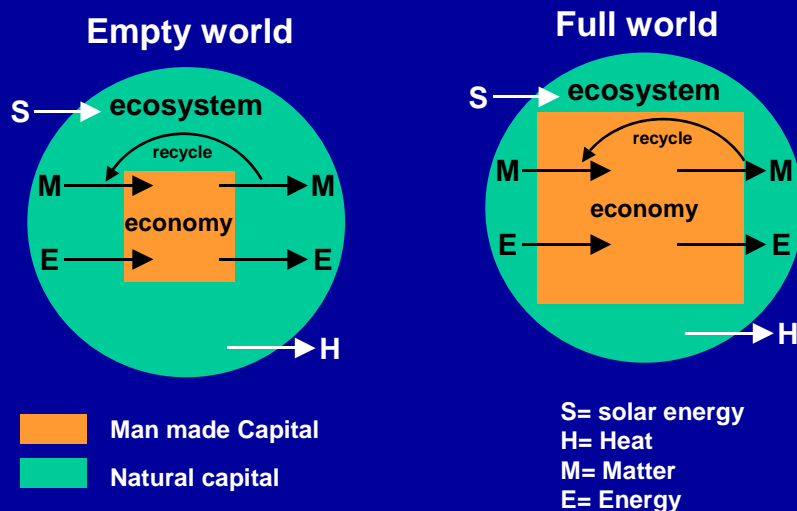
- Volume (thermodynamics / Carnot)
- Matter (abundant; less harmful)
- C2C

- Quality
 - Human life / Good life

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The economy as a subsystem of the ecosystem



After: Herman E. Daly (1996) Beyond Growth, p49

Environmental Behaviour?

- Human behaviour most often not motivated by environmental aims or concerns in the first place
- Nearly all human behaviour has an impact on the environment; the degree varies
- Is human behaviour conditioned by Worldview /Religion?

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$$I = P * A * T$$

Ehrlich & Holdren vs Commoner 1971

- Impact = Environmental Impact (pressure)
- Population
 - Number of people involved
- Affluence
 - Products/services per capita
- Technology
 - Impact per product/service

Energy-related environmental impact =

$$\text{population} \times \text{affluence} \times \text{impact} =$$

$$\text{population} \times \left[\frac{\text{stock}}{\text{person}} \times \frac{\text{throughput}}{\text{stock}} \right] \times \left[\frac{\text{energy}}{\text{throughput}} \times \frac{\text{impact}}{\text{energy}} \right]$$

Example

$$\text{population} \times \frac{\text{cups}}{\text{person}} \times \frac{\text{plastic/y, ceramics/y, ...}}{\text{cup maintained}} \times \frac{\text{GJ, kW-h, ...}}{\text{kg material/y}} \times \frac{\text{CO}_2, \text{NO}_x, \text{land-use, ...}}{\text{GJ, kW-h, ...}}$$

Applicable tools

family planning	values	product longevity	end-use efficiency	benign sources
female literacy	prices	materials choice	conversion efficiency	scale
social welfare	full costing	minimum-materials design	distribution efficiency	siting
role of women	what do we want?	near-net-shape mfg.	system integration	technical mitigat
land tenure	how much is enough?	recycle, reuse, remfg.	process redesign	offsets
		scrap recovery		

