



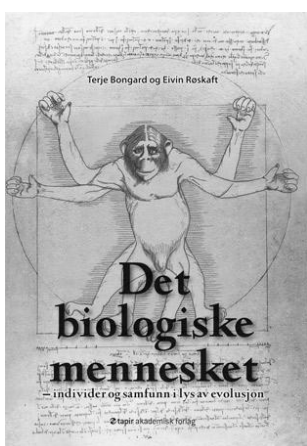
Ecosystem Services and Public Goods

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NINAs working group: HumBEE (HUMAN BEhaviour and Evolution)

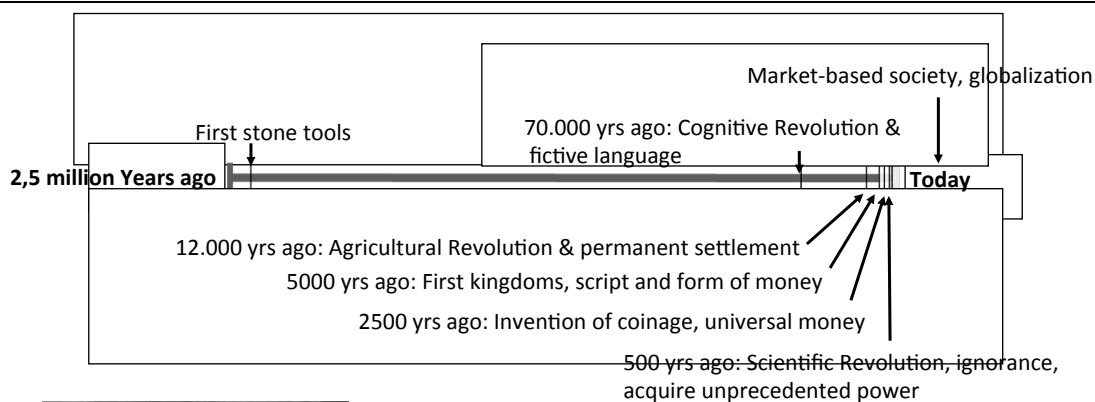


Aim:

- **HumBEE into Sustainability Science**
- **HumBEE as guidance/assistance in Sustainable Societal Transformation processes**

Presentation:

- **A short history about humans**
- **A brief note on policies and current scientific work**
- **Public goods and Ecosystem Services**
- **Challenges and opportunities**



The ability of the human mind to imagine things that do not really exist



4. An ivory figurine of a 'lion-man' (or 'lioness-woman') from the Stadel Cave in Germany (c.32,000 years ago). The body is human, but the head is leonine. This is one of the first indisputable examples of art, and probably of religion, and of the ability of the human mind to imagine things that do not really exist.

{Photo: Thomas Stephan © Ulmer Museum.}

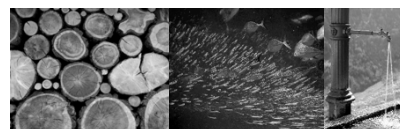
HUMAN BEHAVIOUR and Evolution

- ▶ Price as a symbolic value:
 - ▶ Money, gold, artefacts, ...



But keep in mind....

- ▶ Real value of Ecosystem Services (ES):
 - ▶ Timber, fish stocks, freshwater



HUMAn BEhaviour and Evolution

▶ Why do humans value short-term profit over long-term sustainable natural resource use?

▶ Evolutionary sexual selection

▶ Handicap Principle:

“costly outstanding behavior signals superiority and will be selected through attractiveness”

HUMAn BEhaviour and Evolution



▶ Human Universals = comprise those features of culture, society, language, behavior, and psyche for which there are no known exception [Brown 1991; Pinker 2002]

Creativity Perspective
 Judgment Curiosity
 Honesty Bravery Fairness HUMOR Zest
PERSEVERANCE Teamwork
Love Kindness **Leadership**
 Social Intelligence Love of Learning
Forgiveness **HOPE** PRUDENCE
 Appreciation of Beauty & Excellence Humility
 Spirituality SELF-REGULATION Gratitude
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HUMAn BEhaviour and Evolution

- ▶ Human universals:
 - ▶ status-seeking and social justice
 - ▶ morality linked to deception, egoism and cooperation
 - ▶ symbolic values to satisfy the status-seeking universal

HUMAn BEhaviour and Evolution

- ▶ Human universals:
 - ▶ Gossiping – we are very good at it! 😊
 - ▶ Stable in-groups, trust and acknowledgement, empowerment, ownership (see also Ostrom, 2000)

