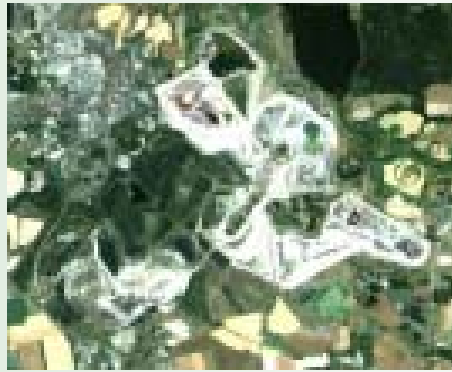




Goitzsche 1984



Goitzsche 1994



Goitzsche 2005

(satellite images prepared by Dr. Ellen Banzhaf, Department Stadtökologie, Umweltplanung und Verkehr, UFZ)

Towards a Sustainable Built Environment ***some potential applications of Ecological Economics*** ***to support European policy making***

FORESCENE “Infrastructures/Land Use” Workshop, Budapest, Hungary, 26-27 October 2006

Dr. Katharine N. Farrell

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ALIVE - **A**ccountability and **L**egitimacy of Governance Institutions that support **V**iable **E**nvironments

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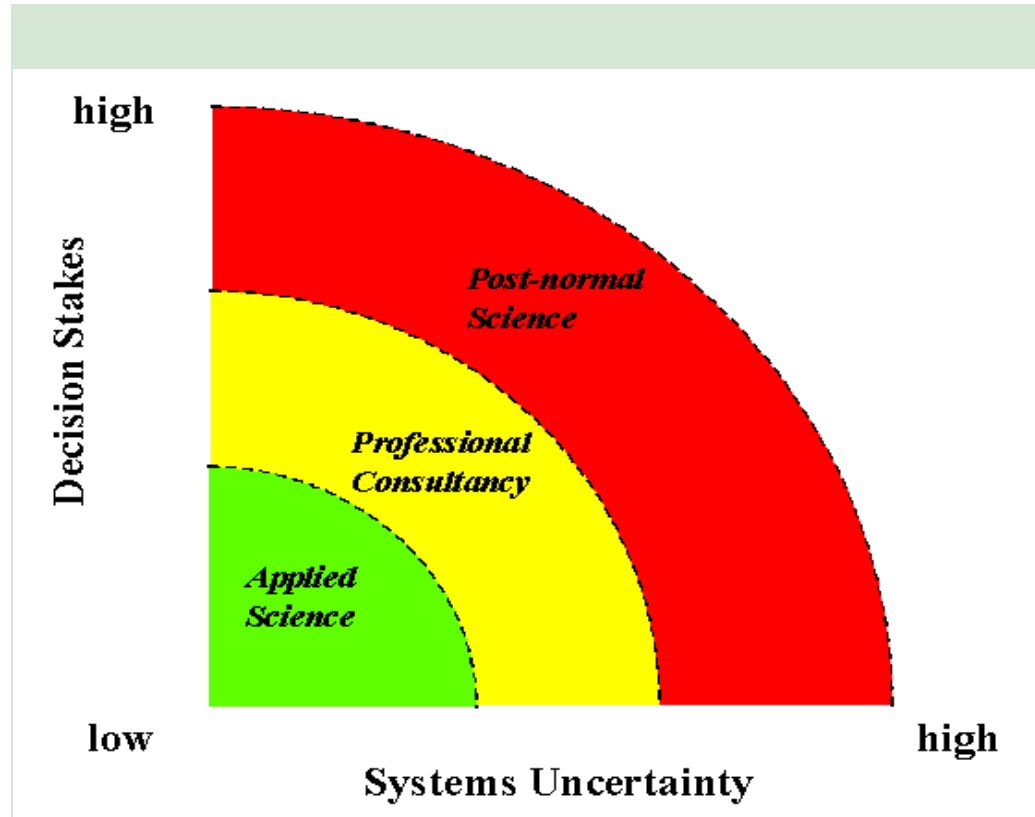
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creating visions in a post-normal context



Under certain circumstances, normal puzzle solving science is not possible
Science and politics merge / conflate / co-operate

Reification of facts and measurement of Quality are extended

Scientific methodologies are *de facto* political theory

The above image appears with the kind permission of Silvio Funtowicz and Jerome Ravetz (1991, 1993), examples added by me

*an inescapable
performative contradiction*

“The traditional fact/value distinction
has not merely been inverted;

in post-normal science the two
categories cannot be realistically
separated”

-Funtowicz and Ravetz, 1993
'Science for the post-normal age'

who is doing talking?

