

Cultural Theory of Worldviews

Attitudes of risk?

Implication for nature?

Compromise, Consensus, or
Complementarity?

Placing value on the environment

- Utilitarian – survival or economic
- Ecological – essential to larger life support systems
- Aesthetic – our appreciation of the beauty of nature
- Moral – environment has a right to exist

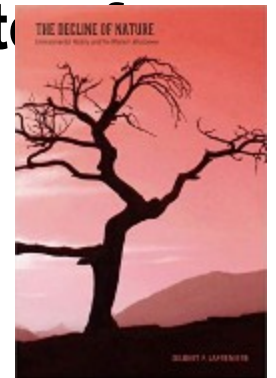


To what extent do our beliefs about the nature of reality, our worldview, affect the degree or intensity of our relationship with nature?



Attitudes toward nature implicit in all worldviews can have either a restraining or enhancing influence upon the tendency of human civilizations to despoil their natural surroundings (p. 137).

Human nature is not the same from society to society or from individual to individual, **nor is it a permanent attribute of *Homo sapiens*** (p.138).



Lafreniere G. 2007. The Decline of Nature : Environmental History and the Western Worldview

Different Perspectives of Nature

Everything is connected – environmental unity, balance of nature, events are directly and indirectly connected together.

Traditional cultures also feel this is beyond human understanding yet treat nature with respect in order to avoid adverse consequences.

Human ecology (systems ecology) studies the great chain of effects that reverberate through ecosystems and social systems, with explicit effort to identify and quantify the details of these connections.

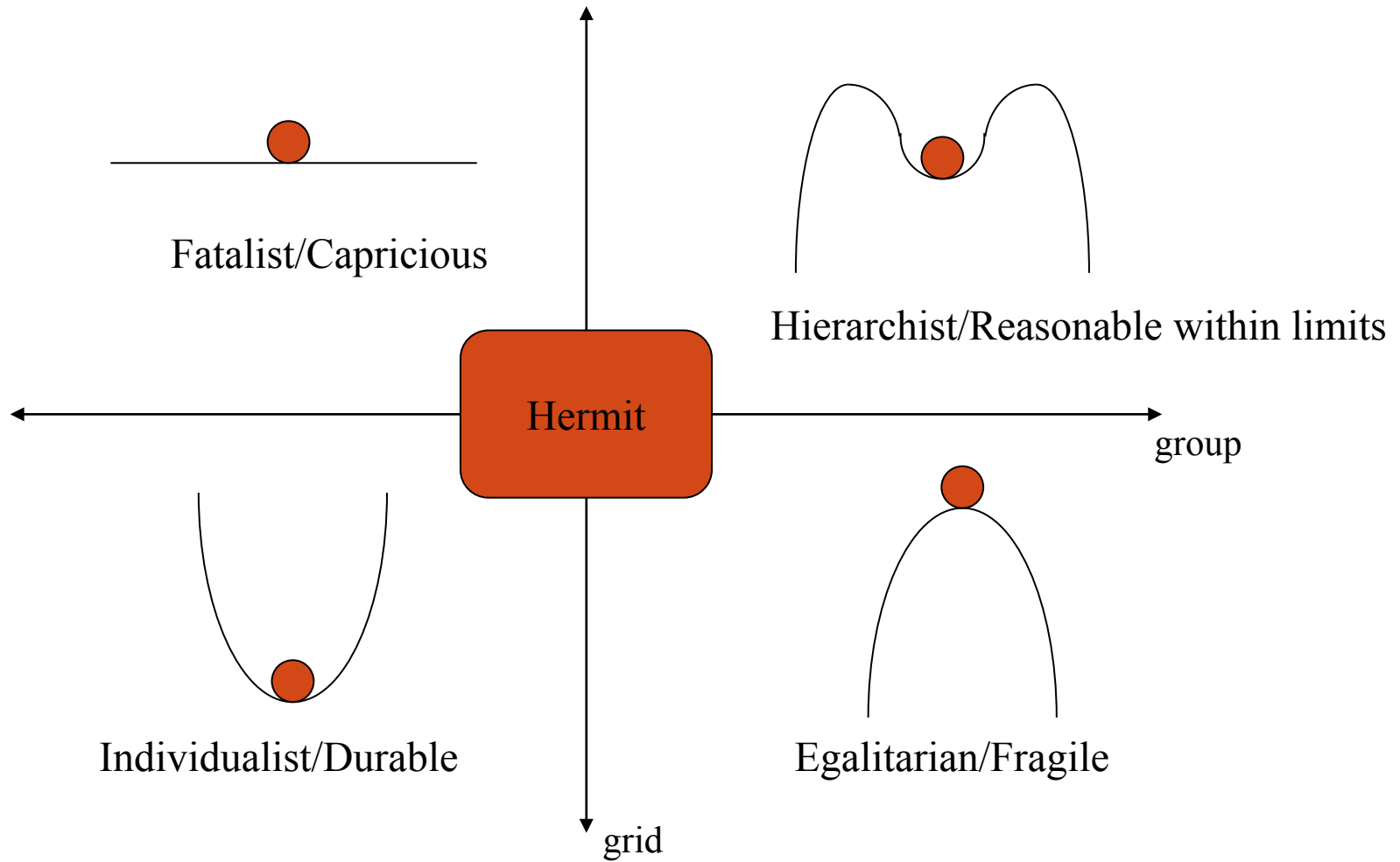
Cultural Theory is based on the hypothesis that one's world view shapes one's social relationships and perceptions, and that these social relationships contribute to one's world view (Douglas and Wildavsky, 1982, Thompson et al., 1990).

This positive feedback loop reinforces particular perceptions and cultural contexts.