Ostrom, 2000: Journal of Economic Perspectives—Volume 14, Number 3—Summer 2000—Pages 137–158

HUMAn BEhaviour and Evolution

- ▶ Nurture: societal and individual choices are driven by cultural processes
- ▶ Nature: choices are driven by evolved capacity of human behavior
- ▶ Both: environmental triggering (e.g. current economic practice) is necessary to release specific behavior

HUMAn BEhaviour and Evolution

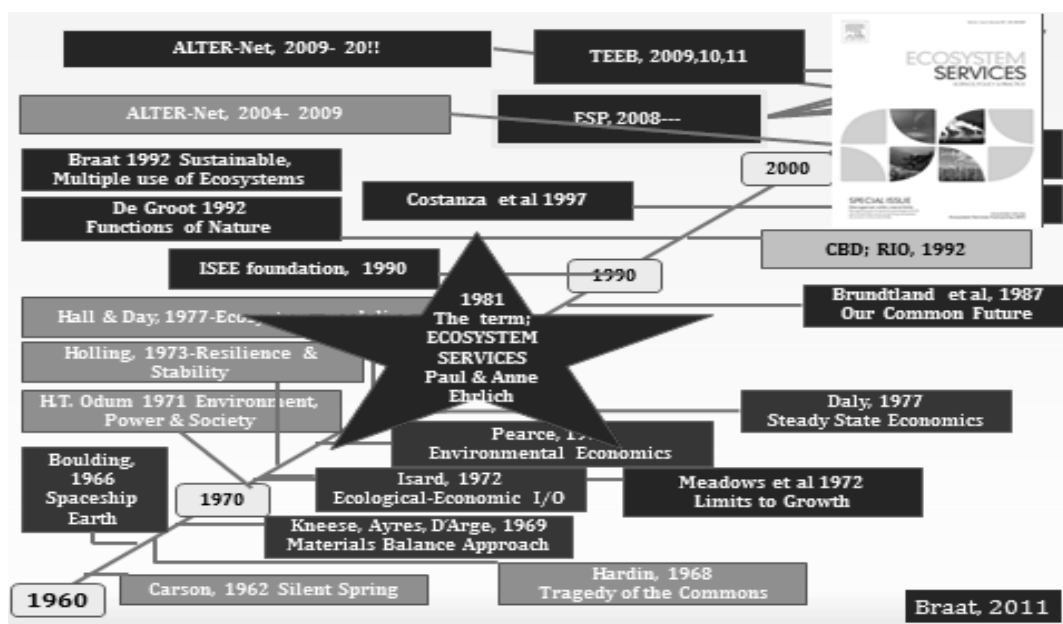
- ▶ Blank Slate Paradigm
 - ▶ All forms of (sustainable) cultures can be taught
- ▶ Neglects innate evolved behavior
 - ▶ Status, power, control for fitness and sexual selection
- ▶ Ingroups may help secure social control, also over our natural resources ("nurture nature" 😊)
- ▶ Biophilia & topophilia theory
 - ▶ inherited emotional affiliation of human beings to other living organisms and/or local place
 - ▶ mechanism of morality

Policies and scientific work

► Degradation of the environment, ecosystems and natural resources with major socio-economic effects

- Millennium Ecosystem Assessment (MEA)
- The Economics of Ecosystems and Biodiversity (TEEB)
- Intergovernmental Panel on Climate Change (IPCC)

Policies and scientific work



Policies and scientific work

- ▶ Decoupling natural resource use and environmental impacts from economic growth, in order to make progress towards a more sustainable economy (EU 2020 Strategies)
 - ▶ climate change mitigation and adaptation
 - ▶ green economy
 - ▶ sustainable use of natural resources

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Policies and scientific work

What are Parties doing to mitigate climate change?