“wholes and parts in [an] absolute sense do not exist anywhere...what we find are intermediary structures on a series of levels in ascending order of complexity, each of which has two faces looking in opposite directions:

the face turned towards the lower levels is that of an autonomous whole,

the one turned upward that of a dependent part”.

- Koestler, Arthur (1968) 'Beyond atomism and holism', Beyond Reductionism, The Alpbach Symposium



politics is about power and legitimacy

“Power needs no justification, being inherent in the very existence of political communities; what it does need is legitimacy.”

Arendt, Hannah (1970) *On Violence* Harcourt Brace & Company (p.52)

- the answers we get depend upon the questions we ask
- problem definition is *Agenda Setting* power
- science is politics

“Who has the power to simplify complexity, ruling some languages of valuation out of order?”

Martinez-Alier, Joan (2002) *The Environmentalism of the Poor* Edward Elgar (p.271)

structure of the presentation

What is Ecological Economics

Ecological Economics
and the Built Environment

the place of Policy in Ecological Economics

the place of Ecological Economics in Policy

ALIVE: multi-level governance and
ecological economics



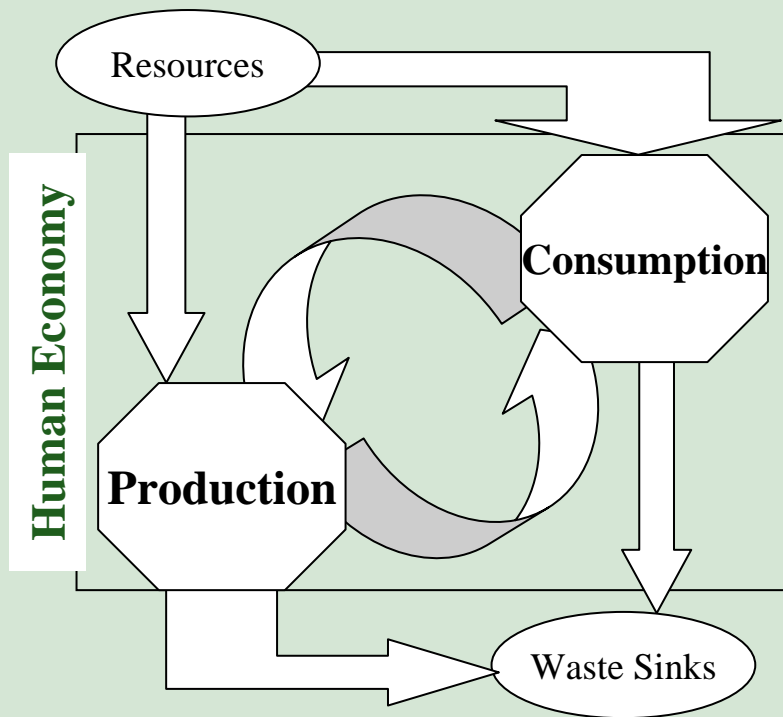
what is Ecological Economics

- the two words ecology and economy share the same Greek root; *oikos* – meaning ‘household’
 - ecology: *oikos* (household) + *logos* (truth or logical structure)**
 - economy: *oikos* (household) + *nehmen* (to manage or make rules)**
- Ecological Economics is concerned with:
 - (1) the human derived rules that govern how humans manage the use of their environments
 - (2) the nascent logic that governs how the environments themselves function