Four Cultural Types/Solidarities

1. We do not need to worry about environmental problems; the environment is not easily disturbed. - DURABLE
2. Environmental problems will not easily run out of control, but we must not exceed limits. - REASONABLE WITHIN LIMITS
3. We have to be very careful with the environment; the slightest change may be catastrophic. - FRAGILE
4. We do not know whether environmental problems will aggravate or not. - CAPRICIOUS

Cultural Theory Solidarities (Thompson 1997)



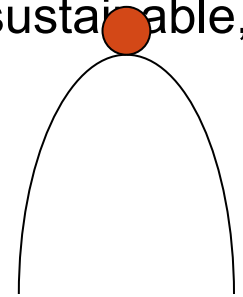


Individualist

Individualists' choices are unconstrained by society and lack close ties to other people. They value **individual initiative** in the **marketplace**, and fear threats like war that would hamper free exchange. The individualist view of nature is described as cornucopian or resilient. Thus, individualists embrace **trial-and-error**, as they have confidence that the system will fix itself in the end.

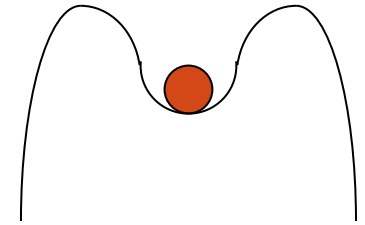
Egalitarian

Egalitarians live in voluntary associations where everyone is equal and the **good of the group comes before the good of any individual**. In order to maintain their solidarity, egalitarians are sensitive to low probability-high consequence risks (such as nuclear power), and use them to paint a picture of impending apocalypse. Egalitarians see nature as fragile. Thus egalitarians advocate the **precautionary principle** and cling to traditional ways of life that have proven to be sustainable, rather than risking disaster by trying new technologies.



Hierarchist

Hierarchist society has a well-defined role for each member. Hierarchists believe in the need for a **well-defined system of rules**, and fear social deviance (such as crime) that disrupts those rules. Hierarchists see nature as "perverse/tolerant": it can be exploited within certain limits, but if those limits are exceeded the system will collapse. They thus **rely heavily on experts**, who can identify those limits and establish rules to keep society within proper bounds.



Fatalist

Fatalists feel isolated in the face of an external world imposing arbitrary constraints on them. Thus, they feel that there is little they can do to control their situation, and resign themselves to **riding out whatever fate throws at them**. Because of their passive stance, fatalists are often excluded from Cultural Theory analyses.





FATALIST ACTORS
see no possibility
of effecting change
for the better.

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HIERARCHICAL ACTORS
are pro-control.
They talk of "wise guidance"
and are in favor of top-down
planning by government.

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CULTURAL THEORY argues that there are four types of worldviews.



INDIVIDUALIST ACTORS
are pro-market.
They call for deregulation,
for the freedom to take
risks, and for the explicit
recognition of trade-offs
among competing uses
of resources.

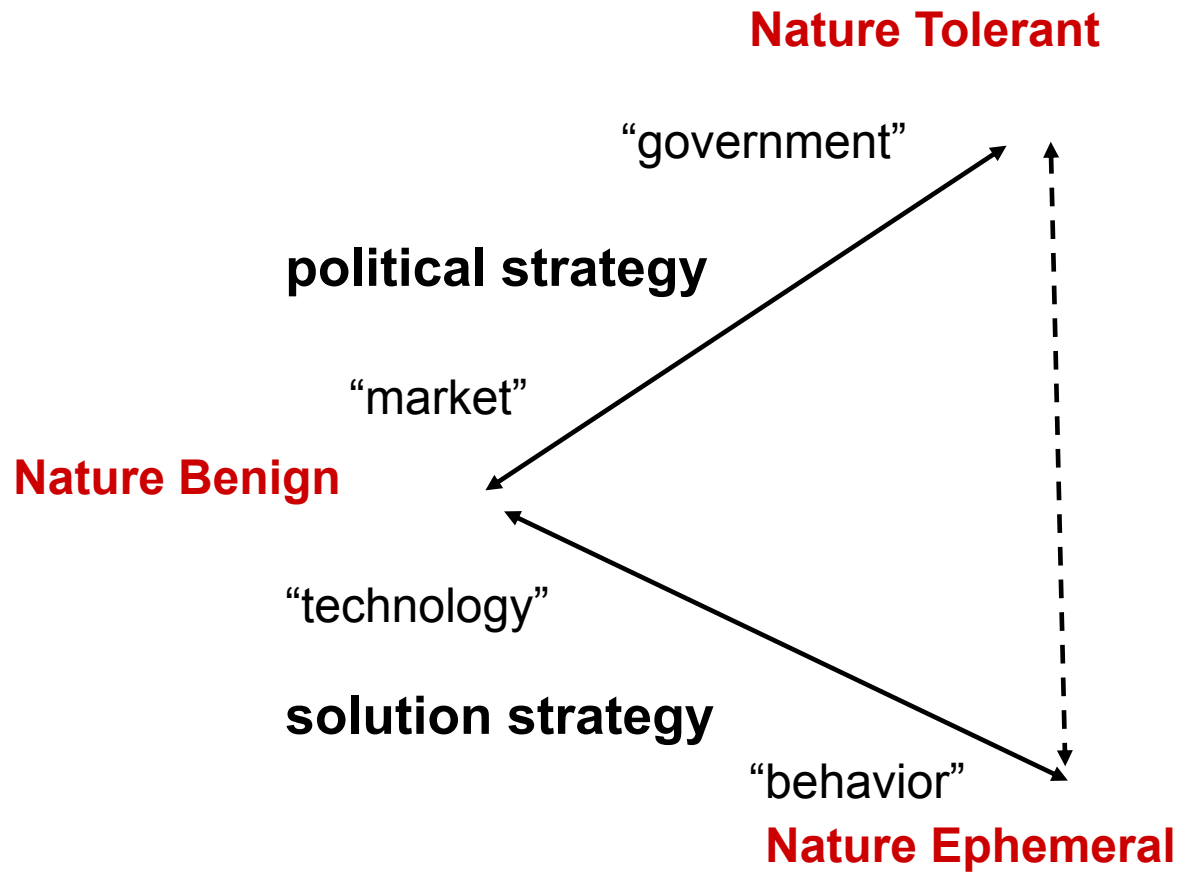
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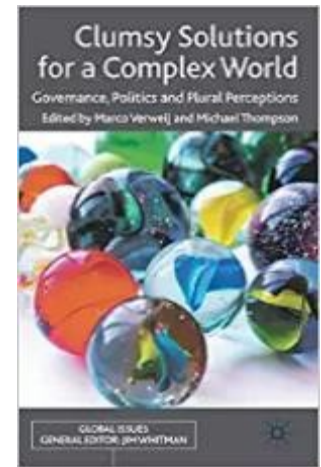