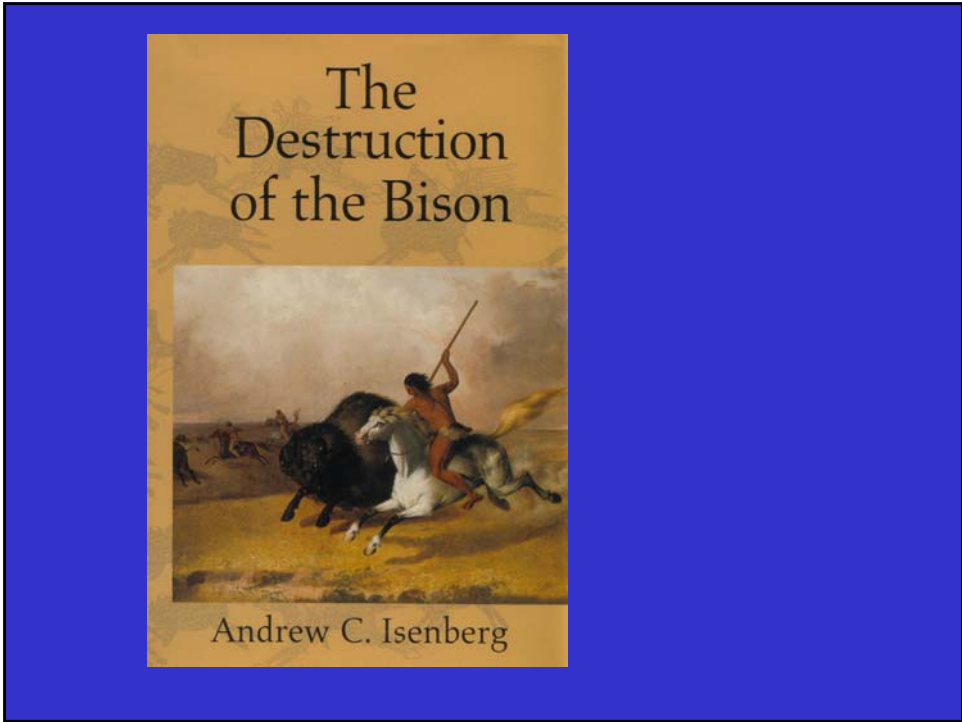
Approximate scope for long-term change

~ 2x	?	~ 3-10x	~ 5-10x	~ 10 ² -10 ³ x
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Timescale of major change

~ 50-100 y	~ 0-50 y	~ 0-20 y	~ 0-30 y	~ 0-50 y
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26.11.90/RM/ABL/APJ



North American Bison Ideology

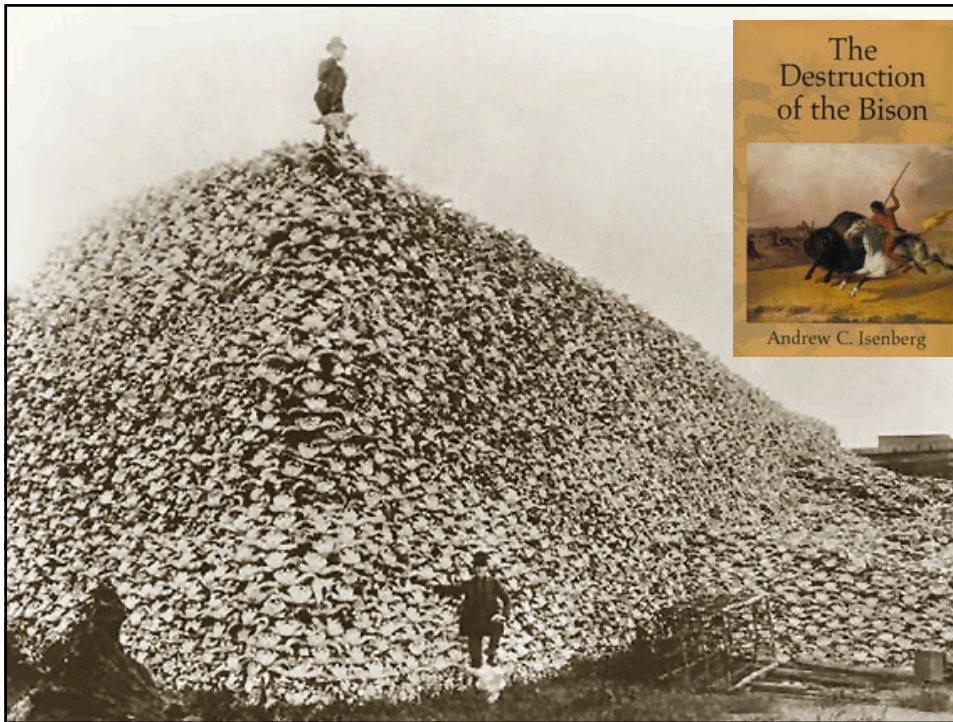
- 1701 Attempt to domesticate the Buffalo in James River, Virginia
- Early settlers came to see Buffalo's as obstacles to the establishment of the European way of life (=civilization)
- The Savage life (men/animals) does not belong to the orderly, civilized world (hunting/replacing/alteration of habitat)
- Killing the Buffalo part of the fight against the Indian

Every Buffalo dead is an Indian gone
(colonel R.I. Dodge 1867)