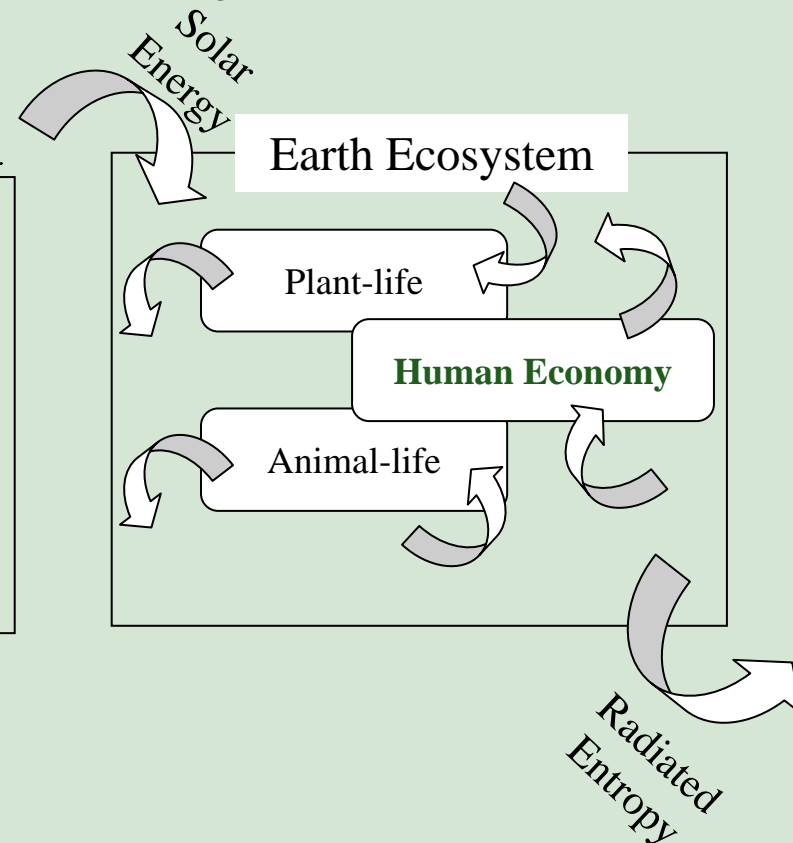
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the ecological economic insight

conventional dis-embedded view



ecological economic embedded view



adapted from Martinez-Alier, 2000 and Daly, 1999

a materially embedded view of economic processes

- all economic activity depends upon and transforms the environment
 - production and use of capital goods, housing, factories, infrastructure, etc. and the use of their products are not exempt from the laws of physics
 - (1) we cannot create or destroy matter
 - (2) all creation of order also increases disorder
 - (3) disorder is inevitable

a materially embedded view of economic processes

- all economic activity is directed by the choices we make and the rules we set
 - production and use of capital goods, housing, factories, infrastructure, etc. is not a spontaneous phenomenon; it is a result of human activity
 - (1) we choose how and where to collect materials; e.g. into buildings, bridges and trains
 - (2) we choose how and where to create waste; e.g. industrial ecology vs. toxic waste dumps
 - (3) the best we can hope for is to create useful disorder

