Wirtschaftswachstum, Umwelt & Nachhaltigkeit:

Neoklassik, Ökologische Ökonomie und Degrowth

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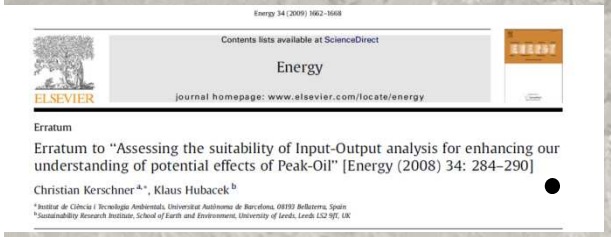
Ringvorlesung "Plurale Ökonomik
Universtität Hamburg 13. November 2014

Personal Motivation


Energy 34 (2009) 1662–1668

Contents lists available at ScienceDirect

Energy

journal homepage: www.elsevier.com/locate/energy

Erratum

Erratum to "Assessing the suitability of Input-Output analysis for enhancing our understanding of potential effects of Peak-Oil" [Energy (2008) 34: 284–290]

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Economic de-growth vs. steady-state economy

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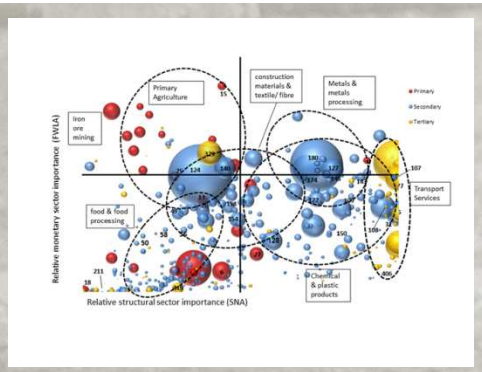


- Masters Thesis: Steady State Economy (SSE)
  - Energy Dogma – key issue
- PhD Studies
  - Phenomenon of Peak Oil
  - Impacts (Kerschner & Hubacek 2009)
  - Economic vulnerability (Kerschner et. al. 2013)
  - Attitudes towards technology (Ehlers & Kerschner 2010)
  - Degrowth vs. the SSE (Kerschner 2010)
- In progress: Degrowth & Technology
- Research & Degrowth active member

Structure

1: Ecological Economics (Eco-Eco) vs. Mainstream Eco.

2: Philosophy of Science in EE

3: Economic Growth

4: Degrowth

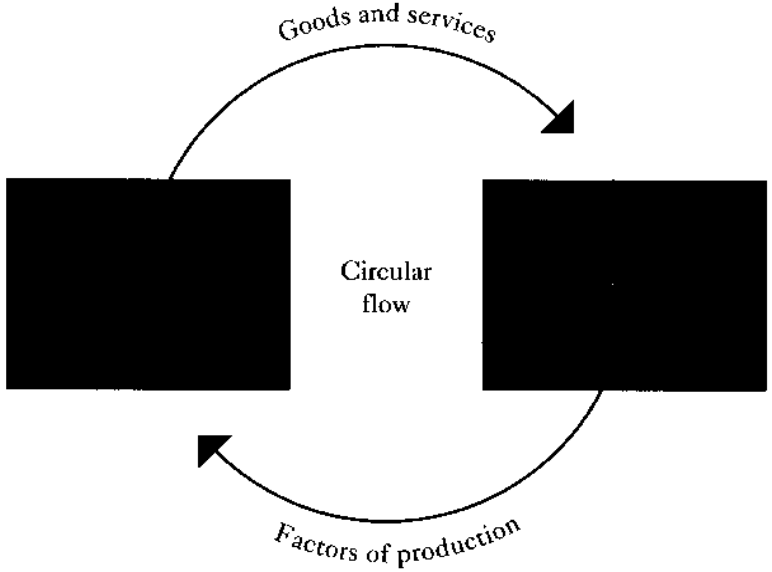
Environmental History

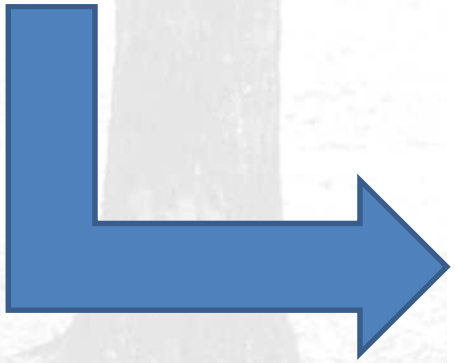
- 1962 – Silent Spring (Rachel Carson)
- 1966 – Spaceship Earth vs Cowboy Economy (K. Boulding)
- 1968 – Population Bomb (Paul R. Ehrlich)
- 1971 – Entropy law Economic Process (N. Goergescu-Roegen)
- 1972 – Limits to Growth (Meadows et al.)
- 1972 – Mass Balance Principle (Kneese, Ayres & d'Arges)
- 1972 – UN Environmental Programme
- 1973 – First Oil Crisis
- 1973 – Small is Beautiful (E.F. Schumacher)
- 1977 – Steady-State Economics (H. Daly)
- 1979 – Second Oil Crisis
- 1987 – Brundtland Commission Report
- 1992 – UN Earth Summit
- 1997 – Kyoto Protocol (into force in 2005)

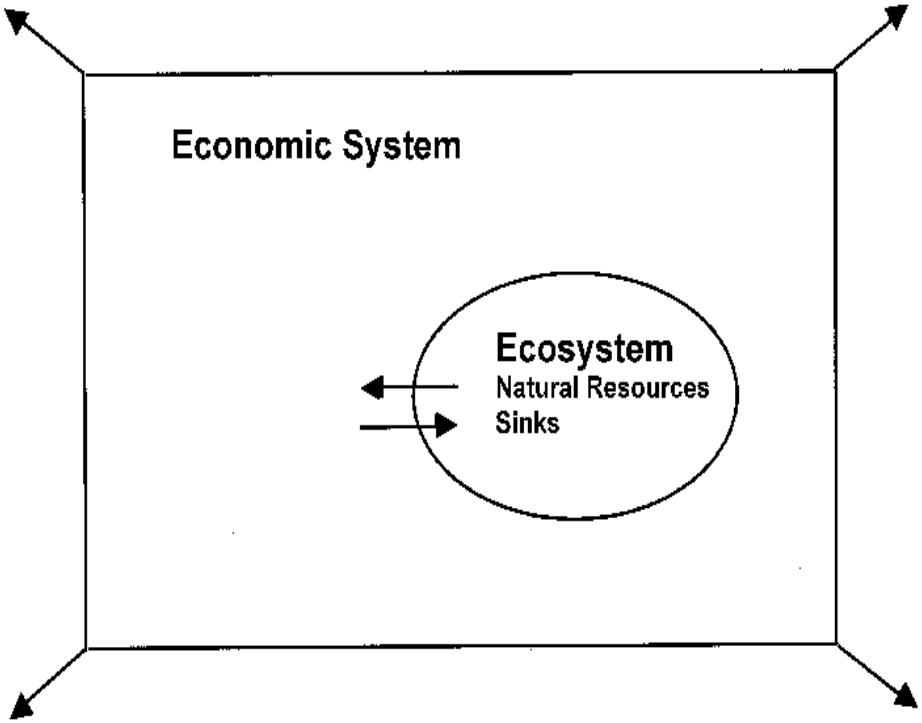
Environmental & Resource Eco

- 1974 Journal of Environmental Economics and Management
- 1978 Association of Environmental and Resource Economists (AERE)
- Some big names: J. Cumberland, R. Arge, A. Kneese, W. Baumol

Philosophy and Approaches I







Philosophy and Approaches II

- strictly mono-disciplinary inside of neoclassical welfare economics
- Amenity-Economics: nature useful if useful for people (utilitarianism)
- Functions of Environment: resources, waste absorption, enjoyment value
- individual preferences (homo-economicus),
- Long-term impacts of pollution & intergenerational equity = technical issue & matter of appropriate discount rate

Focus on

- (1) Externalities (Pigou) & internalization (from welfare economics), pollution control,
- (2) efficient and optimal resource (optimal control theory) use or depletion based on abstract mathematical models (linear optimization, etc) e.g. fisheries, forests, etc.

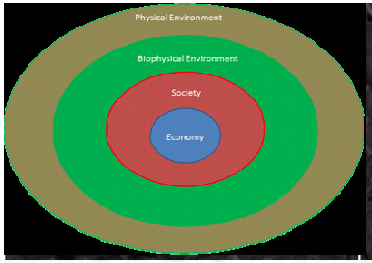
Philosophy and Approaches III

- single-measure theory of value and utility (money!)

- cost of pollution control vs. amenity value for decision making
- cost-benefit analysis e.g. Exxon Valdez resource damage legal case

- highly mathematically formalized in order to show that it was "scientific" enough (19th century locical positivism)
-
- pushing to one side problems failing to conform to the neoclassical economic theoretical expectations e.g. Entropy (NGR), Uncertainty (Ciriacy-Wantrup), critiques of valuation & behavioural model
- entropy, social metabolism and materials balance principle disappeared
- restricted to micro-economics (eg. Household consumption level)

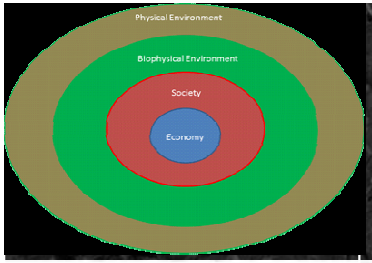
- **no limits to economic growth**



Why Ecological Economics?

Frustration with Env. & Resource Economics:

- Frustration with sub-disciplinary status of ENV-Eco e.g. articles excluded from mainstream economic journals
- Theories of mainstream econ. continued to produce models which assumed that the economy could be operated independently of either natural or resource constraints
- Economists' disregard for natural science info. on the environment
- intolerant of open debate (Spash 1999)
- Failure of ENV-Eco to impact legislation: legal restrictions instead of pollution taxes and pollution standards without cost-benefit analysis.
- Disregard of intragenerational equity (Pareto Efficiency) & intergenerational equity (discounting)

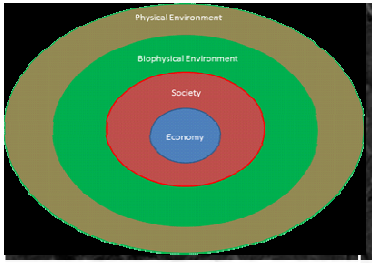


Early History of Eco-Eco

- Martinez Alier (1987): Lotka, Soddy,..
- Kapp (1950): Externalities (waste/pollution) are pervasive social costs – not correctable market failures
- Barcelona 1987: ISEE
- 1998: ESEE
- Some Names: M.Faber, B. Costanza, H. Daly, A-M. Jansson, JMA,

Overviews:

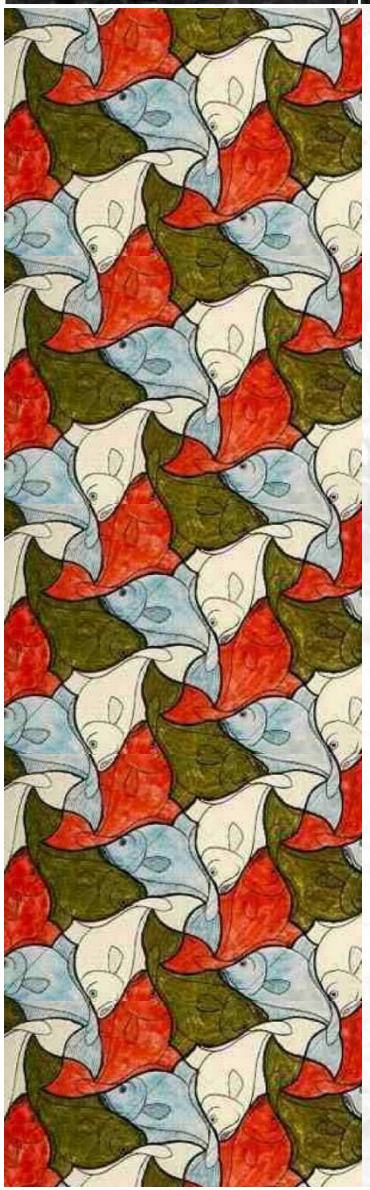
- Spash 1999
- Roepke 2004



What is Ecological Economics?

- „*The science and management of sustainability*“ (Costanza 1991)
- „*Movement for expressing concern over environment-economy interactions with the potential for common cause to be expressed through shared concepts.*“ (Spash 2013)

Across Disciplinary Boundaries I

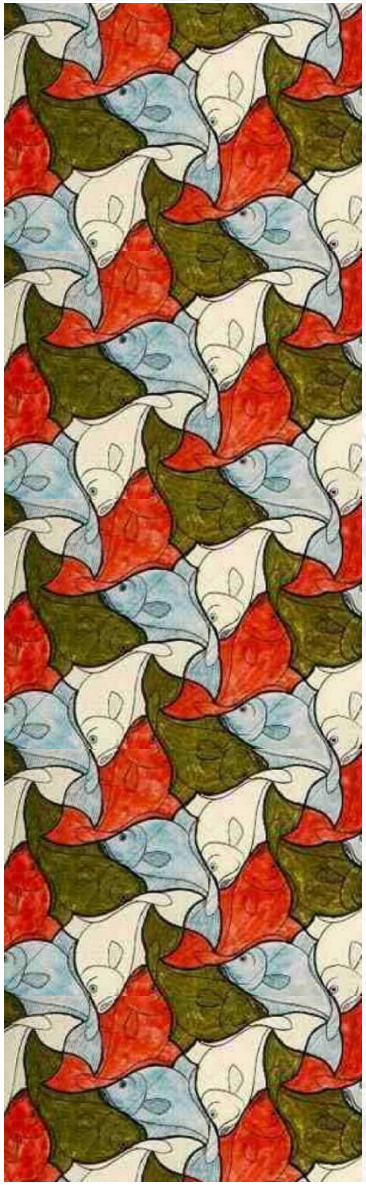


Uniting two groups with a narrow methodological background:

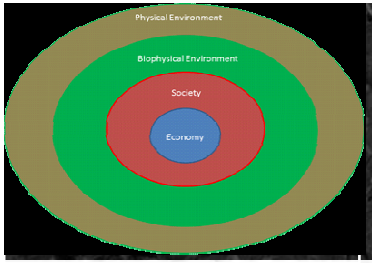
Natural scientists: falsificationist

Neoclassical economists: logical positivism

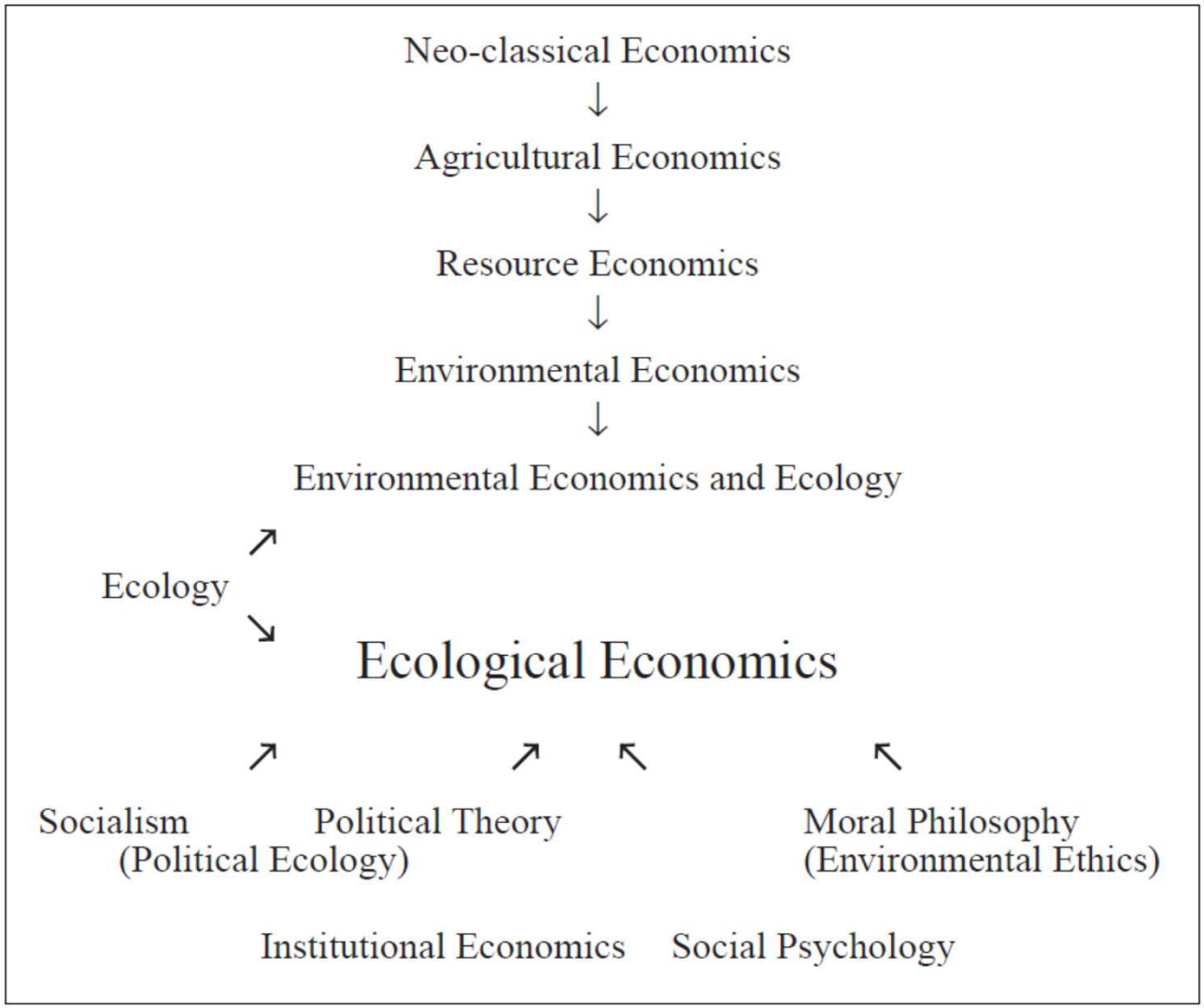
Across Disciplinary Boundaries II



- Physics (thermodynamics)
  - Flow-fund model (Georgescu-Roegen)
  - Mass-Balance Principle (Ayres & Kneese)
  - Industrial/social metabolism (B. Ayres)
- Energy Studies (crises of the 70s & 80s!)
  - Jevons paradox, Rebound, (Jevons 1865)
  - EROI, Max. Power Principle, (Cleveland, C. Hall)
  - Peak-Oil
- Ecology & systems theory
  - H.T. Odum (1971)
  - Resilience (Holling 1973)
- Co-evolutionary development (Norgaard 1984)



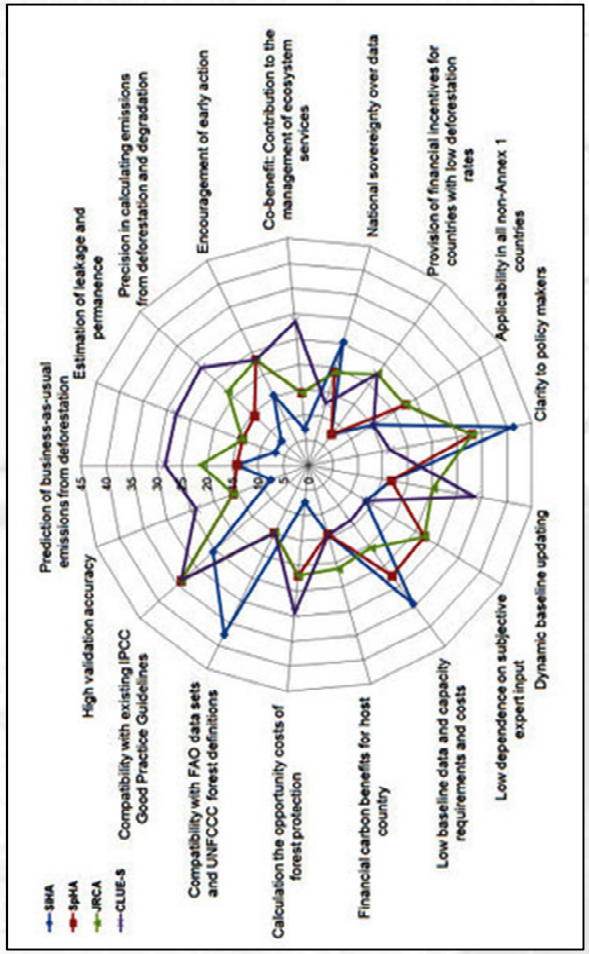
What is Ecological Economics?



Spash (1999)

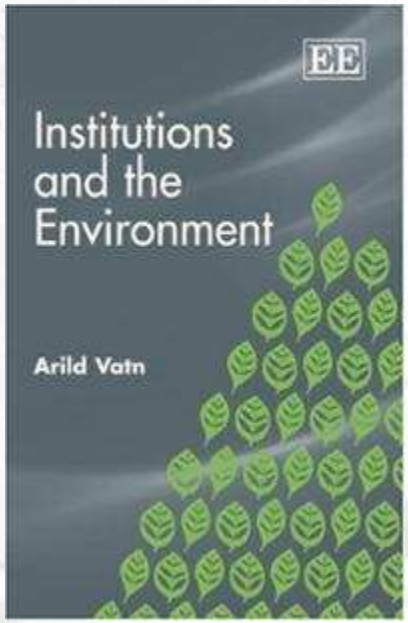
FIGURE 1. Economic perspectives on the environment

Indicators and Multiple Criteria



- Indicators: MFA, EFA, HANPP, Eco-footprint
- Input-Output
- GDP critique
- ISEW, GPI, (problematic)
- Multi-criteria assessment/mapping
- MC analysis (Munda 2008),
- MuSIASEM (Giampietro et.al 2009)

Environmental Values and Value Articulating Institutions



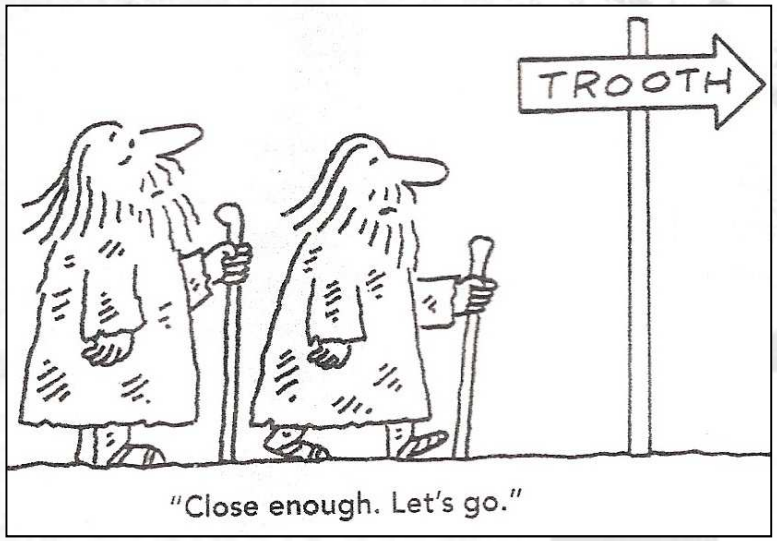
- Ecosystem services (Costanza et al. 1997)
- Commodification of Nature (O'Neil 1993)
- Lexicographic prefernces (Spash 1998)
- Value articluating institutions
- Environmentalism of the poor

Strong Uncertainty and the Science-Policy Interface

- Post-Normal Science Funtowicz & Ravetz 1994)
- Extended peer community
- Partial ignorance (Stirling 1997)

- Strong uncertainty (Spash 2002)
- Strong transdiciplinary approach (van der Sluijs et. al. 2005)

Philosophy of Science



- Preanalytic Vision – unifying approach
- EE - Insufficient progress
  - Methodological pluralism - critique
- Ideology

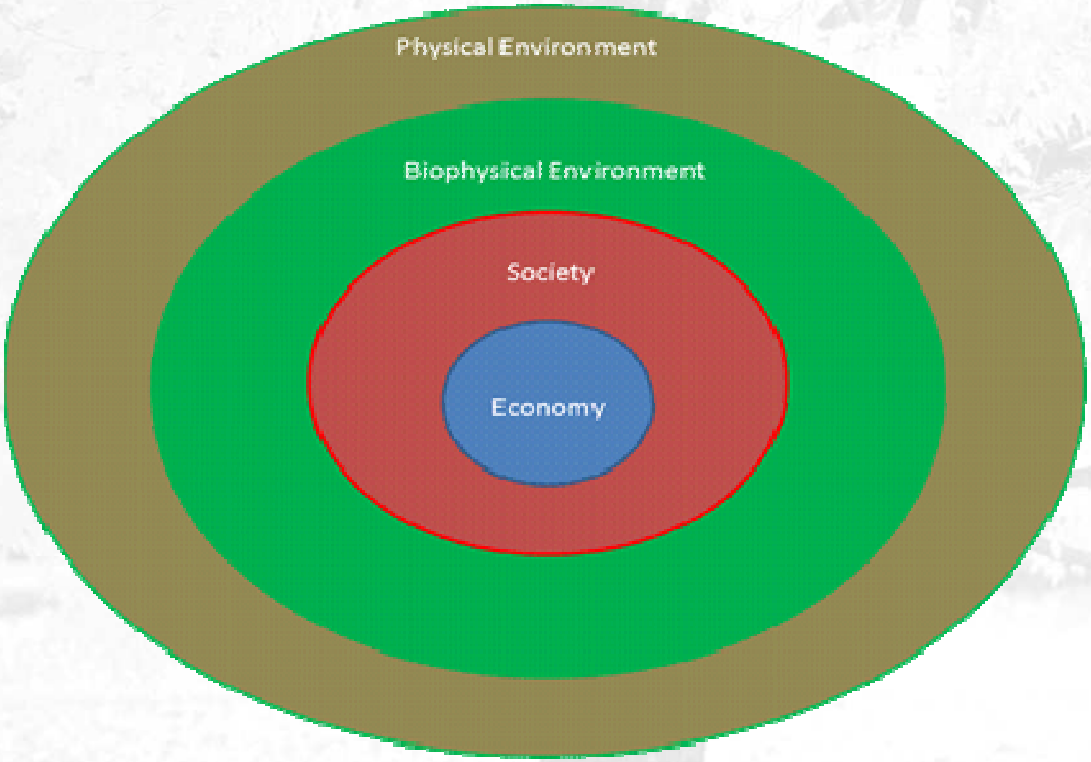
Philosophy of Science

Ideological Beliefs in Ecological Economics

- Ethical neutrality should be rejected and ethical positions made explicit;
- Both human and non-human inhabitants of Earth are morally considerable;
- Action is required to address gender inequity and inequity between, within and across social groups, time periods and spatial dimensions;
- There are more meaningful aspirations for human existence than hedonism (e.g. invoking philosophical concepts such as flourishing, a 'worthwhile life', the 'good-life');
- Restrictions are necessary on population growth and the scale of human activity;
- Levels of material and energy consumption per capita prevalent in the industrialised world are excessive and its social and environmental consequences unacceptable;
- Opposition is required to the wanton destruction of war and the military-industrial complex;
- We should uphold democratic principles of fairness and justice, including international human rights and protection of the innocent from harm;
- Ecological economics can change the world by creating better understanding of the structure of the social and environmental reality in which we live and communicating its findings to help achieve that change.
- Ecological economists should act personally in ways consistent with their environmental and social values.

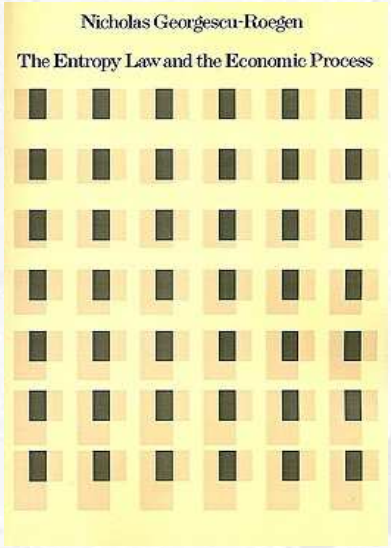
Source: Spash (2012b) p. 45

Ontological assumptions



- Hierarchical systems level
- Economy open subsystem
- Strong Biophysical Ontology
- (still weak social Ontology)

Ontological assumptions



- Thermodynamics – core element
- i.e. objective external reality

--> Realism + weak social constructivism, acceptance of fallibalism

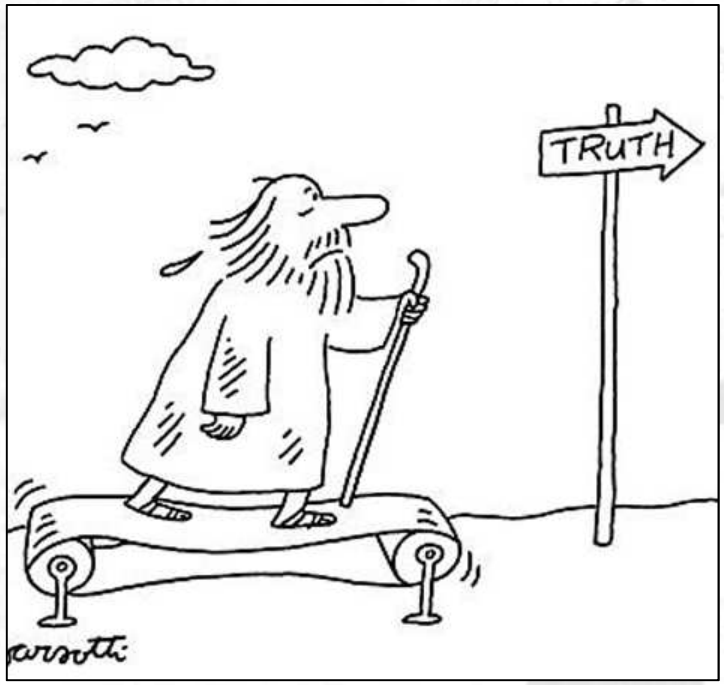
Ontological assumptions

Ontological Presuppositions in Ecological Economics

- An objective reality exists independent of humans;
- Humans create social reality;
- Facts about social reality are inseparable from values;
- Biophysical and social reality are distinct but are interconnected;
- A hierarchical ontology is accepted in which there is an ordered structure (e.g. biophysical, social, economic);
- Society and the individual are distinct in that the former cannot be reduced to the latter nor the latter merely aggregate to create the former;
- Complex systems and their interactions create emergent properties and are inherently unpredictable;
- Systems are continually subject to change and interaction.