EGALITARIAN ACTORS
are deeply skeptical of both
the individualist notion
of trade-offs and the
hierarchical claim that
experts know best.
They argue for a more
holistic, moralistic, and natural
approach to management.

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	Not Manage needs	Manage needs
Not Manage resources	Fatalist (capricious)	Egalitarian (ephemeral)
Manage resources	Individualist (benign)	Hierarchist (perverse yet tolerant)





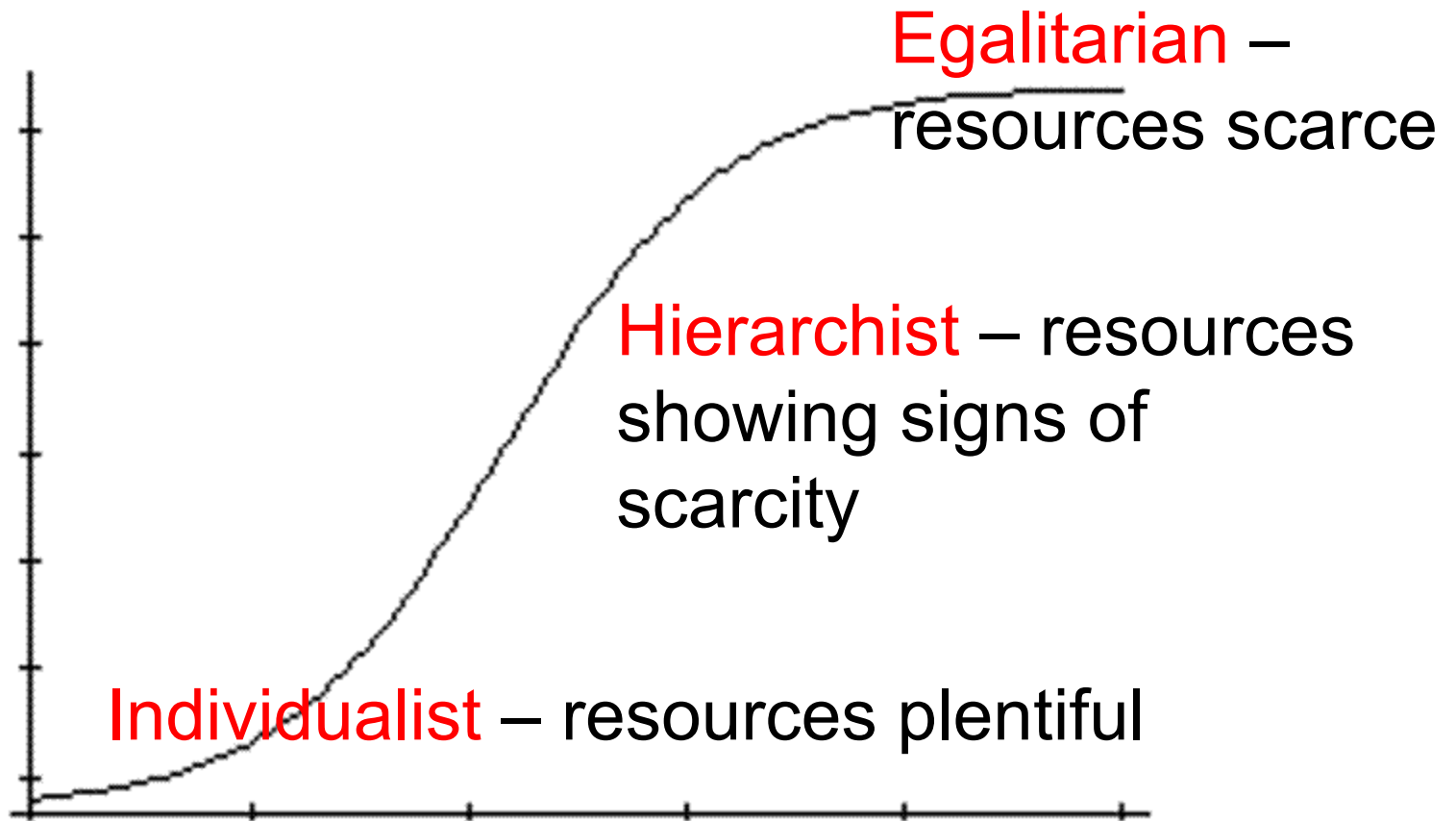
Conclusion

Cultural theorists maintain there is not one “correct” solidarity, but that they are complementary.