Destruction of the Bison over time

- 1775 Extinct in South Carolina
- 1780 Extinct in Georgia
- ~1800 Extinct East of Mississippi
- Expedition of Lewis and Clarke 1804/5
- 1800 30-40 million on the plains
- 1850 – 70: Destruction peaks: millions killed
- 1884 buffalo was gone on the plains
- 1900: ca 1000 left





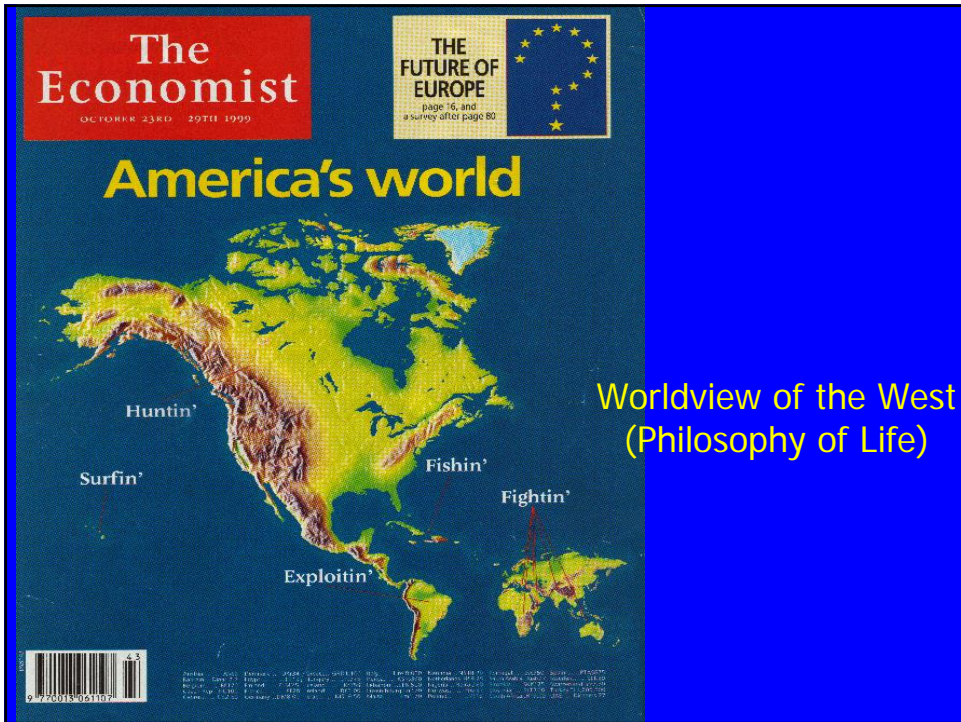
Aftermath

What we must do..is gather them all into a small district which we can really police and protect, and there we can teach them the arts of civilized life

NYTimes, editorial 22may 1870

Indian Reservations in remote areas

Yellowstone founded in 1872, herd of bisons



Central Ideas to Western (Modern?) Culture

1. Progress and the Linear concept of History (Arrow of Time)
2. Progress and (Economic) Growth
3. Anthropocentric
4. Materialistic / Matter based

Linear Concept of Time & Progress

" If I have been able to see further, it was only because I stood on the shoulders of giants."



Isaac Newton

Letter to Robert Hooke, February 15, 1675

" The future can be better than the past, and each individual has a personal, moral obligation to make it so."

Bill Clinton

Citing Prof Carol Quigley
In *My Life* Alfred A. Knopf, New York, p78

Why Growth?