Source: Spash (2012b) p. 45

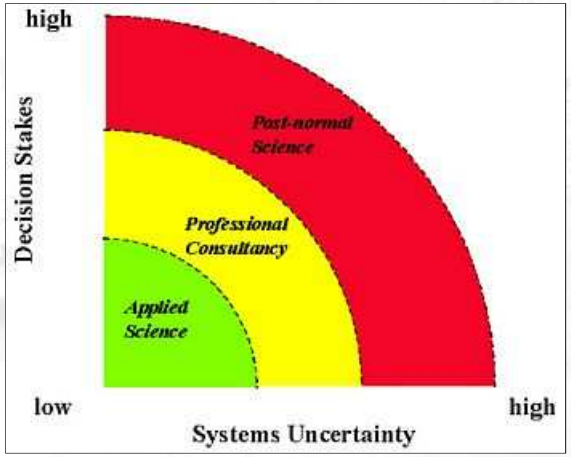
Epistemic Framework



- weak, ill-defined, precariously confused
- Reject 19th ctr. Scientific positivism
- Logical positivism
- Logical empiricism – some aspects valid for EE
- Methodological Pluralism (Norgaard 1987)

Epistemic Framework

- Methodological Pluralism – strong criticism (e.g Anderson & M'Gonigle 2012)
- Post-Normal Science
  - Physical reality – laboratory
  - Complex interactive global systems
  - High uncertainty & high risks → parcipation of extended peer comunity



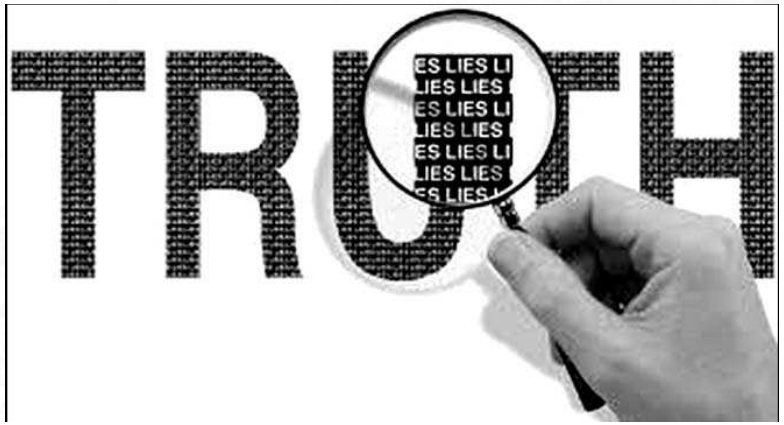
But→No clear epistemology /ontology

Epistemic Framework

PNS in a similar struggle than EE:

"*…trying to steer a course between the postmodern temptation to be nihilistic, while avoiding the modernist temptation to claim a single optimal answer or truth*" (Spash, 2012)

- strong constructivist: biophysical limts depending on personal perspective & group choice
- Critical realism (Spash 2012)



Epistemic Framework

Box 4: Methodology for Ecological Economics

- EE is an interdisciplinary approach to understanding;
- Successful interdisciplinarity requires integration having understood the ontological and epistemological basis for cooperation between different bodies of knowledge;
- Unstructured methodological pluralism is the antithesis of creating knowledge and understanding;
- Structured methodological pluralism requires working across fields of knowledge with those who share a common ontology and epistemology;
- Creation of mutually understood concepts is necessary for interdisciplinary understanding;
- Methods of evaluation must match the requirements of value pluralism.

Source: Spash (2012b) p. 45

Economic Growth

'STEADY AS SHE GOES'

The Orthodox view:

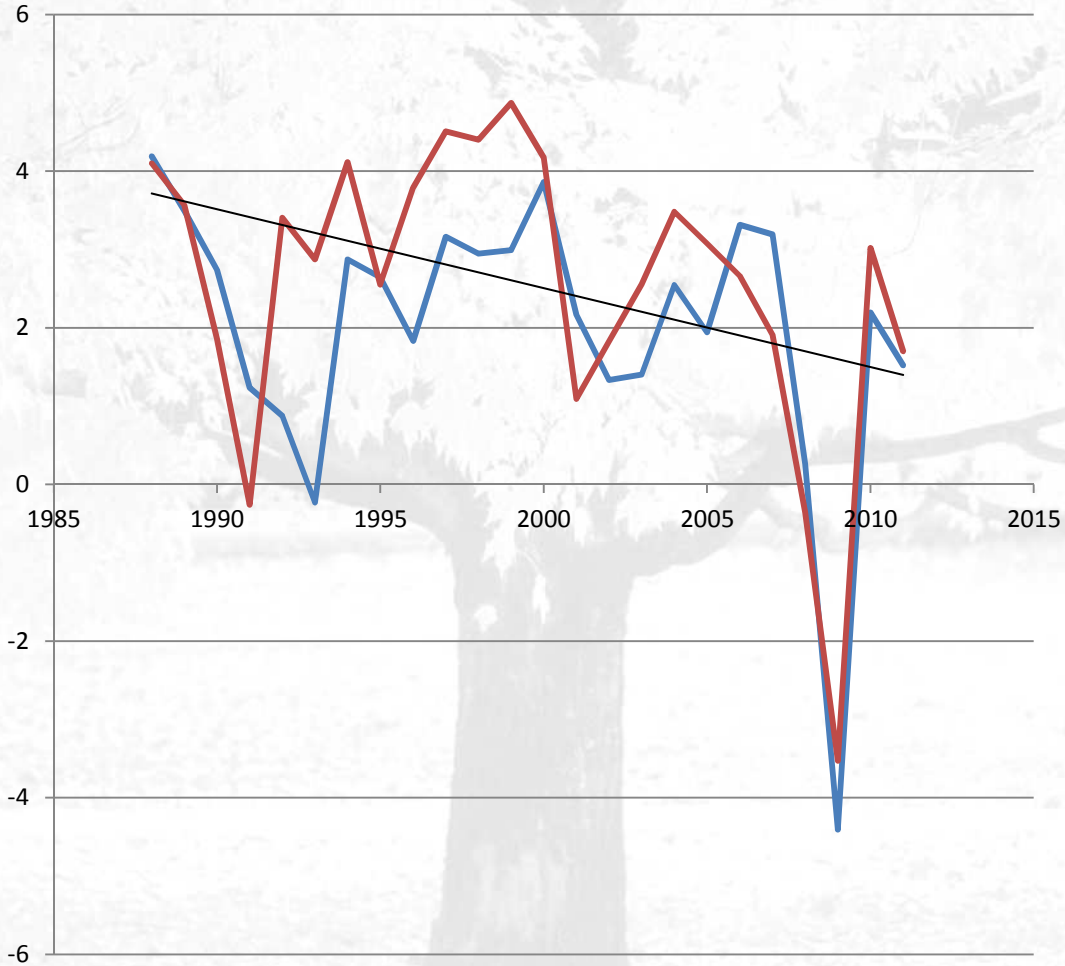
- **Desirable:** axiomatic necessity (NGR) to solve (classical) economic problems of society:
- poverty (Smith),
- overpopulation (Malthus),
- distribution (Marx),
- unemployment (Keynes) and
- environmental degradation

Economic Growth

Possible: NO ‚Limits to Growth‘:

- Relative Scarcity,
- Substitution (Barnet and Morse 1963, Solow, Stiglitz,)
- Technology the ultimate resource (e.g. Simon 1983)
- Energy Dogma

Reality Check

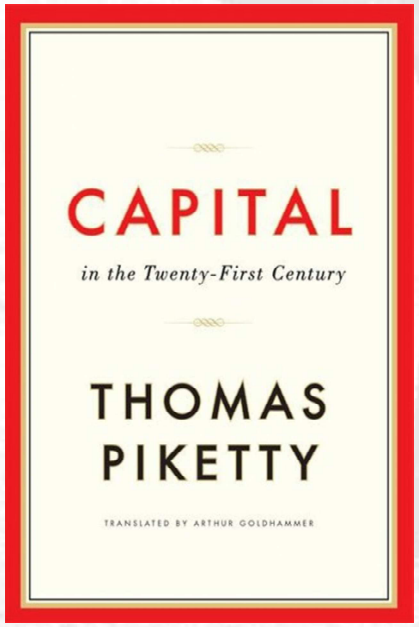


Source: World Bank

GDP-Growth in the West has slowed down

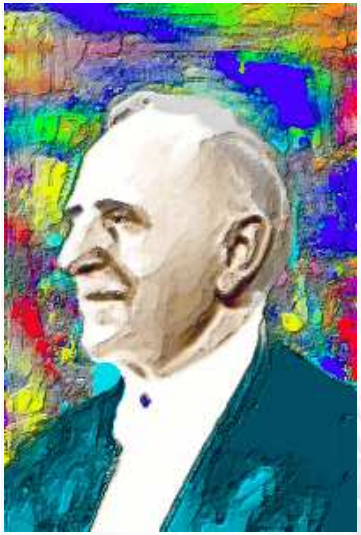
Poverty

"Poverty reduction is best achieved through making the cake bigger, not by trying to cut it up in a different way"
(Anne Krueger, IMF 2004)

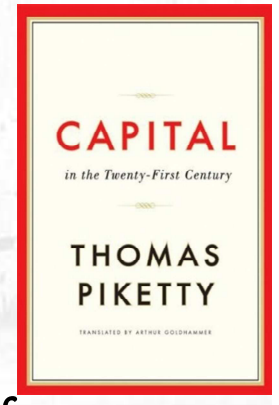


25-fold increase of global economy over the past century, more than one billion people in the world still live on less than $1 per day, and a total of 2.7 billion live on less than $2 per day .

Inequality



Nobel laureate Simon Kuznets: that as economies develop (i.e. grow), more people can take advantage of the arising opportunities. Eventually this was assumed to culminate the "triumph of human capital over financial capital".



Reality Check:

- In the US: richest 0.1% of the population (of which yet again 70% are corporate executives), own 15% of all accumulated wealth
- U.S. wage inequality is higher than in any other society in the world at any time in history (Piketty)

Inequality

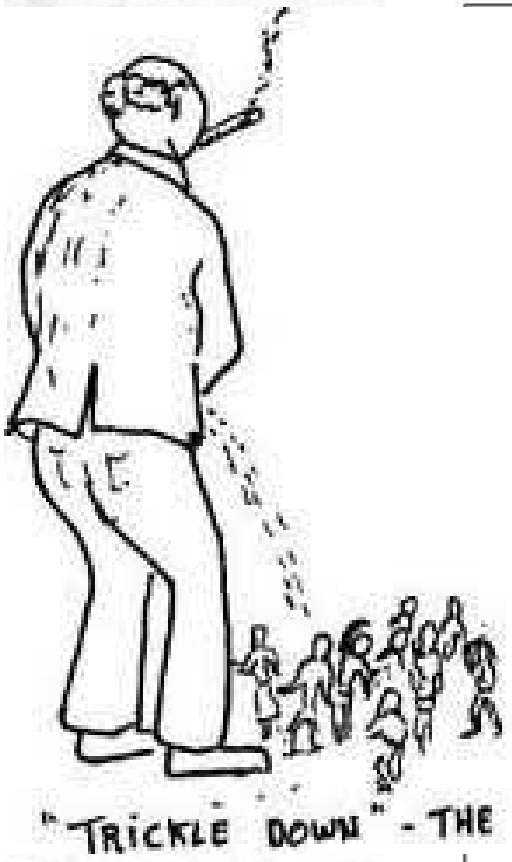
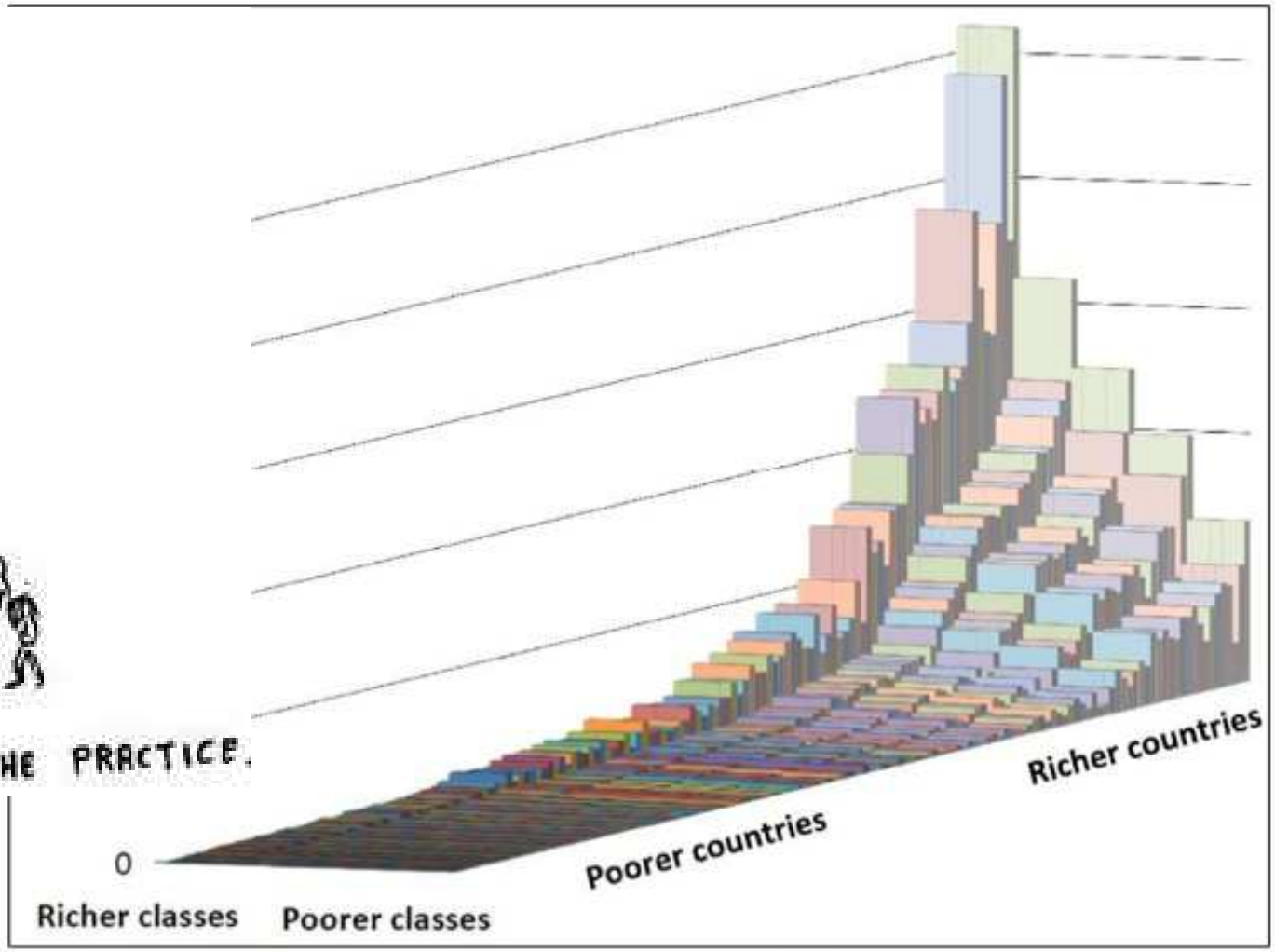


Figure 2. A Visualization of Global Income Distribution, 2007 (or latest available) in constant 2000 U.S. dollars



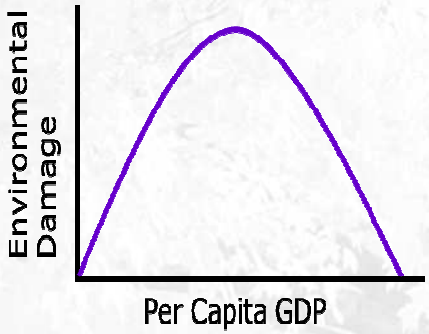
Source: Adapted from Sutcliffe (2005) using World Bank (2011), UNU-WIDER (2008) and Eurostat (2011)

Environment

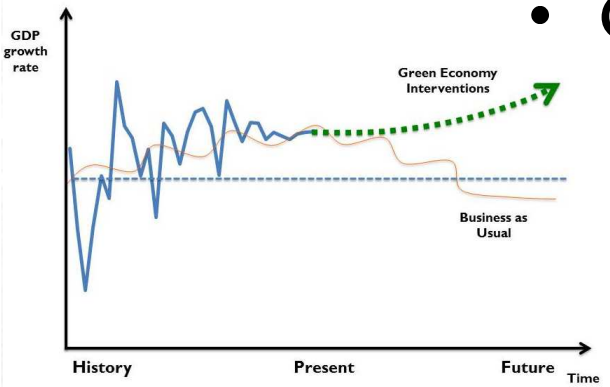
The Orthodox view:

- Weak Sustainability: substitutability of natural capital by human made capital
- Decoupling of economic growth from material and energy consumption (and environmental impacts)
- I (impact) =
  P (Population) x
  A (Affluence) x
  T (Technology
  (Ehrlich&Holdren 1972)

Decoupling

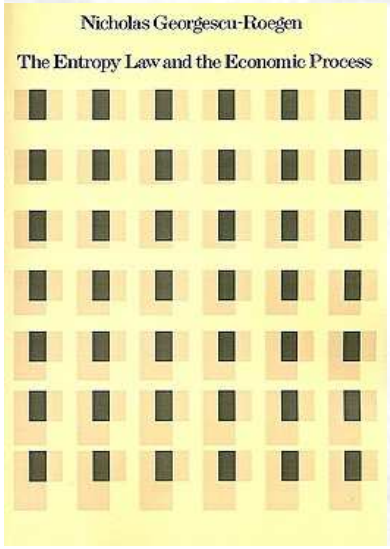


- Environmental Kuznetzs Curve
  Seldon and Song (1994)
- Post-Materialist Value Theory
- Eco-Efficiency
- Factor X (4, 10,..) Weiszäcker et. al (1994)
- Ecological Modernization
- Green Economy and Green Growth



"… fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies" (OECD 2011).