In light of dynamical systems, this could be analogous to early and late successional species.

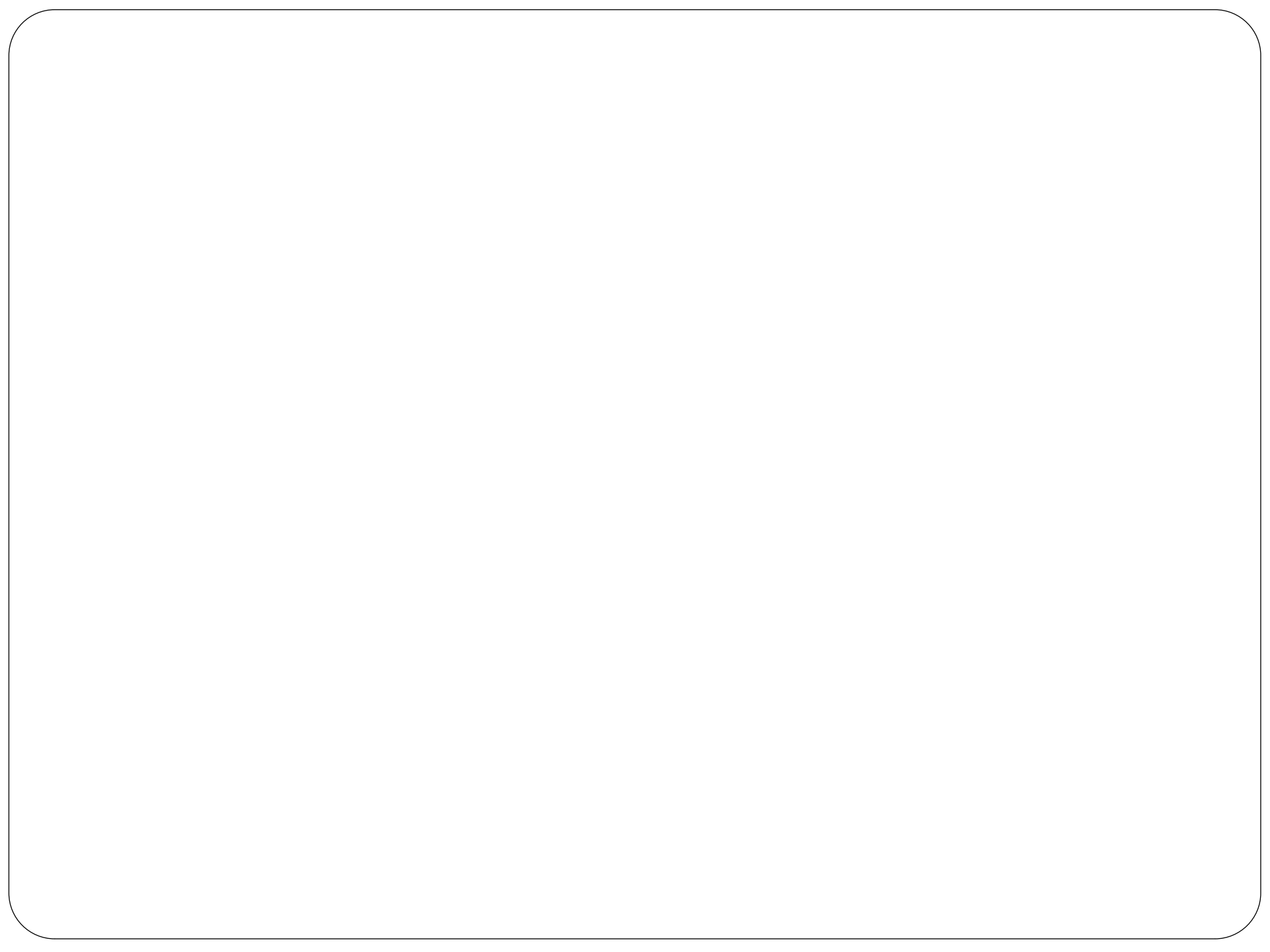
Each solidarity might play a role at a more central role at a certain time under certain

Dominance/Success of each worldview during stages of societal development



Fortunately, there are typically many different places and resources in the many niches that exist in a complex and diverse world, thus giving a role to each cultural bias.

How to make sure that continues?



Attitudes of Religions toward nature

Religion is a powerful way for a culture to organize its values and behaviors – offers moral codes about what is right and what is wrong

Particularly effective because they are reinforced by emotionally compelling beliefs, symbols and rituals.

Animism

Spirits are primitive explanations for natural processes;
passed down through oral traditions



Sun god, moon god, water
god, fertility god, harvest
god,...



Eastern Religions

Hinduism, Buddhism, and Taoism have similarities with spirit religions, but these are codified in writing.

People are part of nature with no special status.

For example, Buddhism – restraining desire is the key to happiness. Use of natural resources should be limited to meeting basic needs.

Re... the same place encourages one to
pr...





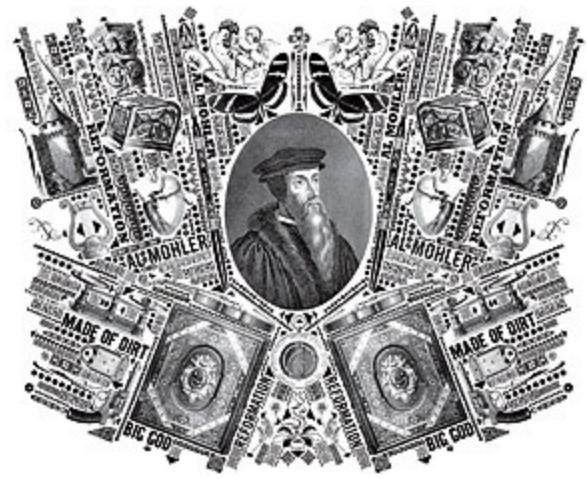
Confucianism, Taoism, and Buddhism are one, a painting in the litang style portraying three men laughing by a river stream, 12th century, Song dynasty. - en.wikipedia.org/wiki/Taoism

Western re
Began with
monotheism
“God created
part of nature

Nature is sacred
Humans are
Humans have
custodians/stewards of Earth



Punishment for those that do not behave
Scrovegni Chapel, Padua, Italy – Fresco by Giotto



About 400 years ago, science provided new explanations of nature as a machine (which it is not).