If it tend to be unsustainable



De Krimp 1925

Moeskersgang 1914

Poverty Abatement

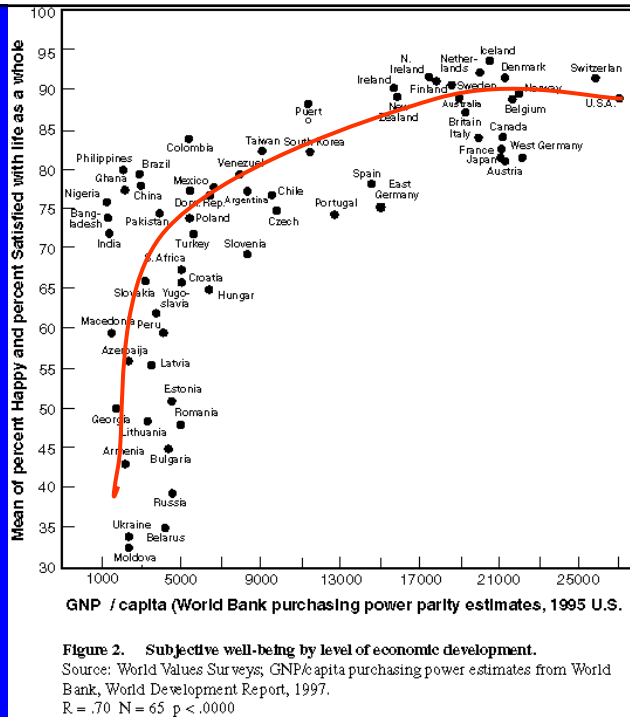
Pursuit of Happiness

(they are endowed by their Creator with unalienable Rights, that among these are Life, Liberty and the ...
Declaration of Independence)

or

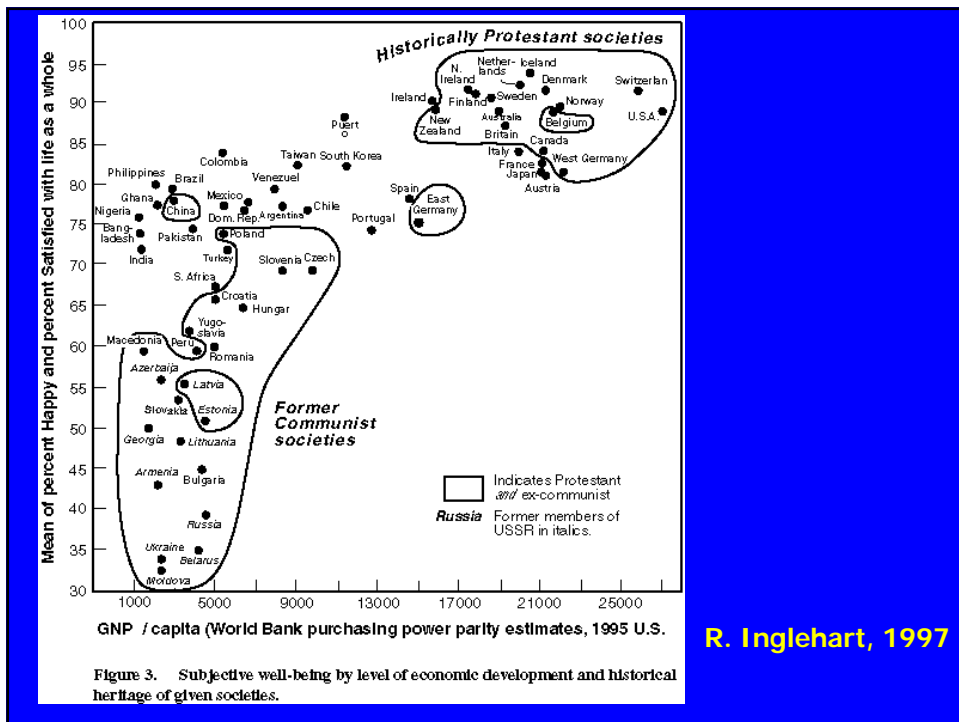
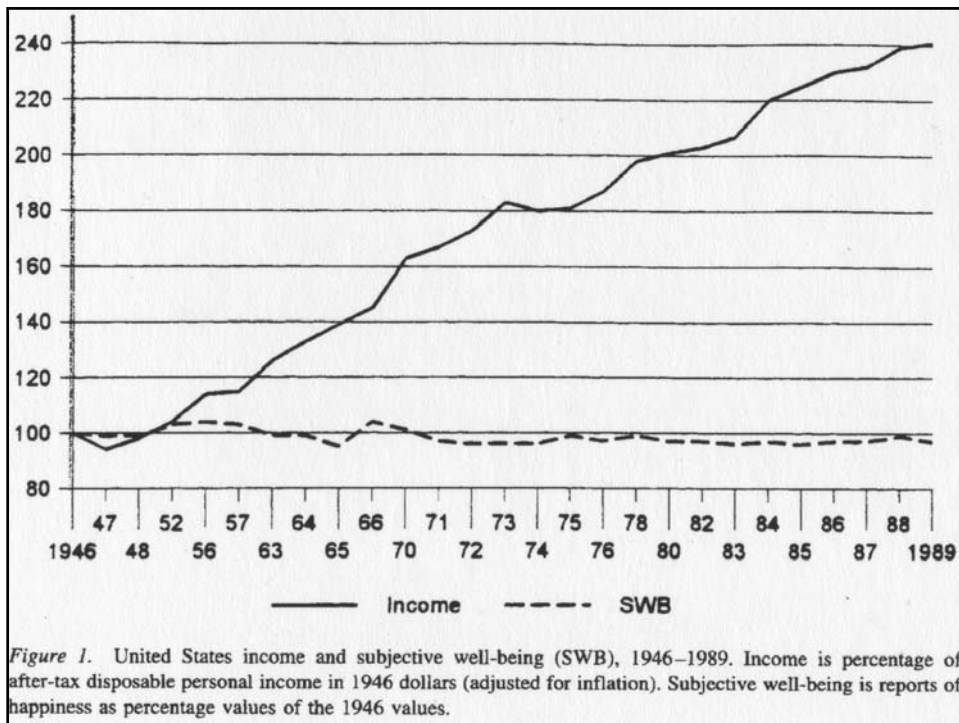
Pursuit of GDP?