Ecological Economics and the Built Environment

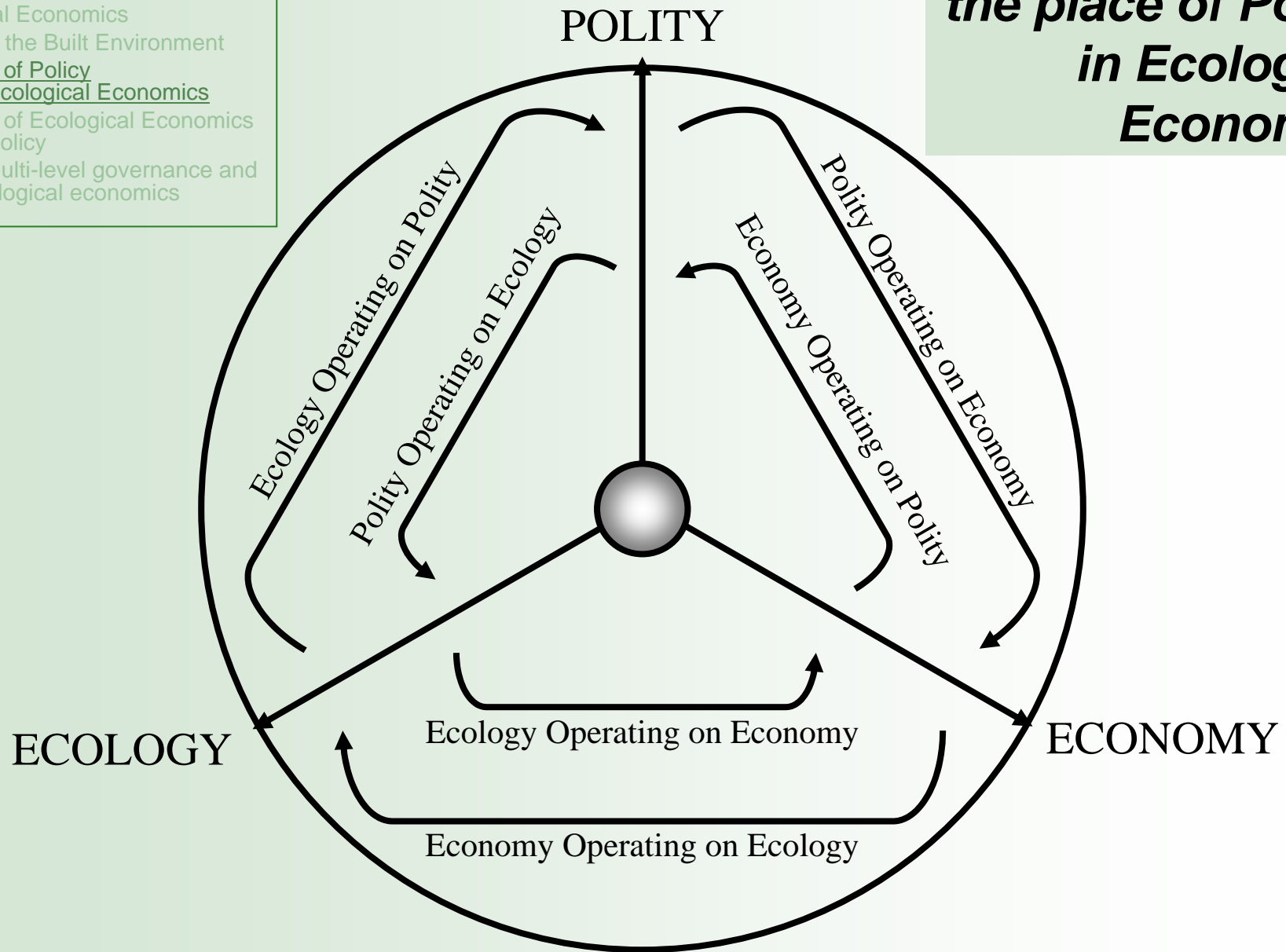
- Environment:
 - *that which surrounds us*
- Built Environment:
 - *that with which we have surrounded ourselves*
- cities, industrial parks, waste management infrastructure, etc, are exosomatic instruments of production:
 - *“[i]n place of slow adaptation of anatomical structure and physiological function in successive generations by selective survival, increased adaptation [in the human species] has been achieved by the incomparably more rapid development of ‘artificial’ aids to our native receptor-effector apparatus, in a process that might be termed exosomatic [outside the body] evolution”*
 - Lotka, Alfred J. (1945) ‘The Law of Evolution as a Maximal Principle’
Human Biology 17(3):167-194.

governing our own evolution

- making choices
 - regarding how to organise our built environment
 - made on large and small scales every day, by every economic actor (individual, firm, community)
- these choices are inevitable and ordinary but they may have avoidable and extraordinary impacts
 - the choices of preceding generations are now part of our environment, this limits our option space
 - not all things are possible;
 - (1) on physical and (2) on historical grounds
 - in turn, our choices influence the option spaces for future generations

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ALIVE: multi-level governance and
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the place of Policy in Ecological Economics



the place of Policy in Ecological Economics

- social institutions, markets, laws, customs are part of how we sort matter to produce low entropy, i.e. they play a functional role in how we stay alive

Georgescu-Roegen, Nicholas (1971)

The Entropy Law and the economic process. Harvard University Press

- “Politically impossible” is analytically relevant –

Boulding, Kenneth E. (1950)

A Reconstruction of Economics, Chapman & Hall

- descriptive task:

- how well do our rules of management match up with the dynamics and structures within which we are embedded?