Eco-Eco: Absolute Scarcity



- Georgescu-Roegen
- Absolute scarcity of low entropy matter
- 4th Law of thermodynamics

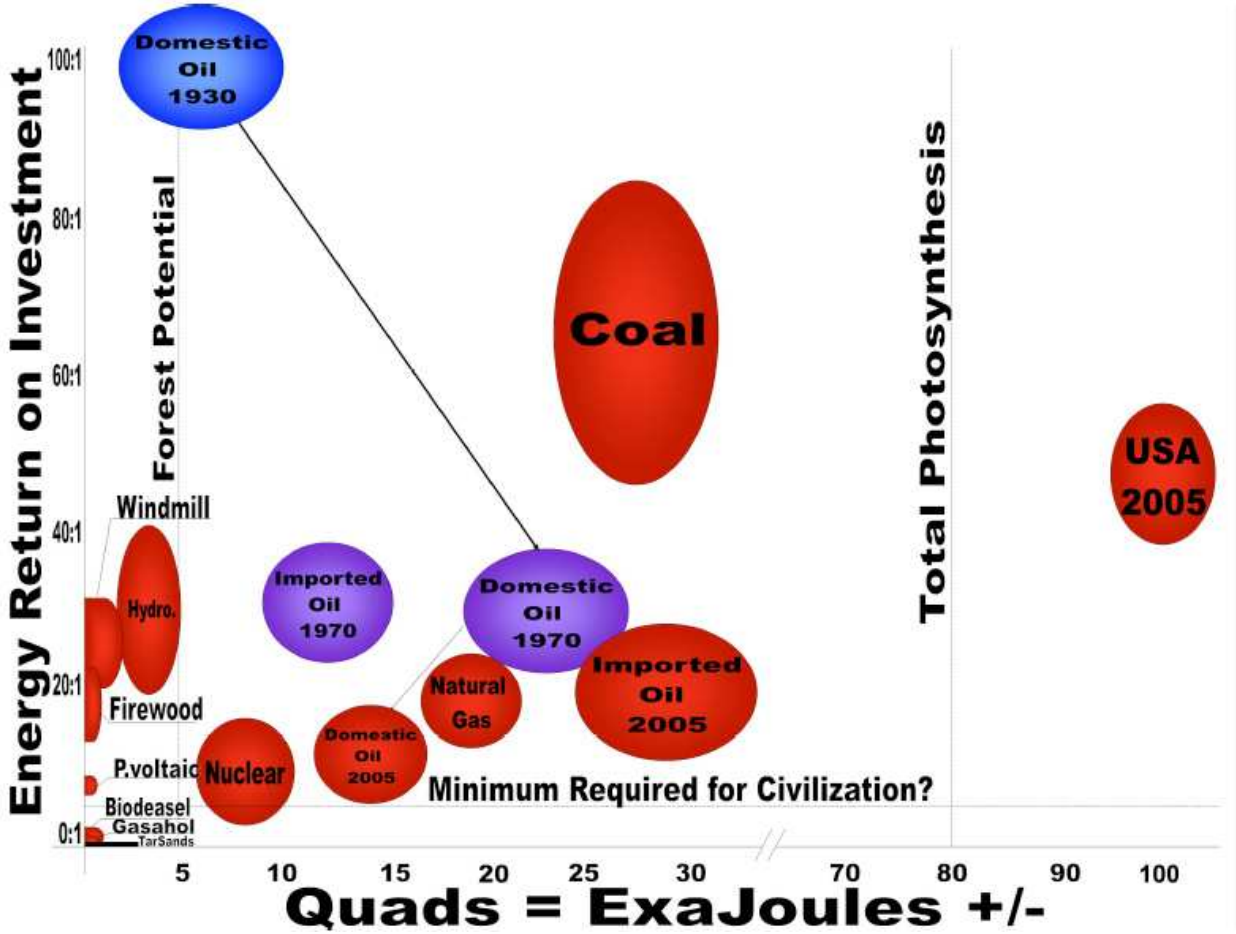
„[M]aterial objects wear out in such a way that small particles (molecules) originally belonging to these objects are gradually dissipated beyond the possibility of being reassembled." (1971, p. 60)

Eco-Eco: Systems Ecology

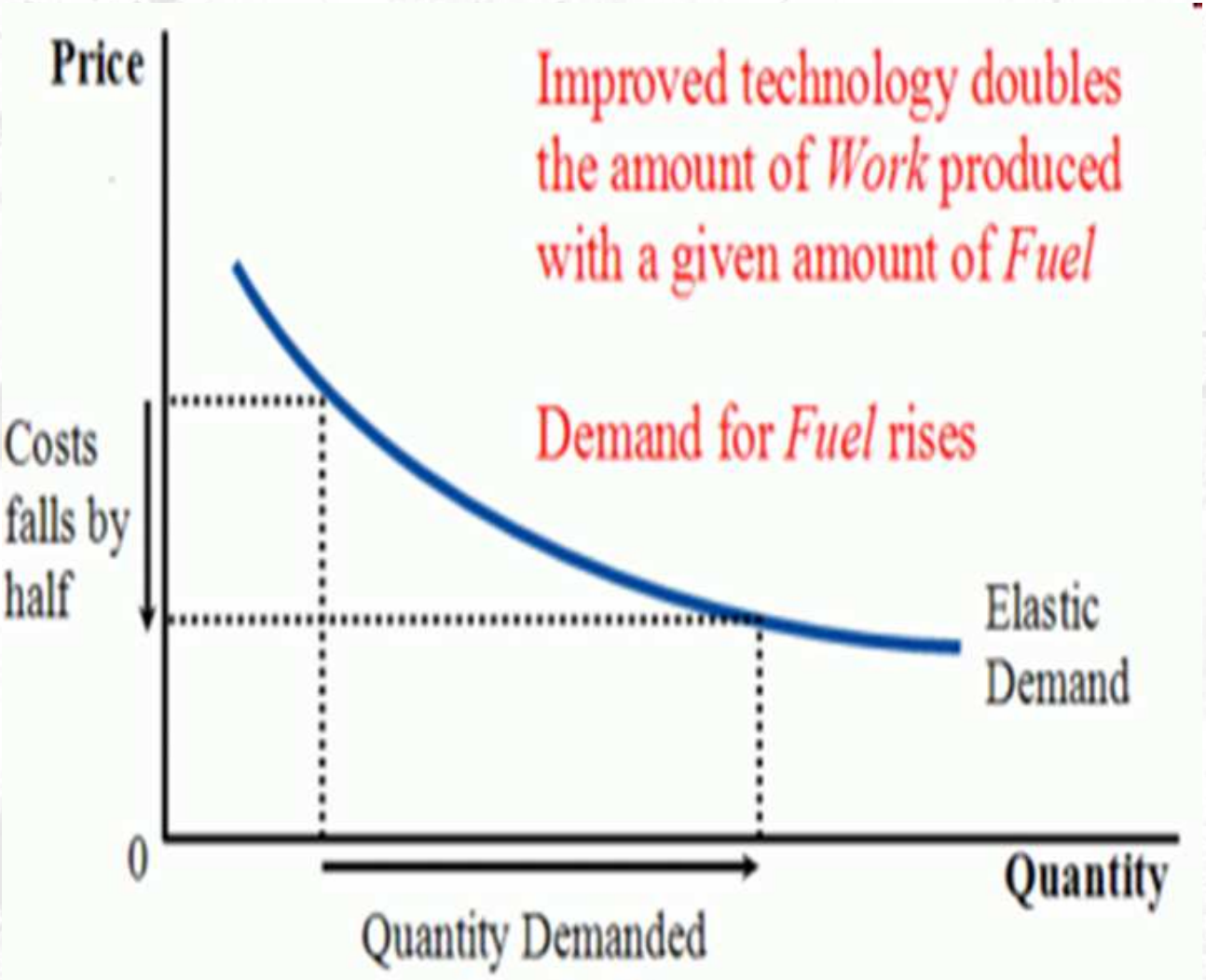
Energy Systems

Net Energy Cliff

EROI

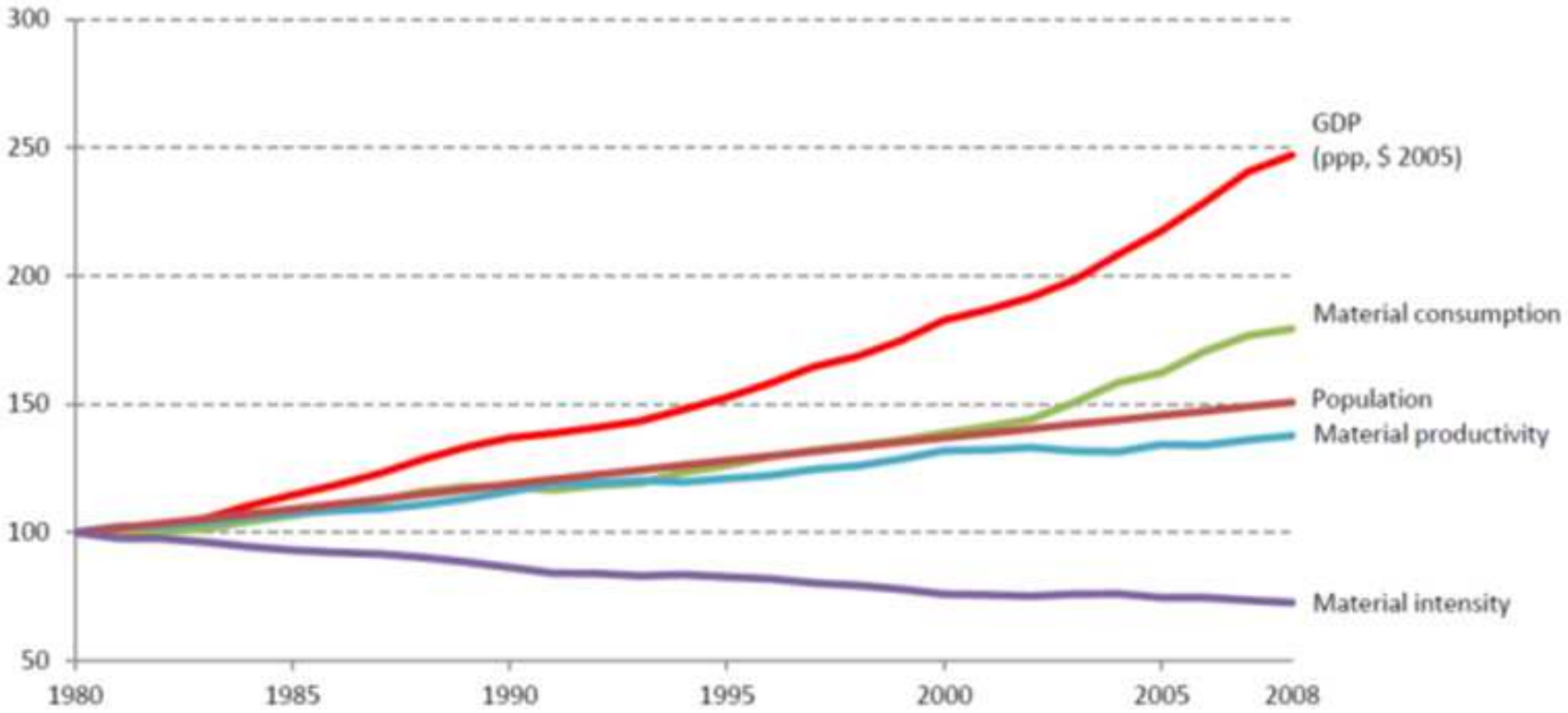


Eco-Eco: Jevons Paradox



Decoupling – Reality Check

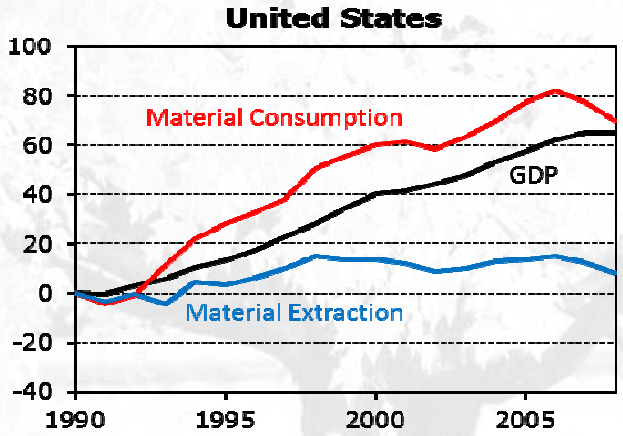
No absolute decoupling

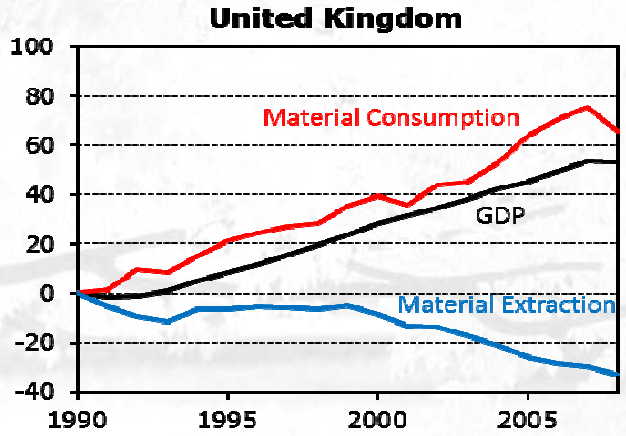


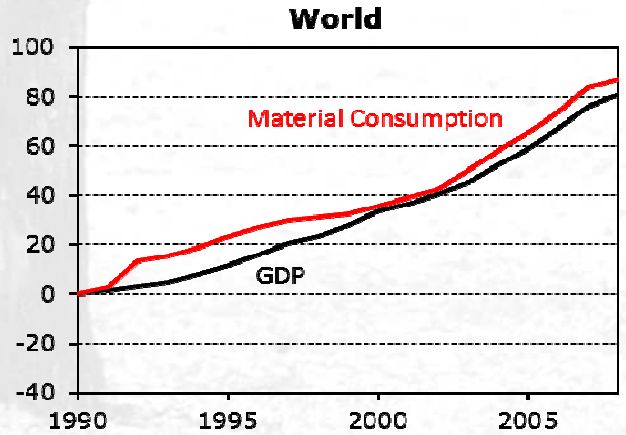
Source: Green Economies around the World? Dittrich, Giljum et al. 2012