(modern economic policy)



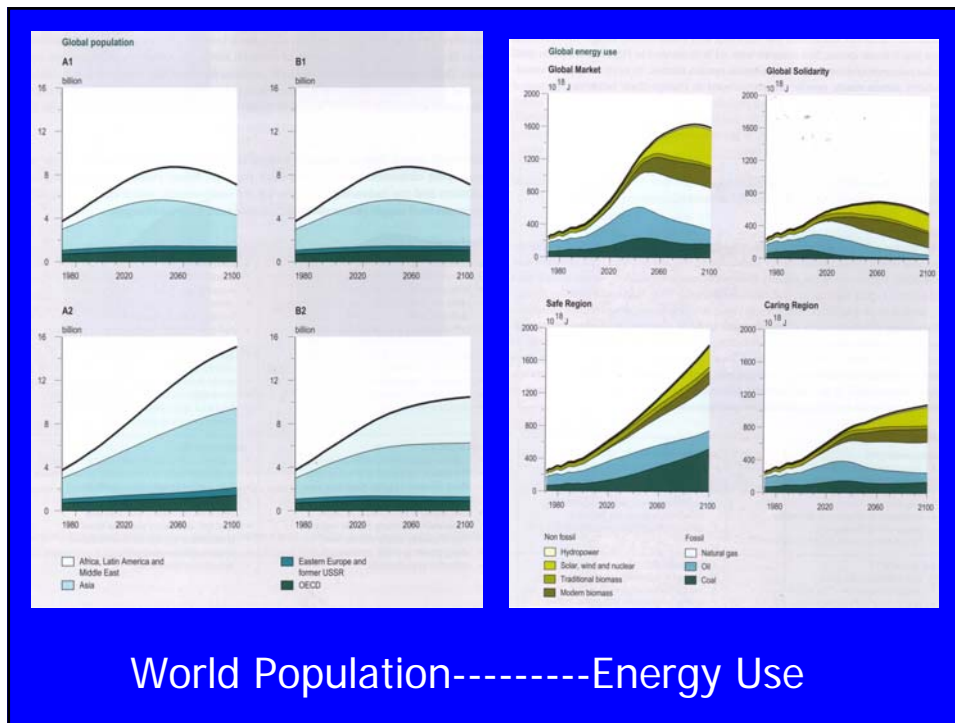
R. Inglehart, 1997

Richard Inglehart
Ruut Veenhoven





Energy	
<p>GLOBAL MARKET (A1)</p> <ul style="list-style-type: none"> • technology; cost saving • energy consumption + 100% in 2030 • use of fossil energy and CO₂ emissions remain high • substantial development of renewable energy only in the long term • EU self-sufficiency declines from 60% to 40% 	<p>GLOBAL SOLIDARITY (B1)</p> <ul style="list-style-type: none"> • climate policy, CO₂ emissions trading • energy consumption + 50% in 2030 • renewable energy and energy-saving technology: use of fossil energy and CO₂ emissions decline in the long term • EU self-sufficiency declines from 60% to 45%
<p>SAFE REGION (A2)</p> <ul style="list-style-type: none"> • self-sufficiency; low costs • energy consumption + 75% in 2030 • energy price 100% higher in 2030 • energy consumption, use of fossil energy and CO₂ emissions continue to rise • limited development of renewable energy • EU self-sufficiency declines from 60% to 55% 	<p>CARING REGION (B2)</p> <ul style="list-style-type: none"> • change in behaviour; clean energy • energy consumption +50% in 2030 • energy price approx. 80% higher in 2030 • renewable energy and energy saving: use of fossil energy and CO₂ stabilise in the long term • EU self-sufficiency declines from 60% to 50%