Religion merged with economics

Calvinism – chosen people (eternal life in heaven) should have material wealth on Earth.

Wealth acquired a positive spiritual value, even if gained through destructive exploitation of nature.

More recently many Christians are turning to earlier Christian values. The World Council of Churches promotes preservation and restoration of natural environment.

May 24, 2015

ENCYCLICAL LETTER

LAUDATO SI'

OF THE HOLY FATHER

FRANCIS

ON CARE FOR OUR COMMON HOME

www.youtube.com/watch?v=QLVdvLPeSKA

Note of caution about romanticizing nature and traditional social systems.

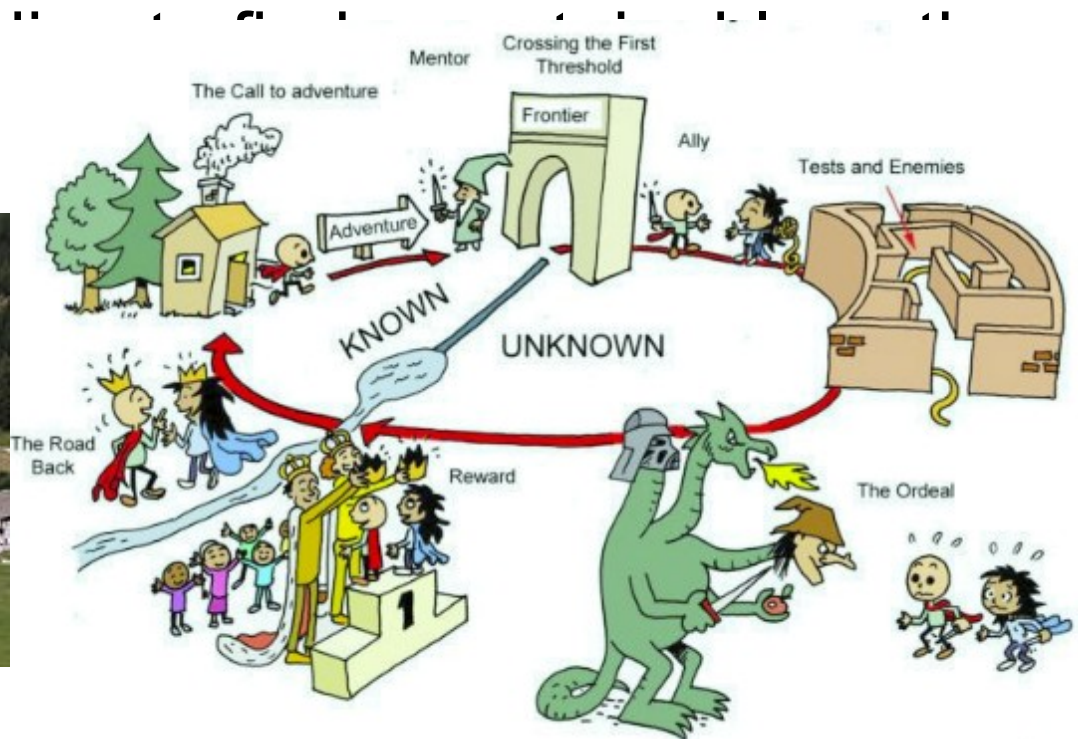
Not everything completely natural is good for humans. People have found it useful to modify ecosystems so that they function in ways which serve human needs.