Decoupling – Reality Check

Not even relative decoupling







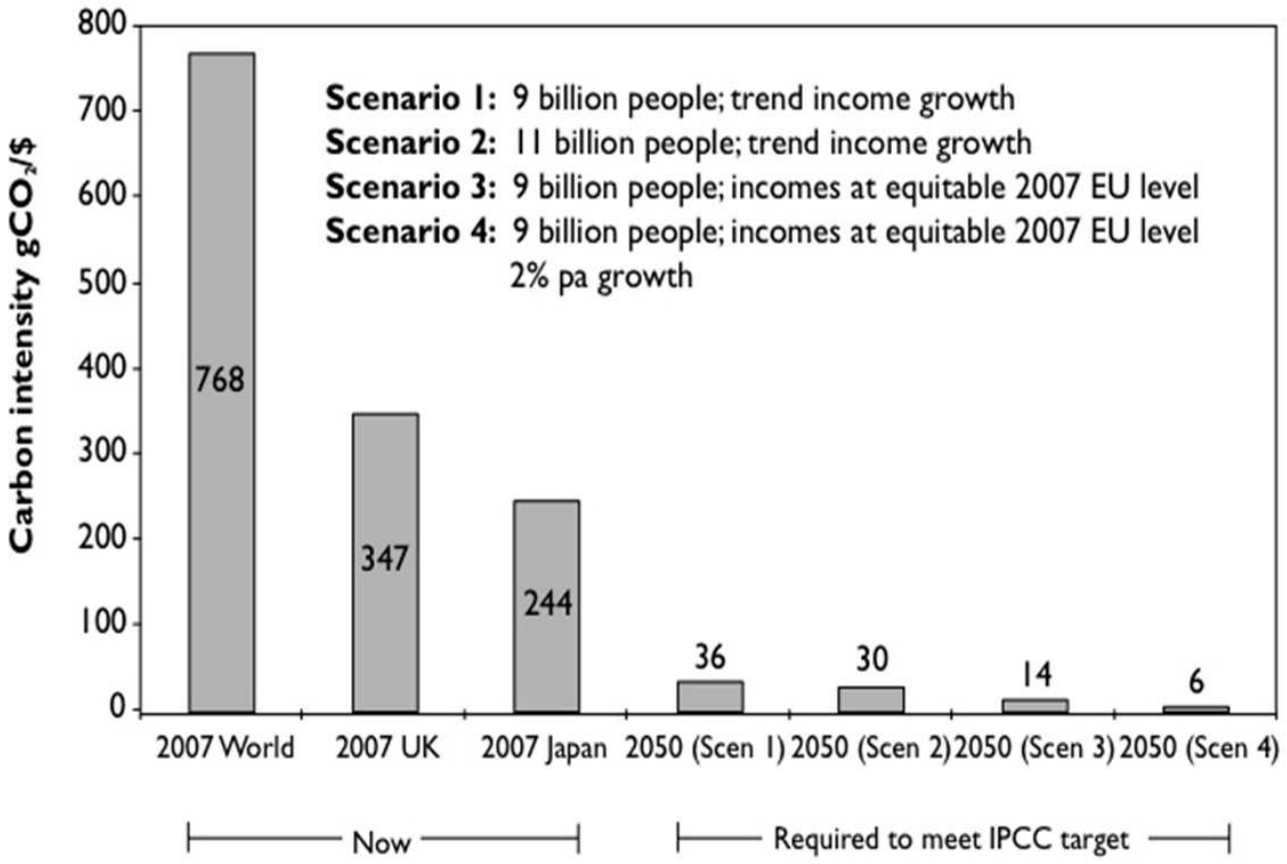
Wiedmann et al. (2014)

Decoupling Reality Check

We cannot both grow and avoid climate change

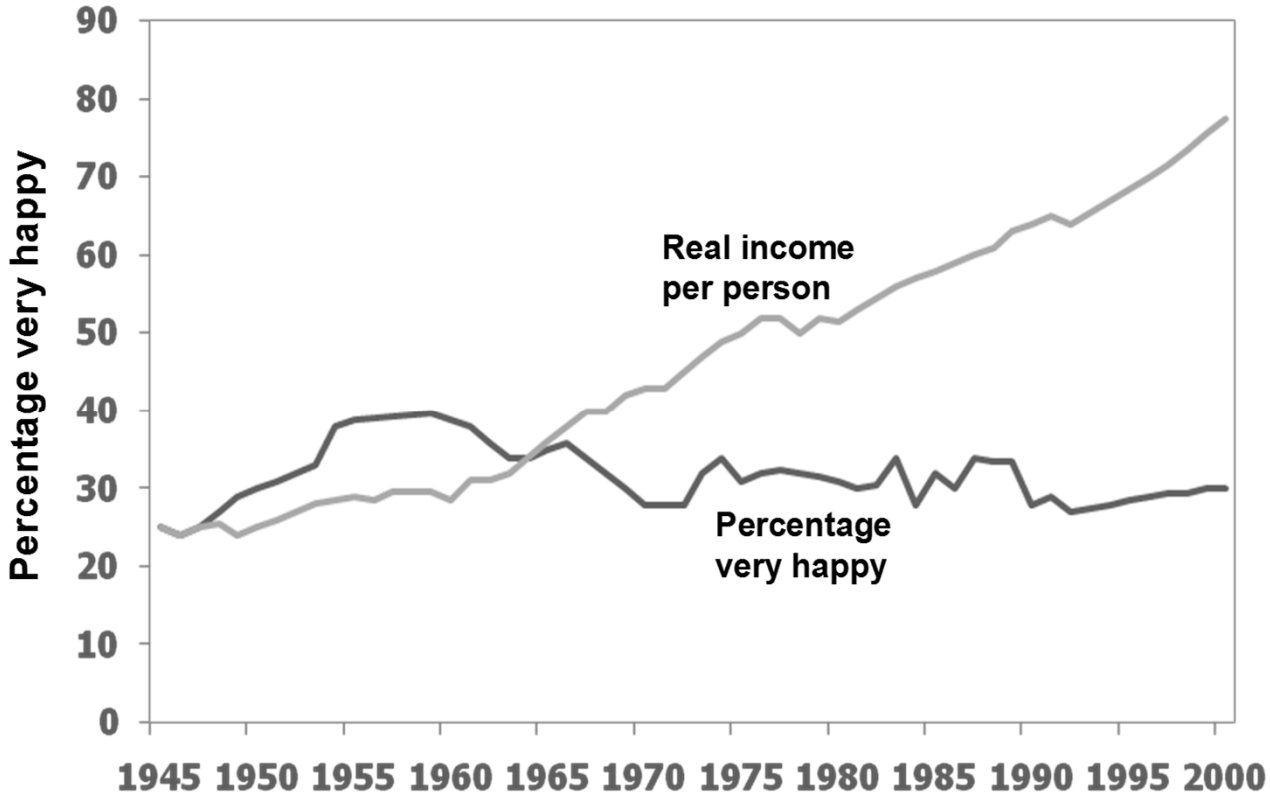
Jackson, T., 2008. *Prosperity without Growth,* Earthscan

20 fold efficiency improvement needed



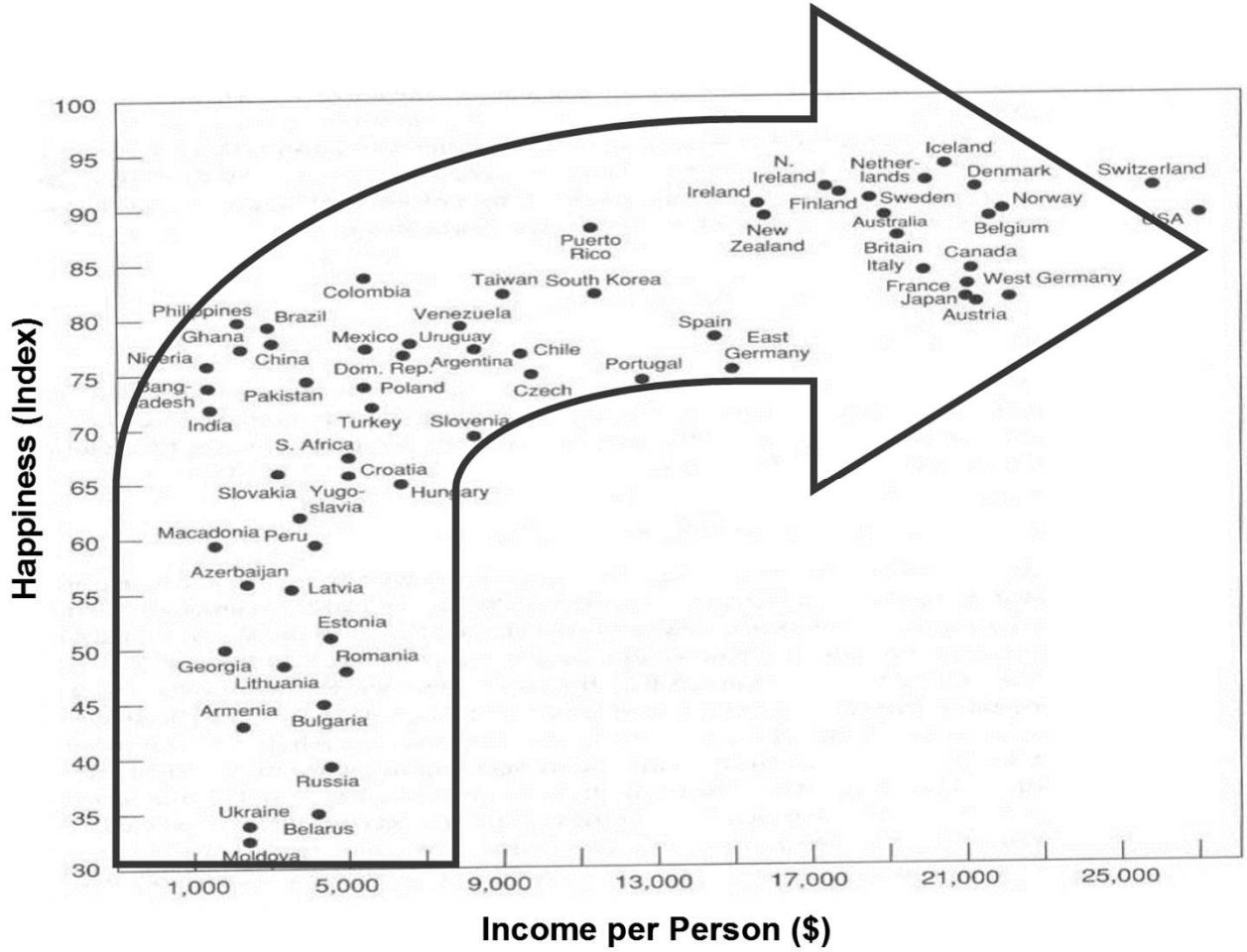
But – decoupling of income from happiness

Life satisfaction decreases with contractions and increases with expansions, **but in the long-term it stays the same**.



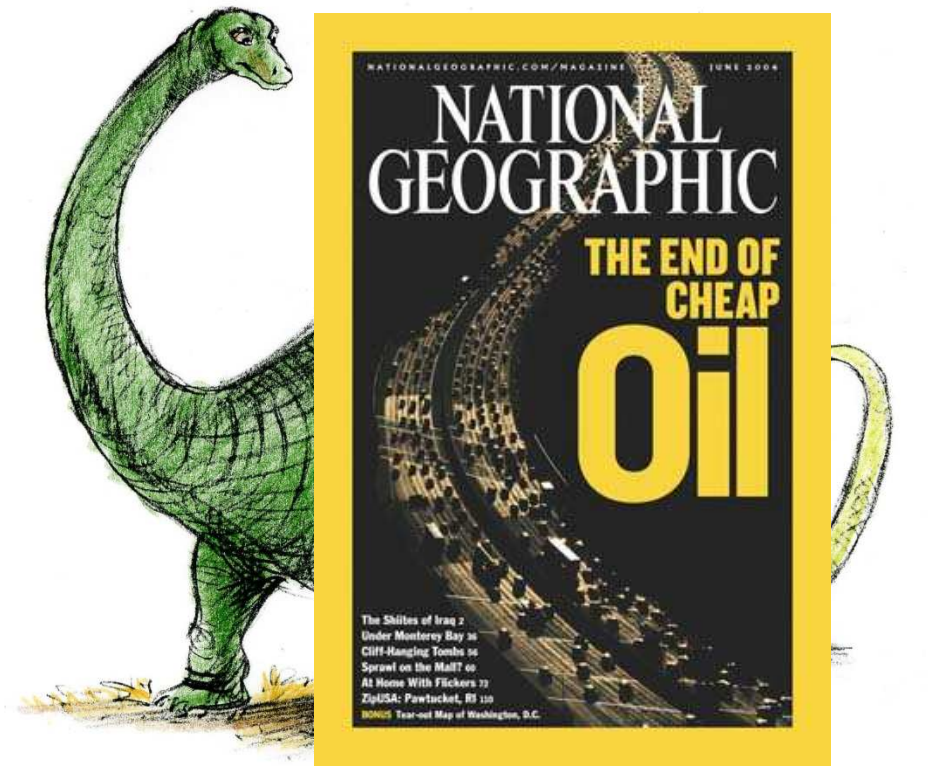
Income and happiness in the United States, 1945-2000. Source: Layard (2005).

But – decoupling of income from happiness



Income and happiness across different countries. Source: Inglehart and Klingemann (2000)).

Defining Peak-Oil

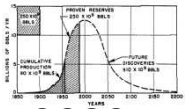


- The maximum possible amount of (global) oil production per unit of time (Barrels per Day), given external constrainst (political, social, economic and geological). (Kerschner 2014)

- 85 million barrels/ day

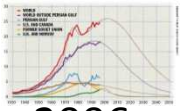
Peak Oil?