World Population-----Energy Use

Worldviews and consumer behaviour

Global market (A1)

- luxury foods (sushi-bar)
- expensive, trendy, international food (high income group)
- high protein (large proportion of men in this group)
- eating out in expensive restaurants
- typical high range price (ready prepared meals)
- soc./ env. circumstances of production of low importance
- thinks organic food is produced inefficiently and overpriced
- industrial food production is good because it's highly efficient

Global solidarity (B1)

- typical Max Havelaar shopper (solidarity)
- likes international foods
- choose organic because of environmental and social merits (high income group, large proportion of women)
- inclined to change consumption patterns if they can exert positive influence
- are skeptical of industrial food production and pure market economy efficiency maximization
- conscious food consumer

Safe region (A2)

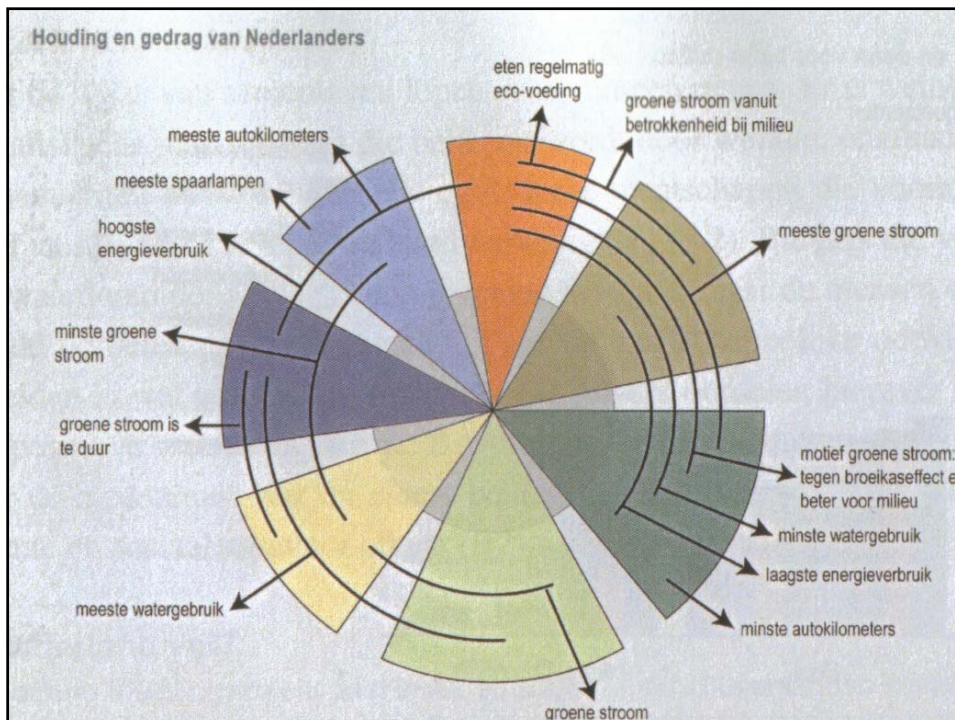
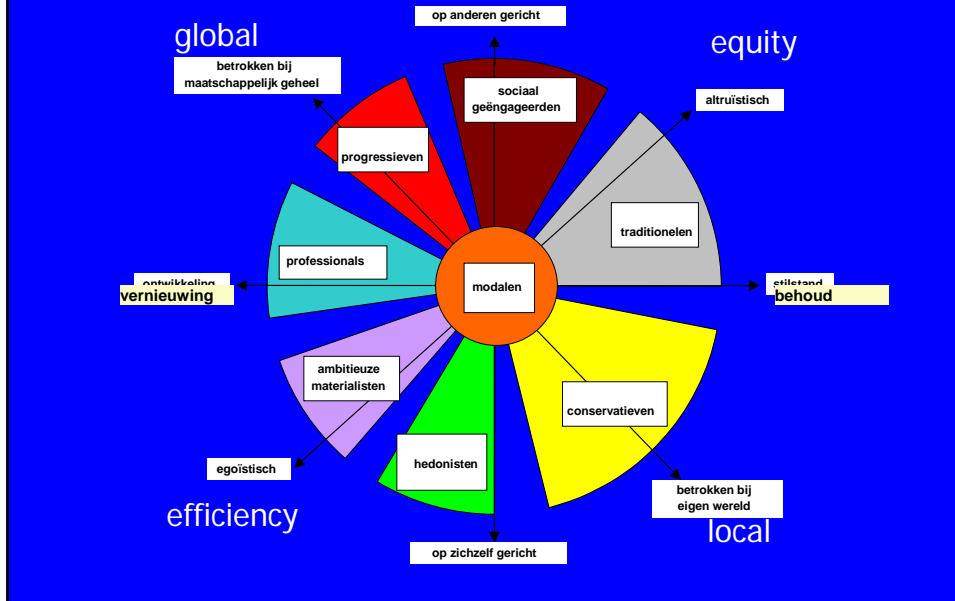
- eats traditional
- likes snack bars, stamppot and herring
- wants to spend little money on food
- international cuisine is not appreciated ('doe maar gewoon')
- little affinity with organic or fair trade (overpriced)
- little willingness to change food patterns
- shops at cheaper supermarkets (low income)