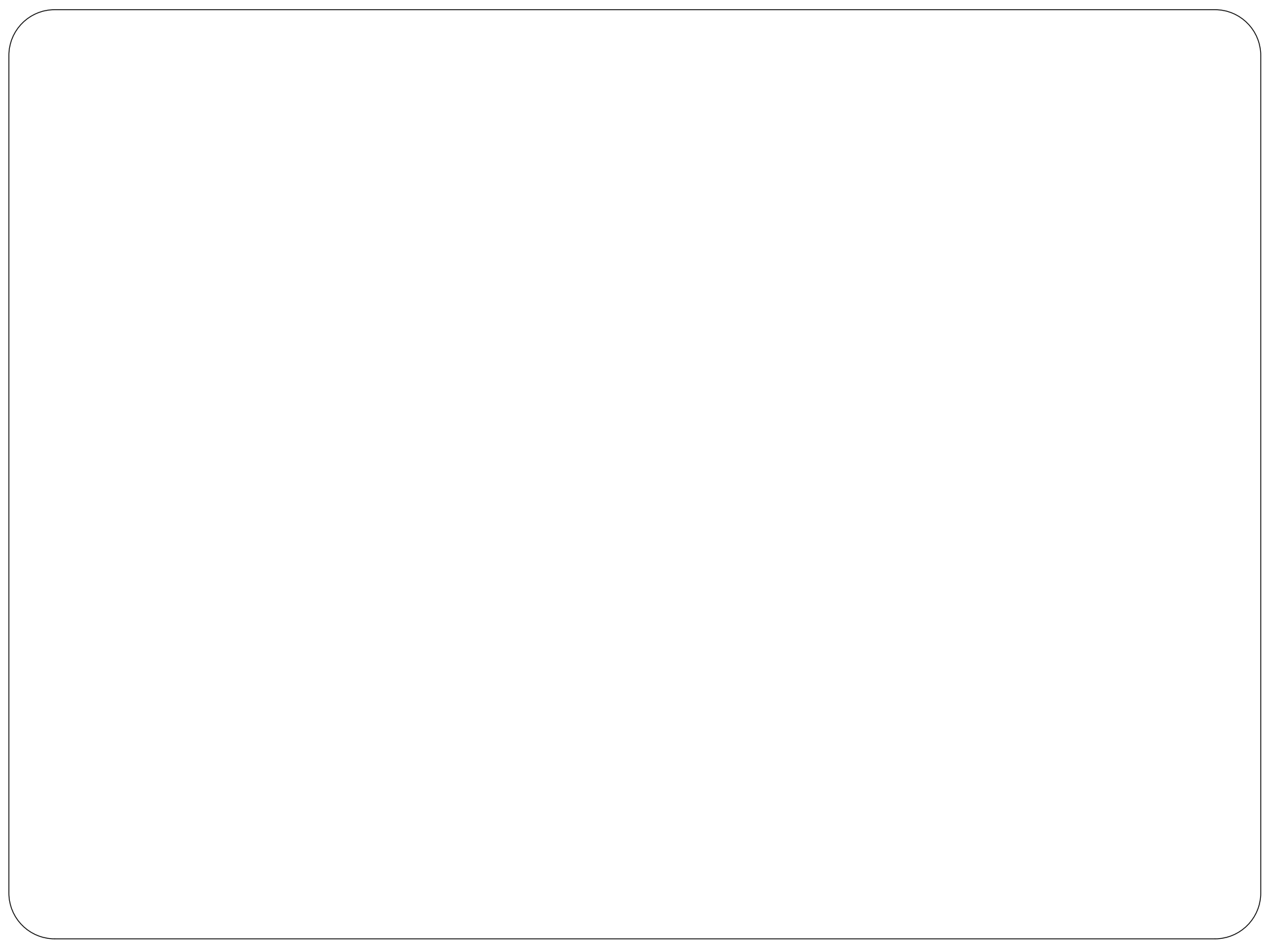
Some traditional societies have coevolved with their ecosystems. They are co-adapted and have inter-generational focus. But, not all traditional societies have healthy relationships with the environment.



Within these paradigms, there is variability of how we fit new knowledge into pre-existing structures. Cultures and their story tellers help us make sense of the world.

Challenge is to combine an ethical values and scientific understanding for society.





Ecosystem services – the benefits people get from nature

How do we value what we get from nature?

Ways of valuing nature

- Utilitarian
- Ecological
- Aesthetic
- Moral

Economists and politicians
mainly/only consider \$\$\$



Ecological Economists wanted to give credit to “Natural Capital”

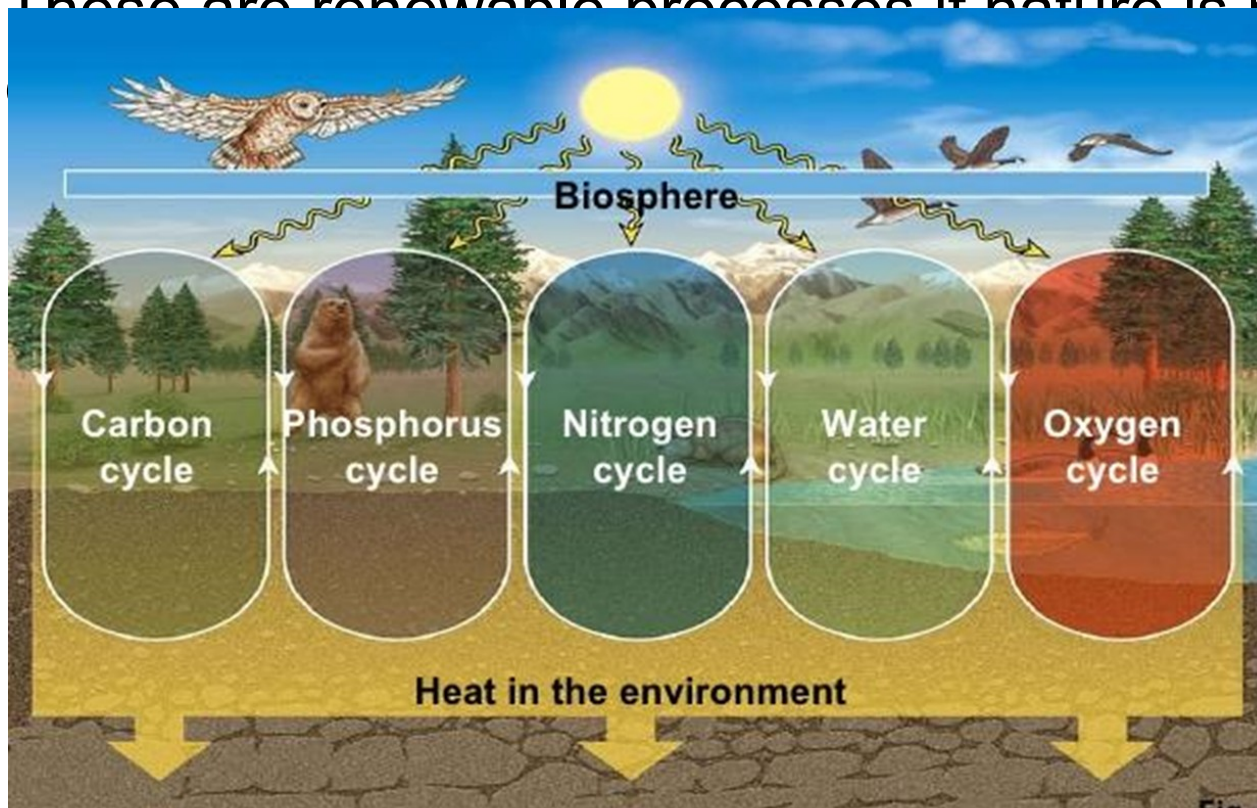
We get a lot of stuff from nature that we do not pay for