Hubbert (1956)



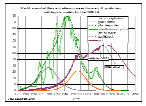
2000

Campbell & Laherrere (1998)



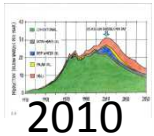
2006

Laherrere (2006)



2012

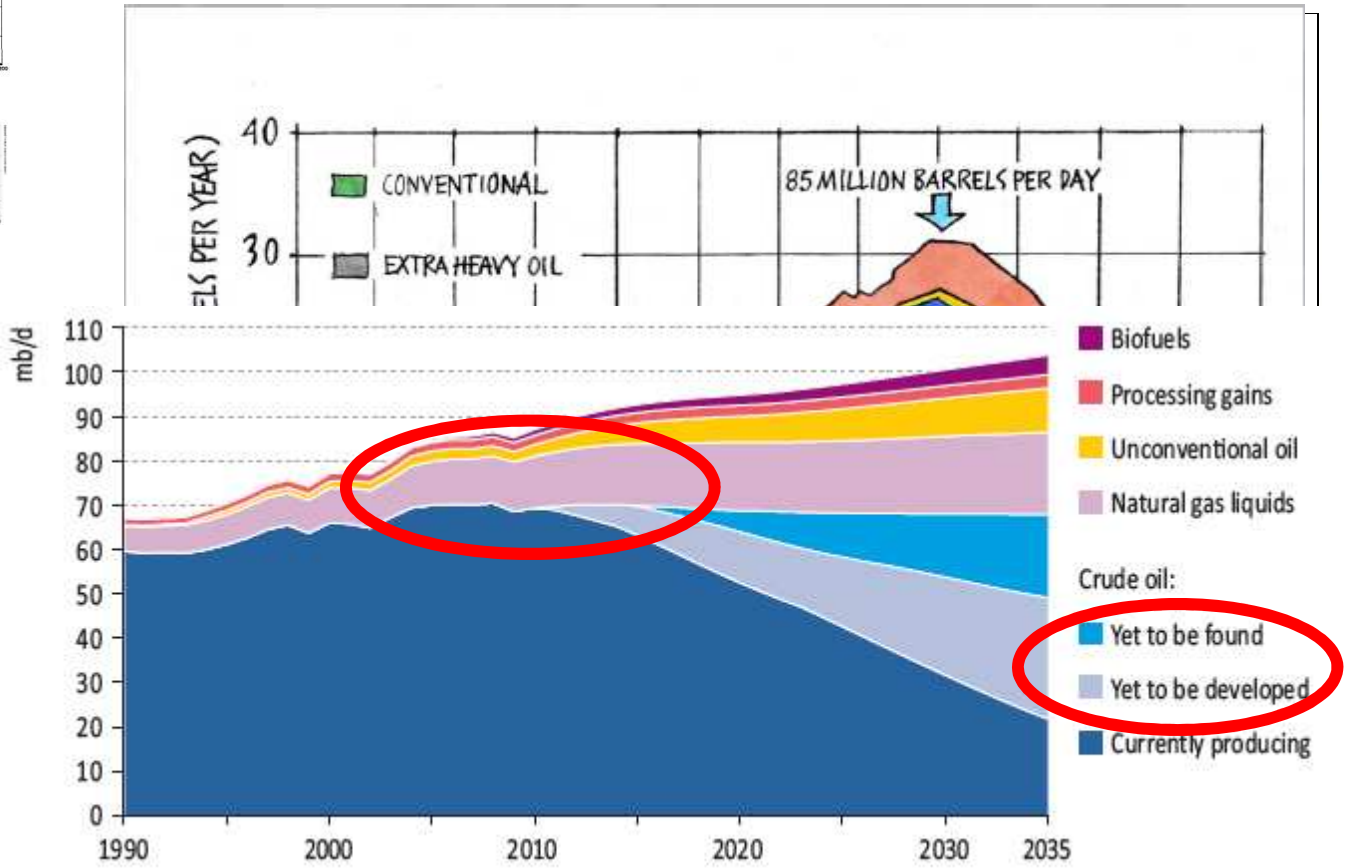
ASPO (2002)
first press release



2010

Sorrel et. Al. (2009)
(conventional)

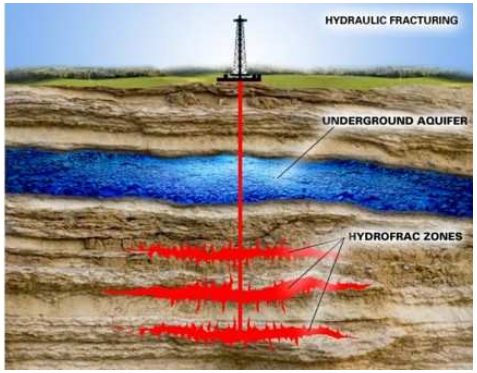
IEA?

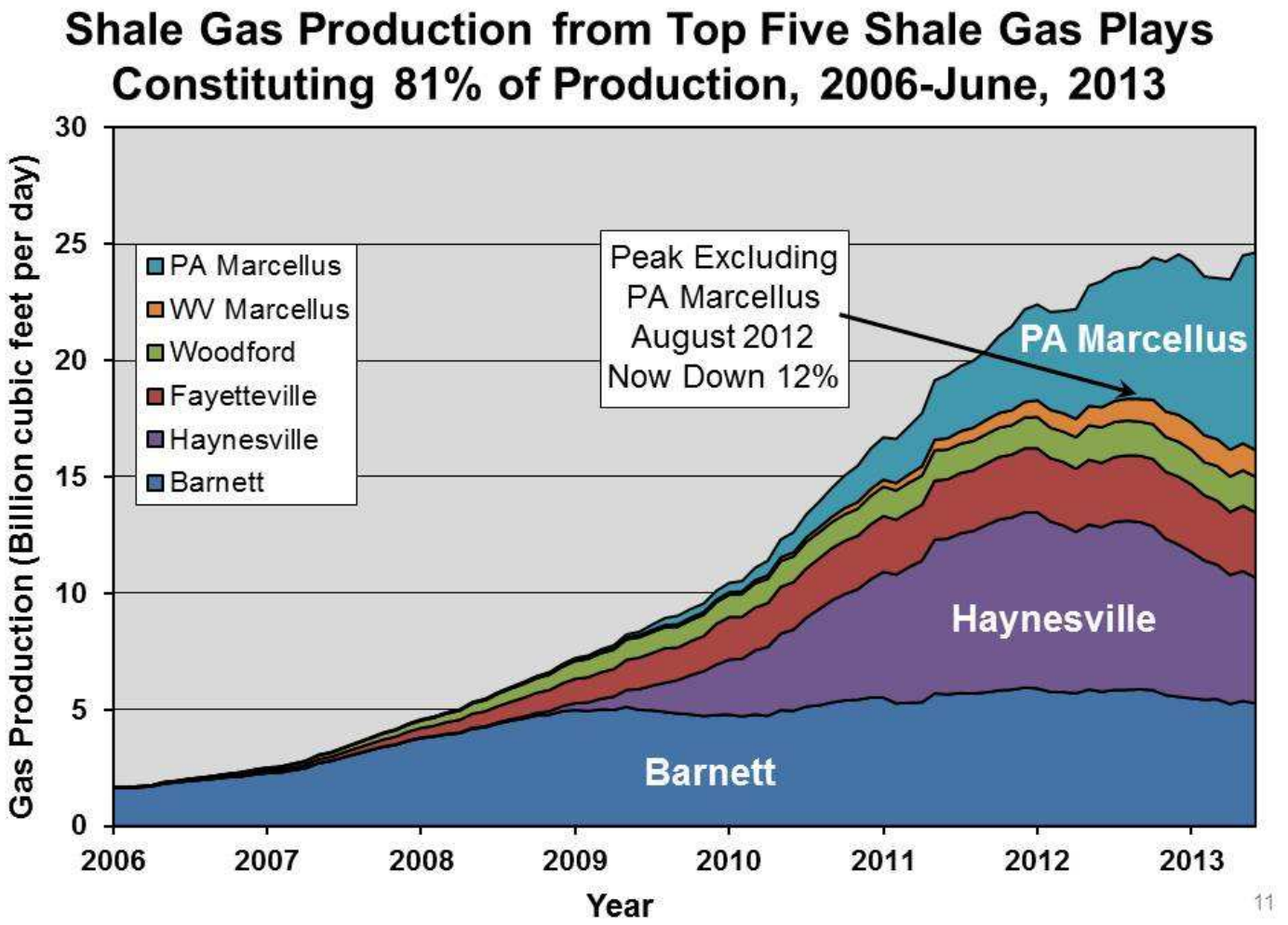


International Energy Agency, WEO 2011, New Policies Scenario

Peak-Oil
Quantity
Quality
When?
What?
Governance

Fracking: Boom or Bust?





(data from DrillingInfo, October, 2013, three month trailing moving average)

Substitution is difficult: OTHER PEAKS!

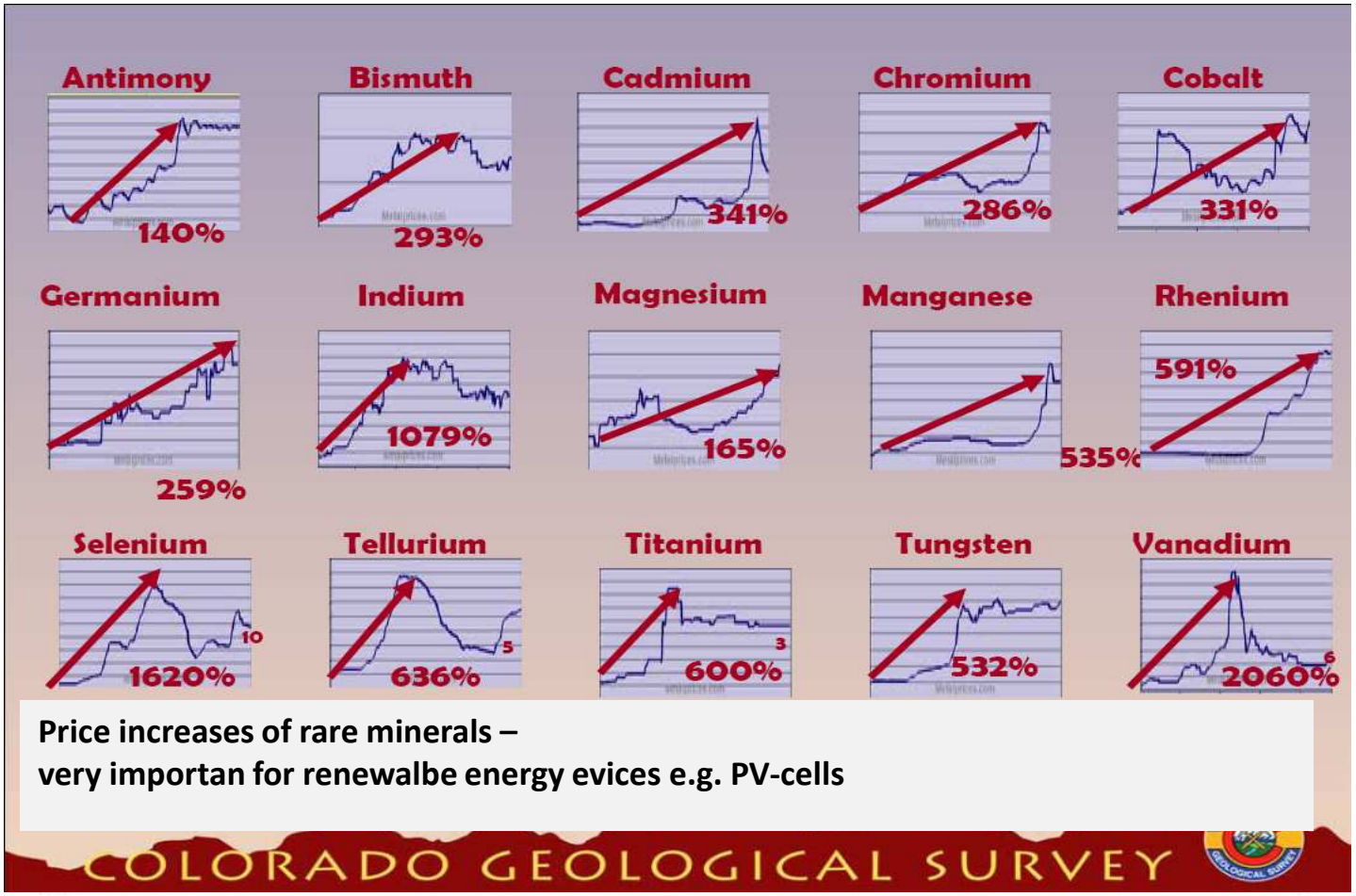
Peak Coal

Peak P

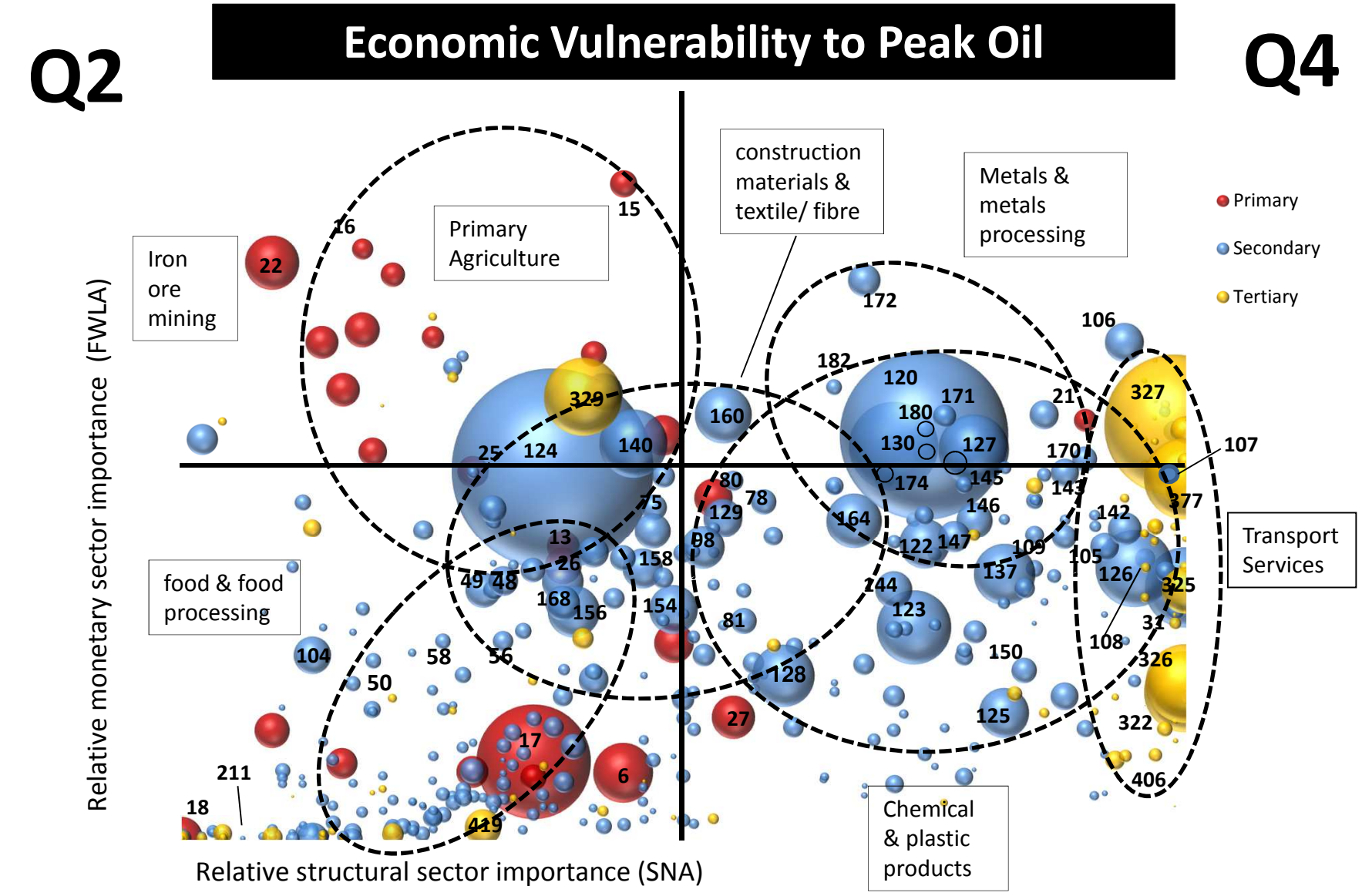
Peak Copper

Other Peaks

….