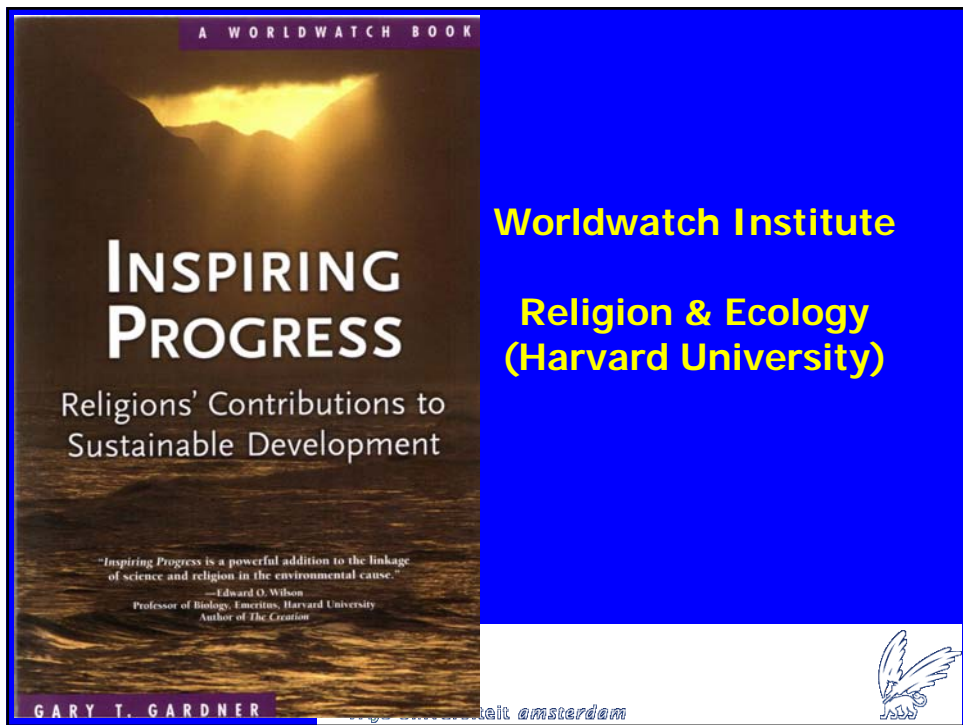
Caring region (B2)

- farmers market shoppers or farms near their house
- search for local produce and local producers
- appreciates seasonal foods from the Netherlands
- organic might be too expensive
- agriculture and food production in own country is very important
- quality of local green space and agriculture important

Values Rokeach 1973; Schwartz & Bilsky 1987

www.tns-nino.nl





Worldwatch Institute

Religion & Ecology
(Harvard University)