- oxygen
- clean air
- clean water
- soil formation
- climate regulation
- crop pollination
- decomposition of waste



Energy flow and material cycling

- Emergent properties of ecosystems that result from primary production of plants and consumption by heterotrophs
- These are renewable processes if nature is not



Energy is the ability to do work

Forms of energy: potential, kinetic, thermal, chemical, electrical, etc.

1st Law of Thermodynamics:

energy cannot be created or destroyed

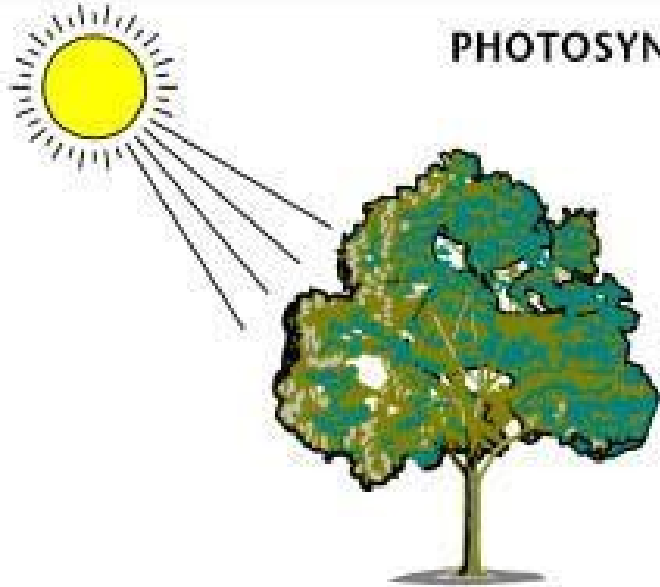
2nd Law of Thermodynamics:

energy goes from a high quality to a lower quality during each energy transformation; while energy is conserved, it's ability to do work decreases

Production and consumption

- Photosynthesis results in biological production
 - Building block
 - Source of energy for metabolic activity
- Respiration
- Different ecological roles emerge
 - Producers (plants)
 - Herbivores
 - Carnivores (predators)
 - Decomposers (scavengers)

Biological production is main service



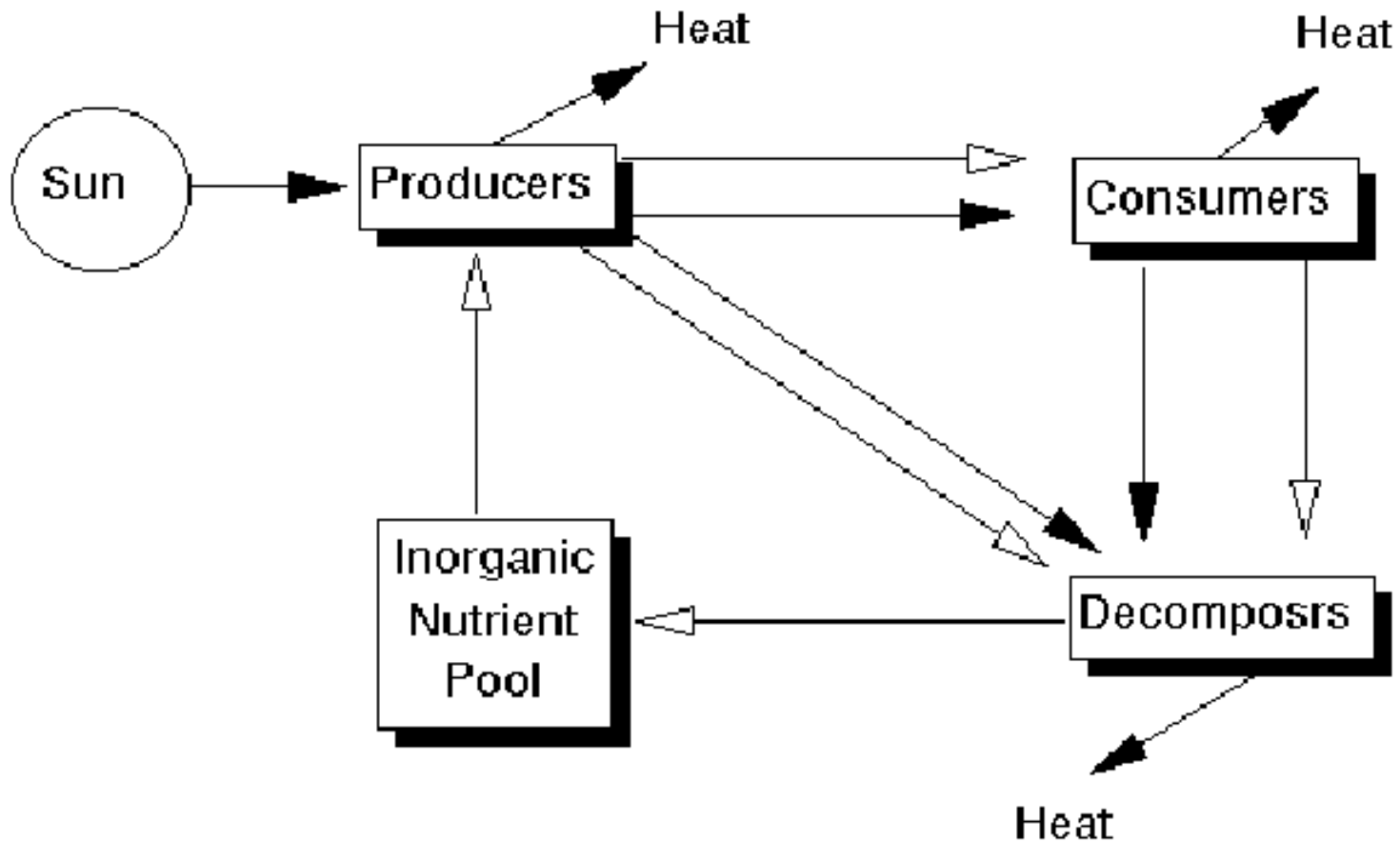
The diagram illustrates the process of photosynthesis. On the left, a yellow sun with radiating lines represents the source of radiant energy. Lines of light extend from the sun towards a green tree on the right, symbolizing the absorption of light energy by the plant.