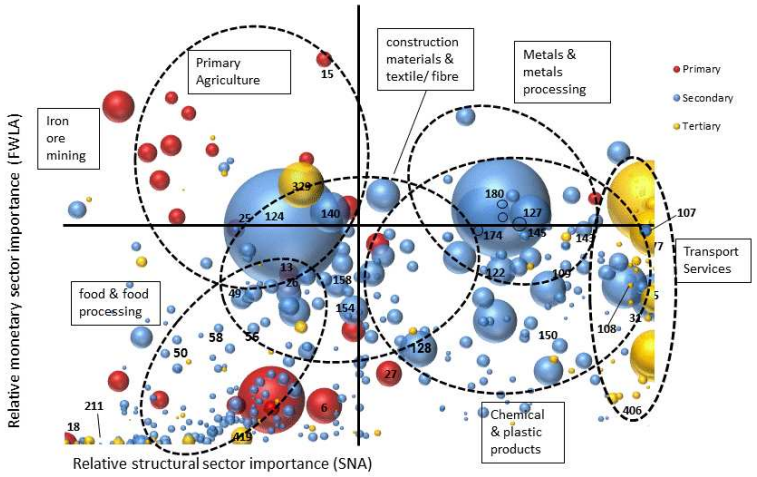


Economic Vulnerability to Peak Oil



Source: Kerschner et. al. 2013

Policy Implications



Several OPTIONS:

(1) Substitution of oil inputs

– Problem: unique qualities of oil (e.g. net energy content)

(2) Substitution with other products

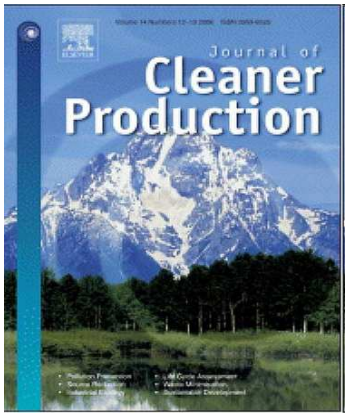
– Substitutes also in problematic position e.g. plastic packaging & paper

(3) DEGROWTH! Radical systematic transformation into a

Post-Carbon Economy

4. What is DEGROWTH?

What is “sustainable degrowth”?



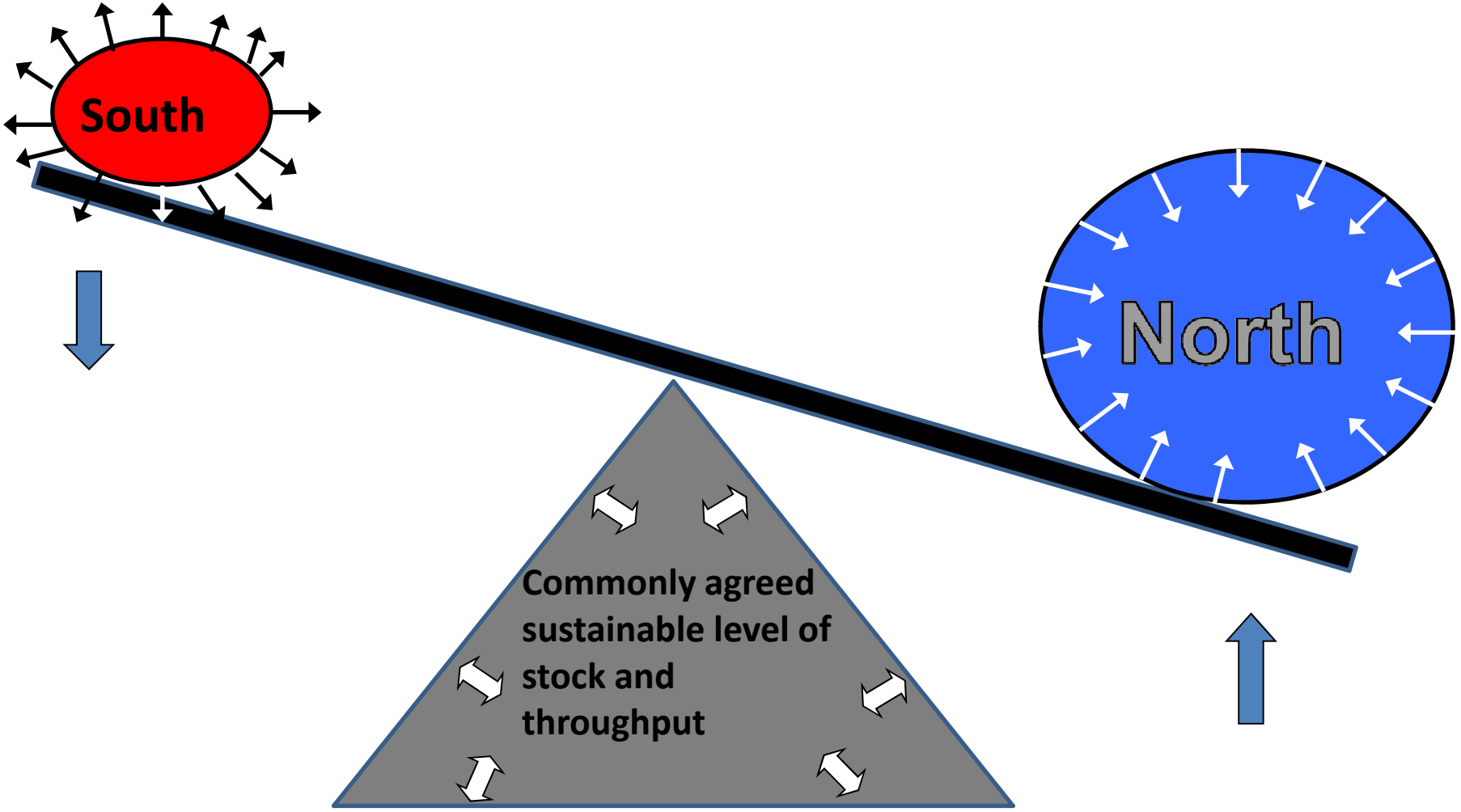
… focusing on Materials and Energy

“An equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions”

Schneider, Kallis and Martinez-Alier, 2010

„De-growth is a path for the Rich North, to allow economic growth in the Sourth. The goal being a worldwide SSE.“

Kerschner 2010



Source: Kerschner 2010

Degrowth – beyond Biophysics

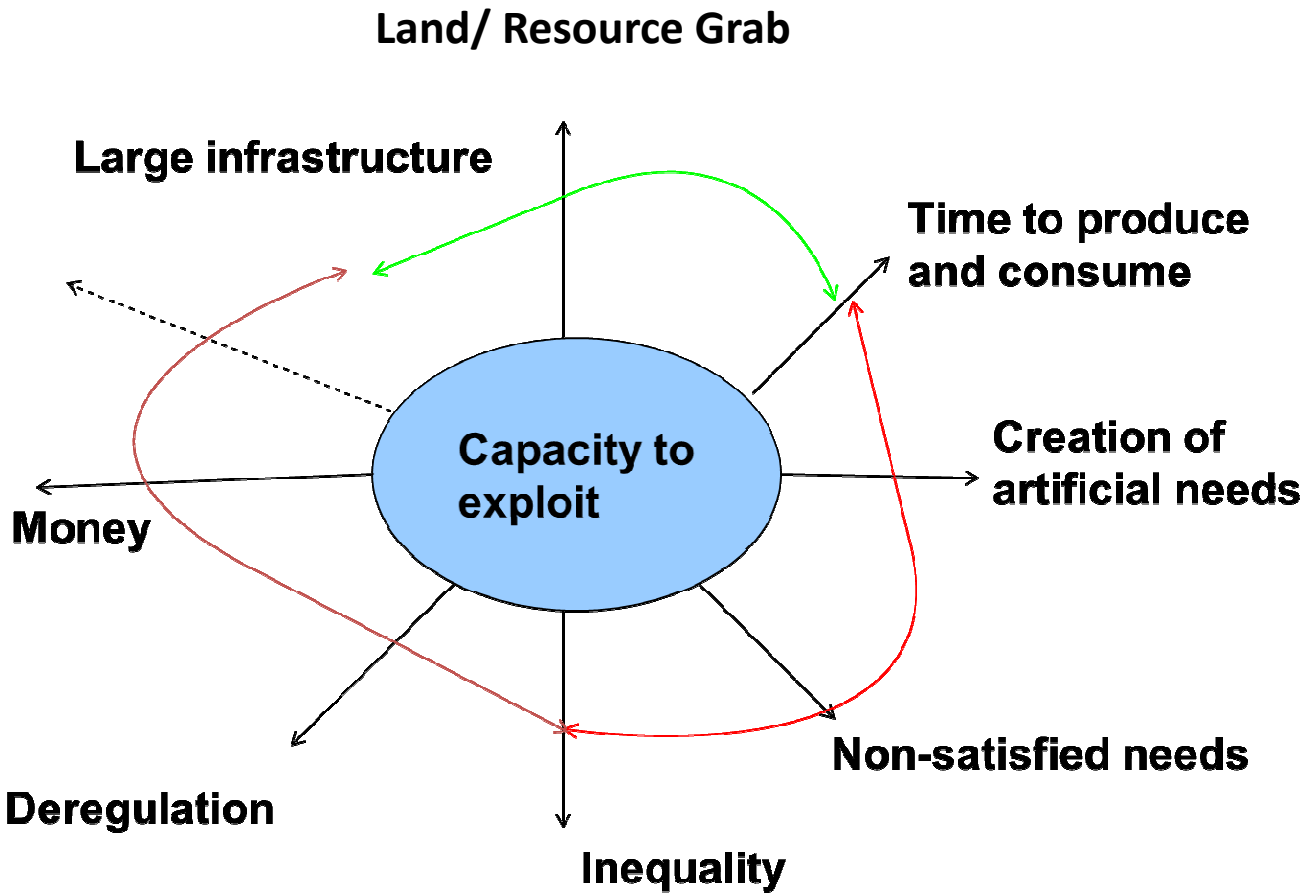
« Degrowth is an **umbrella keyword**, a **multi-faceted framework** that gives purpose and connects different policies and citizen initiatives.

(Kallis 2011)

Degrowth is …

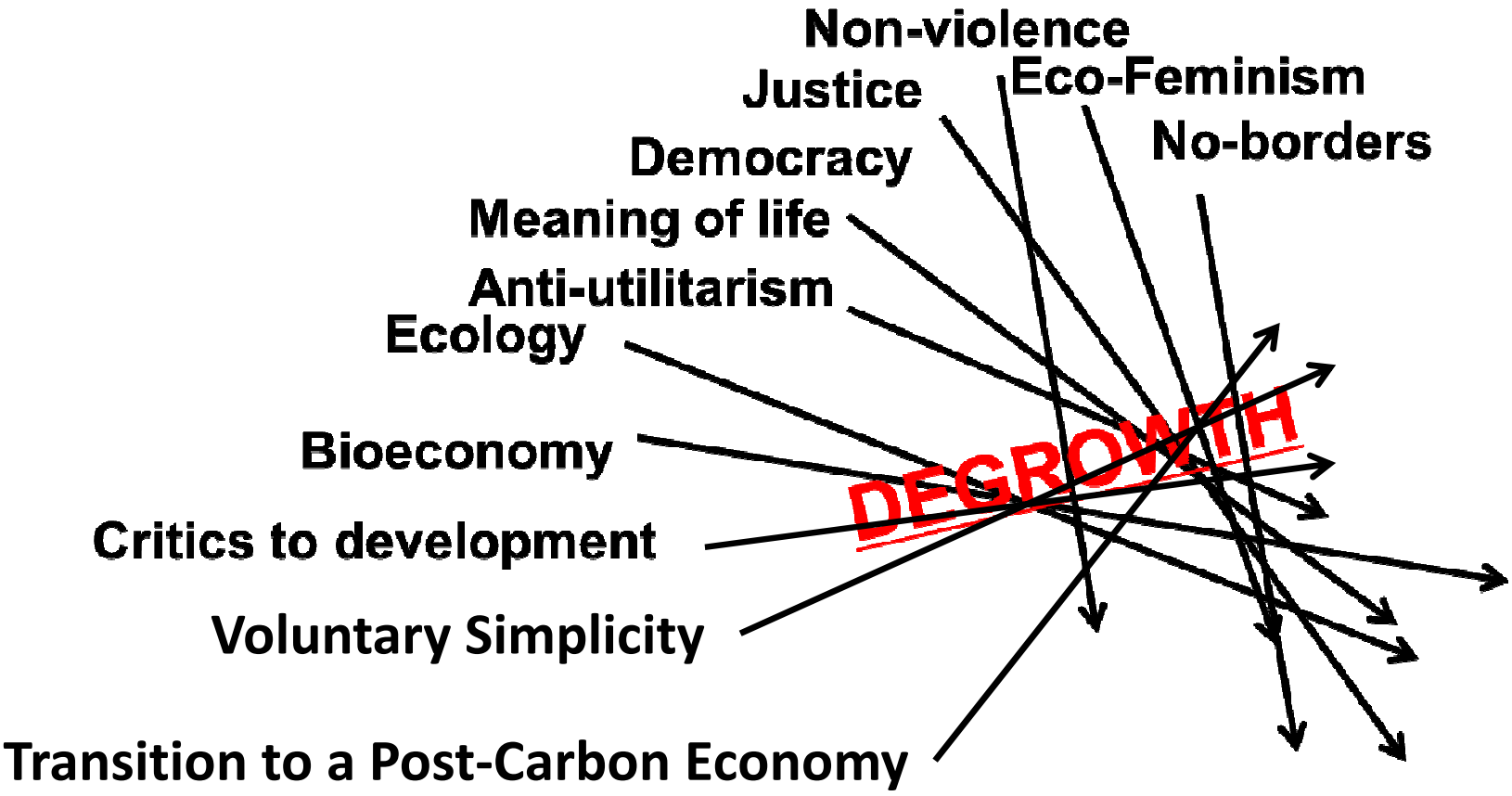
- an intepretative frame for differnet sources and strategies.. Demaria et als 2013
- A slogan, a “missile word”, meaning to repoliticize social and environmental debates:
- An alternative frame for a new social movement.