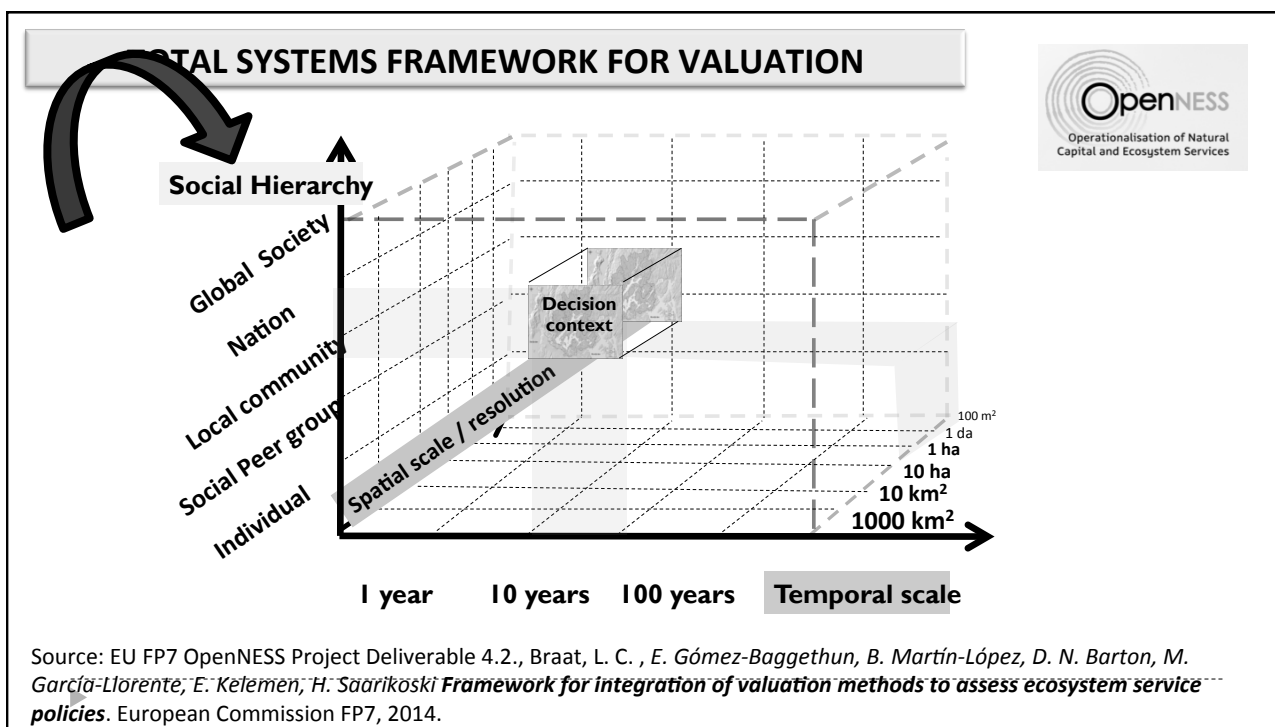
For developed countries, mitigation policies and measures have focused mostly on the sectors with the highest emissions, such as energy and transport, and have included steps such as more stringent emission reduction requirements and increased investments.

As a further step towards increased mitigation, the Kyoto Protocol operationalizes the Convention by committing industrialized countries to limit their GHG emissions. Market-based instruments, such as GHG emissions trading schemes, have also been used to complement regulatory and fiscal instruments.

More recently, under the Convention, developed countries have communicated quantified economy-wide emission targets for 2020 and are in the process of submitting intended nationally determined contributions (INDCs). In addition, Parties to the Kyoto Protocol adopted a second commitment period under the Kyoto Protocol.

Developing countries have been contributing to global mitigation efforts in several ways. The clean development mechanism (CDM) has been an important avenue of action for these countries to implement project activities that reduce