- normative task:

- how can we set better rules? what would be better rules?

the place of Ecological Economics in Policy

- empirical tools to support choosing
 - material flow analysis
 - collection, compilation and comparison of economic and ecological data
 - provides information regarding the shape of our impacts and opportunities
 - multi-criteria decision analysis
 - participatory science, stakeholder participation in criteria setting, cross-referenced study of economic and ecological impacts
 - provides decision support
 - integrated modelling and scenario building
 - participatory science, stakeholder participation in parameter setting, cross-referenced study of potential economic and ecological effects
 - provides support for strategy development and policy direction

the place of Ecological Economics in Policy

- **theoretical insights to support governing**
 - **multi-level environmental governance**
 - new approaches to political theory, informed by attention to the role of ecology in economic processes
 - reevaluation of the role of science in governance
 - **new macro-economic explanations**
 - flow / fund macro-economic modelling
 - optimal control general equilibrium modelling
 - input / output analysis with material satellites

the place of Ecological Economics in Policy

- **methodological innovations to support research**
 - **post-normal science**
 - new methods for conducting science under conditions of high uncertainty and/or high decision stakes
 - incorporating stakeholder participation and local knowledge and/or
 - developing models and analysis through direct collaboration with government and community groups
 - inter-disciplinary research methodologies
 - **multi-scale integrated assessment**
 - new analytical methods for combining data across incommensurable temporal and spatial scales

ALIVE: multi-level governance and ecological economics

ALIVE: Accountability and Legitimacy of Governance Institutions that support Viable Environments

- the work begins from a critique:
due to the specific characteristics of living systems (ecosystem goods and services), it is inappropriate and destructive to represent their economic worth through recourse to monetary valuations
- deliberative democratic discourse is found to be a promising but inadequate alternative:
 - problems of political legitimacy require that deliberative forums be connected with other government and governance structures
 - problems of scientific complexity require that epistemological diversity be accommodated within deliberative forums

ALIVE: multi-level governance and ecological economics

- Looking at Decisions
 - regarding how to manage our relationship with our environment –
regarding how to build our built environment – are taken as real life
examples of multi-level governance environmental valuation
- Studying
 - the political and epistemological structure of selected decision events
(e.g. building a factory, closing a factory),
- the ALIVE research seeks to
 - (1) develop a better understanding of how we currently combine
science, politics and policy to make choices about how to build
our environment and
 - (2) develop recommendations regarding how we could combine
science, politics and policy to make choices that lead to a
sustainable built environment

an ecological economic view of evolution at the Goitzsche lake

(satellite images prepared by Dr. Ellen Banzhaf, Department Stadtökologie, Umweltplanung und Verkehr, UFZ)



Goitzsche 1984



Goitzsche 1994



Goitzsche 2005

- 1984: DDR, large scale open pit brown coal mining, heavy industrialisation, film and chemical industry, high population density, mega-contamination
- 1994: post-unification, closed mine, closed factories, remediation, shrinking population, mega-contamination
- 2005: post-integration, flooded mines, remediation, shrinking population, mega-contamination

an ecological economic view of evolution at the Goitzsche lake

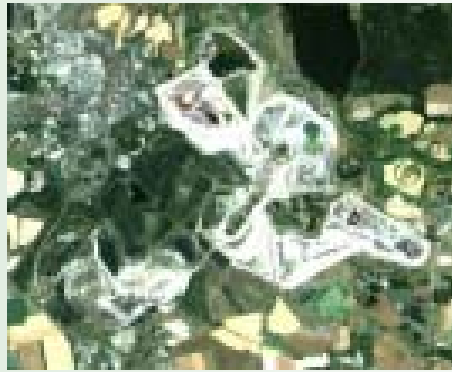
Goitzsche lake is a built environment

Questions worth asking

- (1) what kind of built environments do we desire?
[*politics proper*]
- (2) what kinds of built environments are possible?
[*basic science*]
- (3) how can our desires be matched up with the
possibilities? [*ecological economics*]
- (4) how can our realistic desires be realised?
[*policy*]



Goitzsche 1984



Goitzsche 1994



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Thank You for Your Attention

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