Degrowth means acknowledging a combination of limits



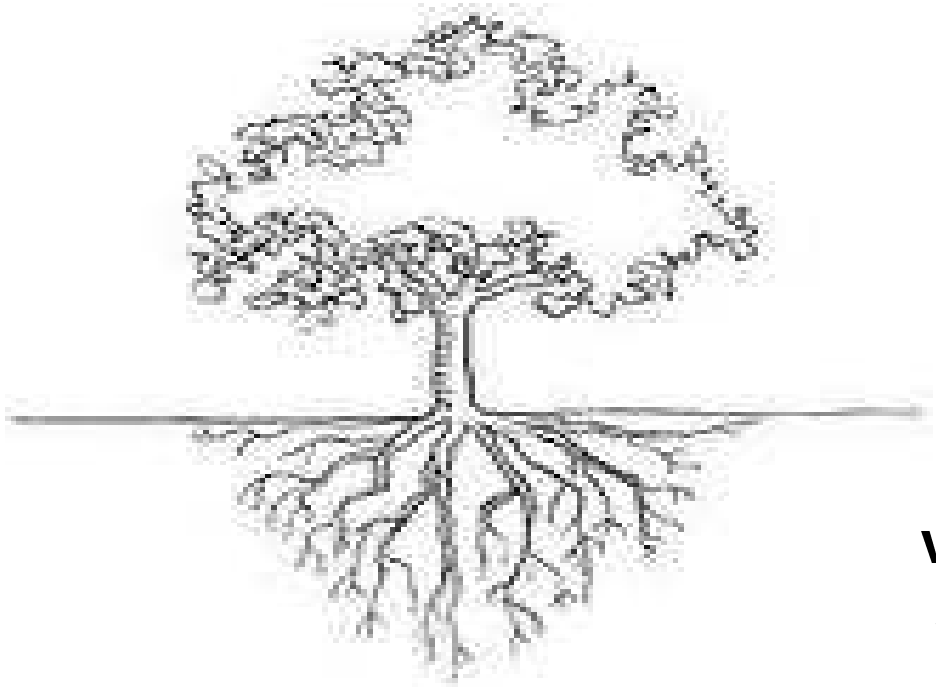
Courtesy F. Schneider

The concerns to which degrowth responds



Courtesy F. Schneider

Degrowth: culturalist origins



anti-utilitarianism

Pareto, Arrow, Harsani, Rawls, Caillé, Bataille, Mauss

critique to development

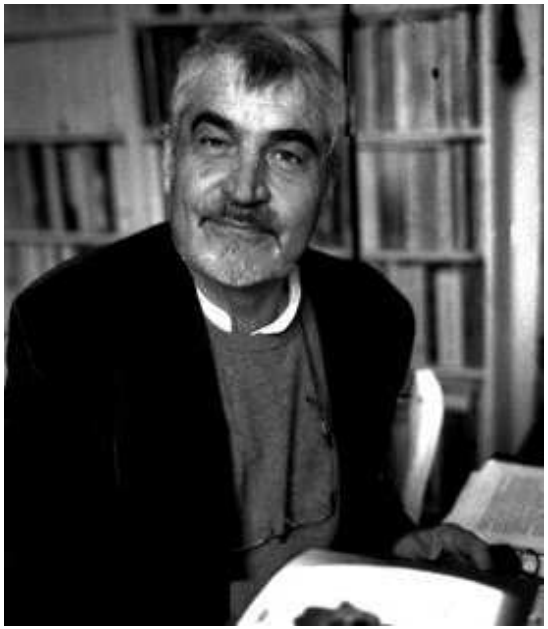
Illich, Escobar, Rist, Esteva, Sachs, Shiva, Deb, Latouche, Castoriadis, Norgaard

volountary simplicity

Thoreau, Gandhi, Schumacher, Elgin

Courtesy C. Cattaneu

Culturalist origins (cont.)



Critiques of (Sustainable) Development

- Desirability of continuous material improvement, growth and progress
- Core (almost religious) imaginary of Western culture – unquestionable.

•"decolonize our imaginary," *(Latouche, 2009)*

…daring to imagine alternatives.

Culturalist origins (cont.)

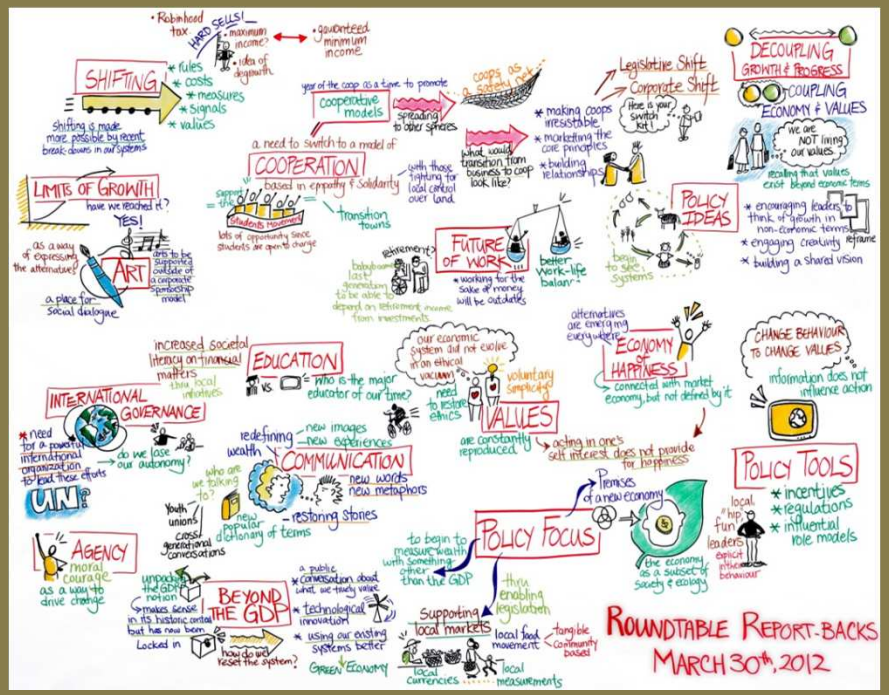
Anti-utilitarianism

- Utility → measure of happiness, self-satisfaction
- Latin root: "useful"
- Behavioral Model: self-interest, Perfect rationality → *Homo Oeconomicus*
- Maximization of utility becomes the moral criterion for the organization of society.
- **Antropology/Sociology critique:** Existent but not so relevant -> social relations, gift economies, (Authors e.g.: Caille, Mauss,..)

Voluntary simplicity

- Eller, 1973: *The Simple Life*;
- Schumacher, 1973: *Small is beautiful;*
- Fromm, 1976: *To have or to be?*
- Etzioni, 1998: Voluntary Simplicity)

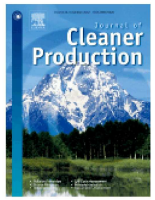
Degrowth Strategies & Research Agendas



degrowth
ecrescita
ecroissance
decreixement

From the Barcelona Conference of April 2010,
three special issues with 31 articles, from authors from 23 different countries

Futures,
Politics, Democracy and Degrowth,
edited by Claudio Cattaneo, Giacomo D'Alisa, Giorgos Kallis and Christos Zografos
Volume 44, Issue 6, Pages 515-654 (August 2012)



Journal of Cleaner Production,
Degrowth: from Theory to Practice,
edited by Filka Sekulova, Beatriz Rodríguez-Labajos, Giorgos Kallis and Francois Schneider
Volume 38, Pages 1-98 (January 2013)

Ecological Economics,
The Economics of Degrowth,
edited by Giorgos Kallis, Christian Kerschner and Joan Martinez-Alier
Volume 84, Pages 1-270 (December 2012)

toward Venezia 19-23 september 2012
3rd INTERNATIONAL CONFERENCE ON DEGROWTH FOR ECOLOGICAL SUSTAINABILITY AND SOCIAL EQUITY

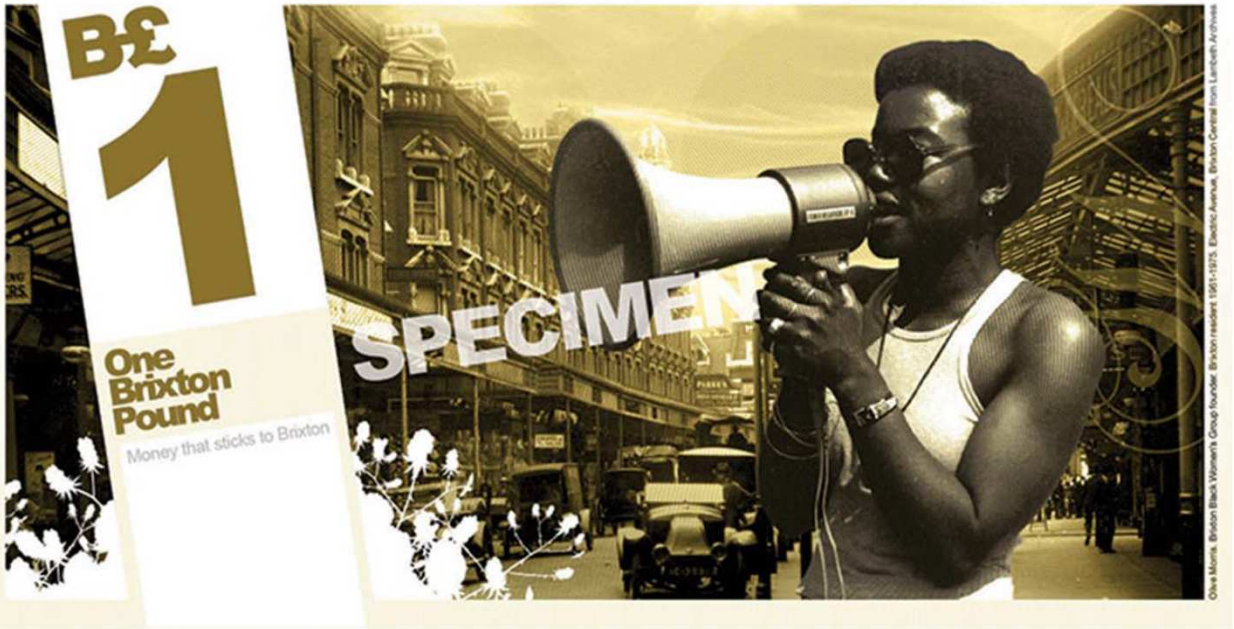
degrowth
conference Leipzig 2014

2.-6. September 2014

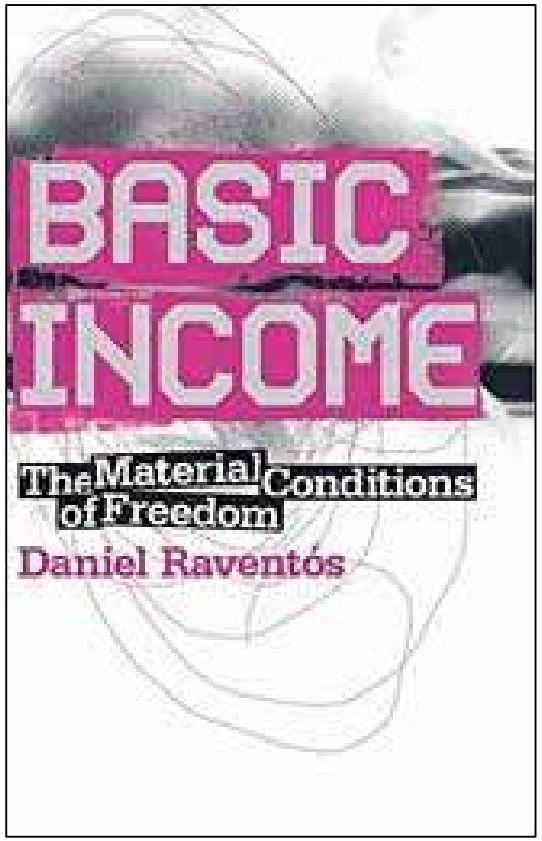
leipzig.degrowth.org/

Money without growth

- Monetary reforms
  - 100% reserve requirements.
  - Public money.
- Community currencies
  - Time banks.
  - HOUR currencies.
  - Parallel currencies.
  - LETS



Social security without growth



- A single, guaranteed-for-life, entitlement transfer.
- Financed e.g. carbon/energy tax

Employment without growth

- Short-term employment boost.
- Productivity gains translated to liberated time, not capital accumulation.
- Environmental benefits depend on complementary policies.

Local economies without wage-labour

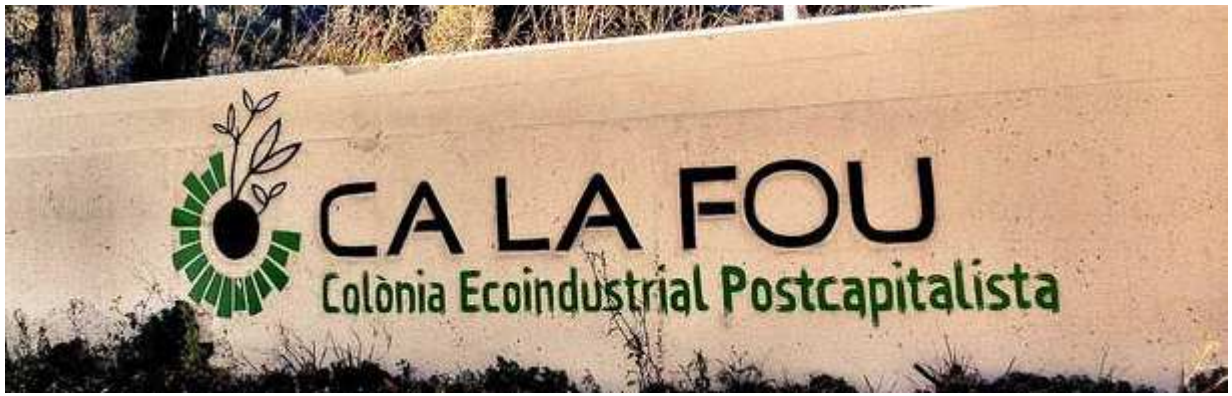
- Proliferating culture of voluntary and forced "nowtopians" (Carlsson, C., 2010. *Nowtopia*, AK Press).

- Expanding cultures of cooperating and sharing (Conill. J. et al, 2013, *Otra vida es posible*, UOC Press).

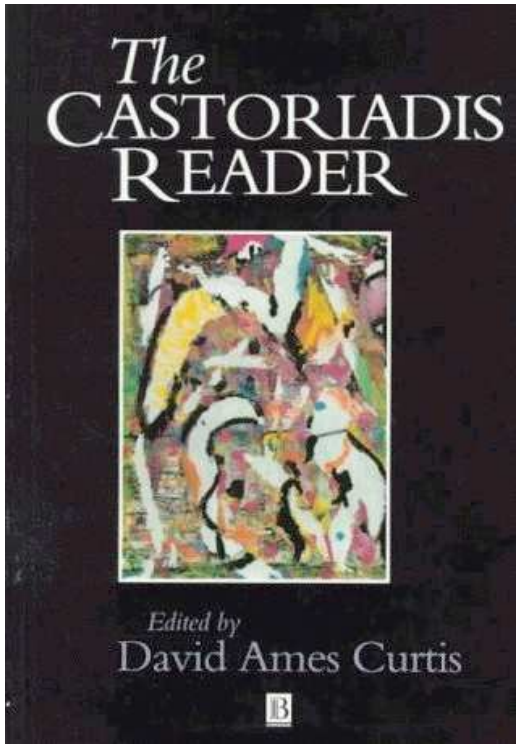
Gorz: autonomy from paid work

“Neo-rurals”

- New forms of living in the countryside (neo-rural experiences).
- Politicized moves, not mere life-style changes.



Democracy without growth

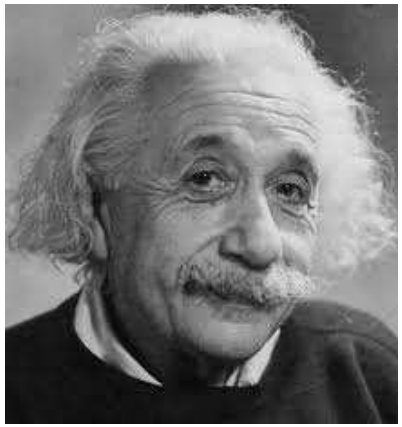


- Auto-nomy as a process of self-institution of society.
- **Direct democracy** as a revolutionary project of self-institution.
- We are living an era of **depolitization** and the rule of experts.

Technology without growth

- "Socialism can only arrive in a bicycle".
- Above a certain scale (of energy use) distribution of control intensifies and social relations degrade.
- "Technocracy" of experts erodes democracy.
- Participatory democracy requires low energy technologies.
- Industrial *vs.* convivial tools.
- The need for collective limitations.

Conclusion



"We cannot solve our problems with the same level of thinking that created them"

Thank you for your attention

"History teaches us that men and nations behave wisely once they have exhausted all other alternatives."

Abba Eban