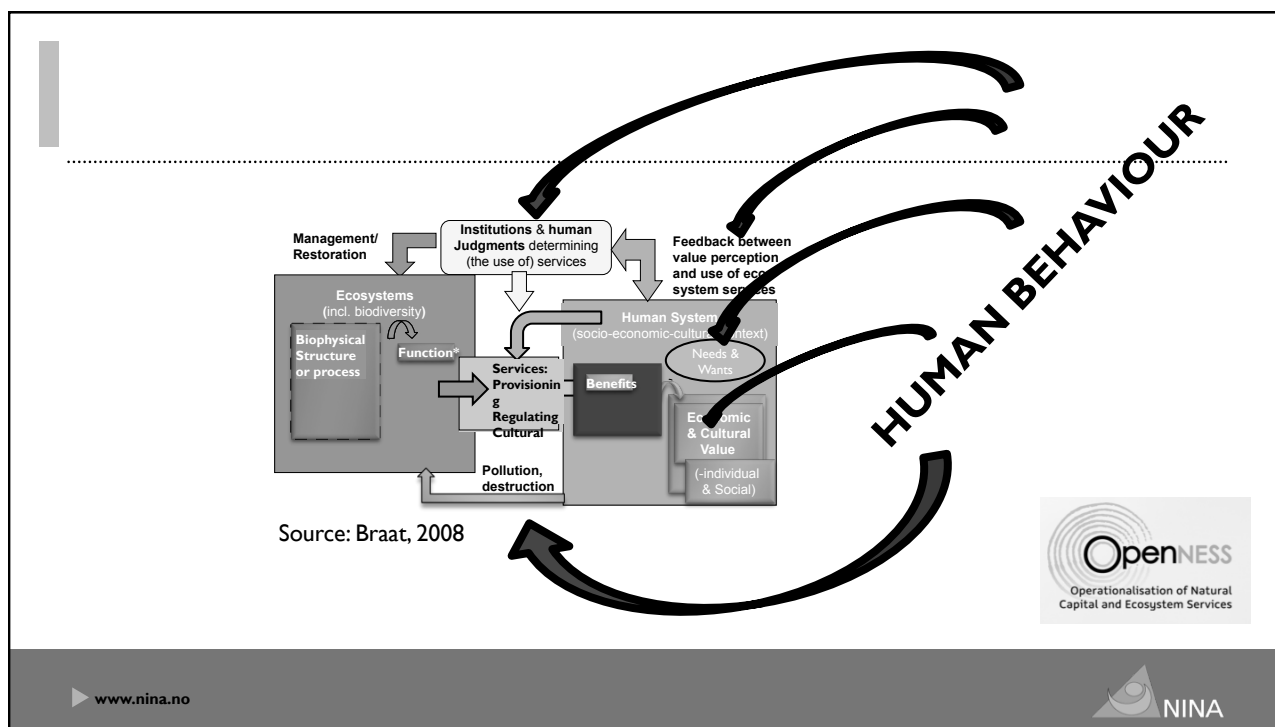


2. INTEGRATION ACROSS THE TYPES

value source		value production (with human inputs)	experience of value	value types		
NATURAL CAPITAL	ecosystem function	ECOSYSTEM SERVICES	BENEFITS (satisfaction of needs & wants)	ECONOMIC	CULTURAL	SOCIAL
BIOMASS, NUTRIENTS	PHOTOSYNTHESIS BIOMASS PRODUCTION	PROVISIONING: grain	SATISFACTION OF HUNGER & APPETITE	contribution to W&W: food	way of preparation	valued by more people/ shared value
BIOMASS, TREE STRUCTURE, LEAVES	CAPTURING POLLUTANTS	REGULATING: purification of air	SATISFACTION OF BREATHING NEED	contribution to W&W: healthy air	in landscape context	valued by more people/ shared value
SPECIES, STRUCTURAL DIVERSITY	COLOUR, SMELL, MOVEMENT	CULTURAL: information from forest	SATISFACTION OF INFORMATION NEEDS	contribution to W&W: education	inspiration, stress relief	valued by more people/ shared value

OpenNESS
Operationalisation of Natural Capital and Ecosystem Services

Source: EU FP7 OpenNESS Project Deliverable 4.2., Braat, L. C. , E. Gómez-Baggethun, B. Martín-López, D. N. Barton, M. García-Llorente, E. Kelemen, H. Saarikoski *Framework for integration of valuation methods to assess ecosystem service policies*. European Commission FP7, 2014.



Public goods and Ecosystem Services

A public good is a resource that is **non-excludable, non-rivalrous** and open to all in its consumption.

For example: **clean air, soil water storage that yields flood control, and beautiful views over a landscape.**

Maybe many, if not most, ES are public goods, but - due to privatisation or particular governance and management frameworks, some ES have been transferred to **private ownership and control.**

ES may be either **rival** (i.e. finite) or **non-rival** (e.g. not subject to physical consumption, or otherwise renewable), and either **exclusive** (e.g. if access is limited to certain groups) or **non-exclusive** (i.e. common pool resources).

Brown et al. 2007:

- **Rival, exclusive ES** that does not qualify as a public good: consumptive recreation, such as hunting or fishing, on a confined private property.
- **Non-rival yet exclusive ES**: Non-consumptive recreation opportunities (e.g. hiking or gardening) on an uncongested private property (i.e. not over-crowded)
- **Rival but non-exclusive ES**: renewable living resources harvested from the wild, such as fish or medicinal plants.

'common goods' = goods that are **rival and non-excludable** (such as fish stocks in an open ocean).

Public goods and Ecosystem Services

Some ES may be difficult to categorise, and may be considered either or both as public or common goods, **depending on particular access and use arrangements or different stakeholders' perspectives.**

For example: the supply of fresh water via aquatic ecosystems may be seen as a public good, however over-exploitation by one person or group in a discrete location may limit the availability of freshwater to other users at that location (making it a common good at that site or for those stakeholders).

The advantage of including Public goods into the Ecosystem Services concept

- Human well-being issues are often placed in the public domain – clarifying ES to the supply of needs to the public may help governments to be stronger in their argumentation **for safe guarding public goods.**
- Because of **market forces, privatisation and economic growth** the preservation of existing public goods (referring to natural resources as public goods) are often (deliberately or not deliberately –depending on the political settings) neglected or taken aside.

The advantage of including Public goods into the Ecosystem Services concept

- Consideration of public goods type related ES can give more insight into **use and non-use values, and of local vs. global benefits**, of ES, and enable a **more detailed understanding of pressures and of local responsibilities for management.**
- Highlighting the importance of **considering power relationships** in environmental policies may help **reducing social inequalities and conflicts.**

Challenges and opportunities from a behavioural point of view

- ▶ Reducing resource use and environmental impacts while satisfying human well-being is one of the greatest challenges in human history
- ▶ Free market economies take advantage of evolutionary traits such as fitness and mate choice
- ▶ Stimulate the behavior of overconsumption, greed and overexploitation, feeding the desired status-seeking behavior

Challenges and opportunities from a behavioural point of view

- ▶ There is a need for a transformation in how we value and interact with natural resources (real trees, water and wolves)
- ▶ But remember our every day life when it comes to our use of non-existing things

Challenges and opportunities from a behavioural point of view

- ▶ Overcoming the value paradox towards sustainable solutions need to recognize the **finite availability** of natural resources versus an free market economy based on an **infinite growth**



Challenges and opportunities from a behavioural point of view

- ▶ Although human universals not the cause of environmental problems, they may reinforce wasteful behavior!
- ▶ The pressure on the global environment necessitates re-evaluating the human-nature interrelationship
- ▶ Human universals may offer insight into the mechanisms behind overexploitation and sustainability

Challenges and opportunities from a behavioural point of view

- ▶ Impersonal capitalism triggers towards a self-interest desire for more goods, and away from striving for equity and sustainability

- ▶ **“Tragedy of the unmanaged commons”**
 - ▶ **overexploitation when individual benefits outweigh the (shared) costs for an individual behavior**

Challenges and opportunities from a behavioural point of view

- ▶ **Ingroup – outgroup behavioral strategies**
 - ▶ **degree of visibility and social control**
 - ▶ **reciprocal altruism and kin selection in small groups**

- ▶ **Game theory: humans are just and cooperative in the context of social control**

Challenges and opportunities from a behavioural point of view

- ▶ Sustainable futures demand a deeper understanding of value incorporating both human monetary (instrumental) as well as non-human natural (non-instrumental) values



▶ www.nina.no



Challenges and opportunities from a behavioural point of view

- ▶ It needs to be stressed that this requires a different ethical approach founded on human evolution and human behavioral ecology



Challenges and opportunities from a behavioural point of view

- ▶ More knowledge needed on:
 - ▶ The evolution of Rules and Norms
 - ▶ Adaptation through experiences
 - ▶ The emergence of Self-Organized Collective actions
 - ▶ The emergence of enhanced socially beneficial, cooperative behavior

Which variables affects the processes of teaching and evoking social norms; of informing participants about the behavior of others and their adherence to social norms; and of rewarding those who use social norms, such as reciprocity, trust, and fairness.

By Chief Seattle (1854)

“How can you buy or sell the sky, the warmth of the land ? This idea is strange to us.”

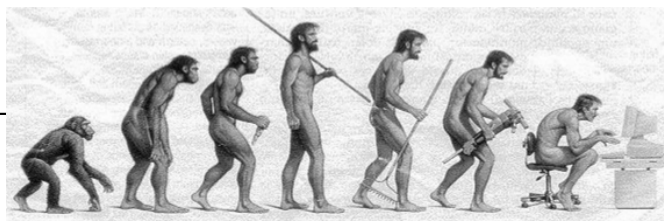
“If we do not own the freshness of the air and the sparkle of the water how can you buy them?”

By Aldo Leopold – A Sand County Almanac (1949)

“ A thing is right when it tends to preserve the integrity, stability, and beauty of the botic community. It is wrong when it tends otherwise.” (p.262)

By Sandel, M.J. (2012) What Money Can't Buy: The Moral Limits of Markets, Allen Lane

“ People are not allowed to sell their organs or their children. These have an intrinsic value that is beyond price.”



“ Everything is connected to everything” (G. H. Brundtland, 1987)

BUT REMEMBER

“Nothing in biology makes sense except in the light of evolution” (T. Dobzhansky, 1973)