PHOTOSYNTHESIS

In the process of photosynthesis, plants convert radiant energy from the sun into chemical energy in the form of glucose - or sugar.

water + carbon dioxide + sunlight → glucose + oxygen
 $6 \text{H}_2\text{O} + 6 \text{CO}_2 + \text{radiant energy} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$

Simplified Energy Flow in Food Web



Material cycling

- Biogeochemical cycles
- Some macronutrients are needed for life processes:
 - Carbon
 - Water
 - Nitrogen
 - Phosphorus
 - ...
- Tracing these cycles helps to understand how we have modified them

Carbon cycle - photosynthesis & respiration

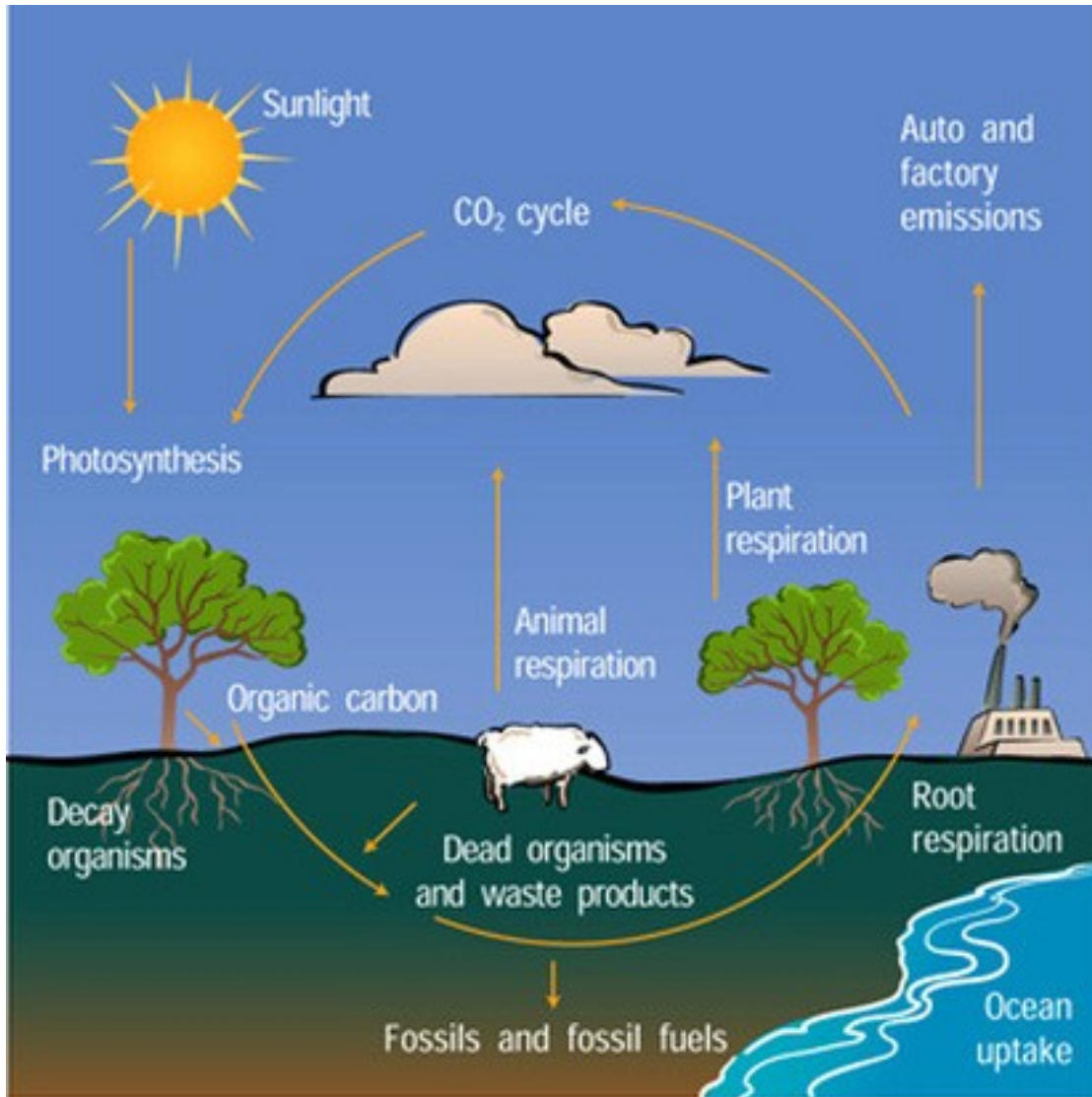
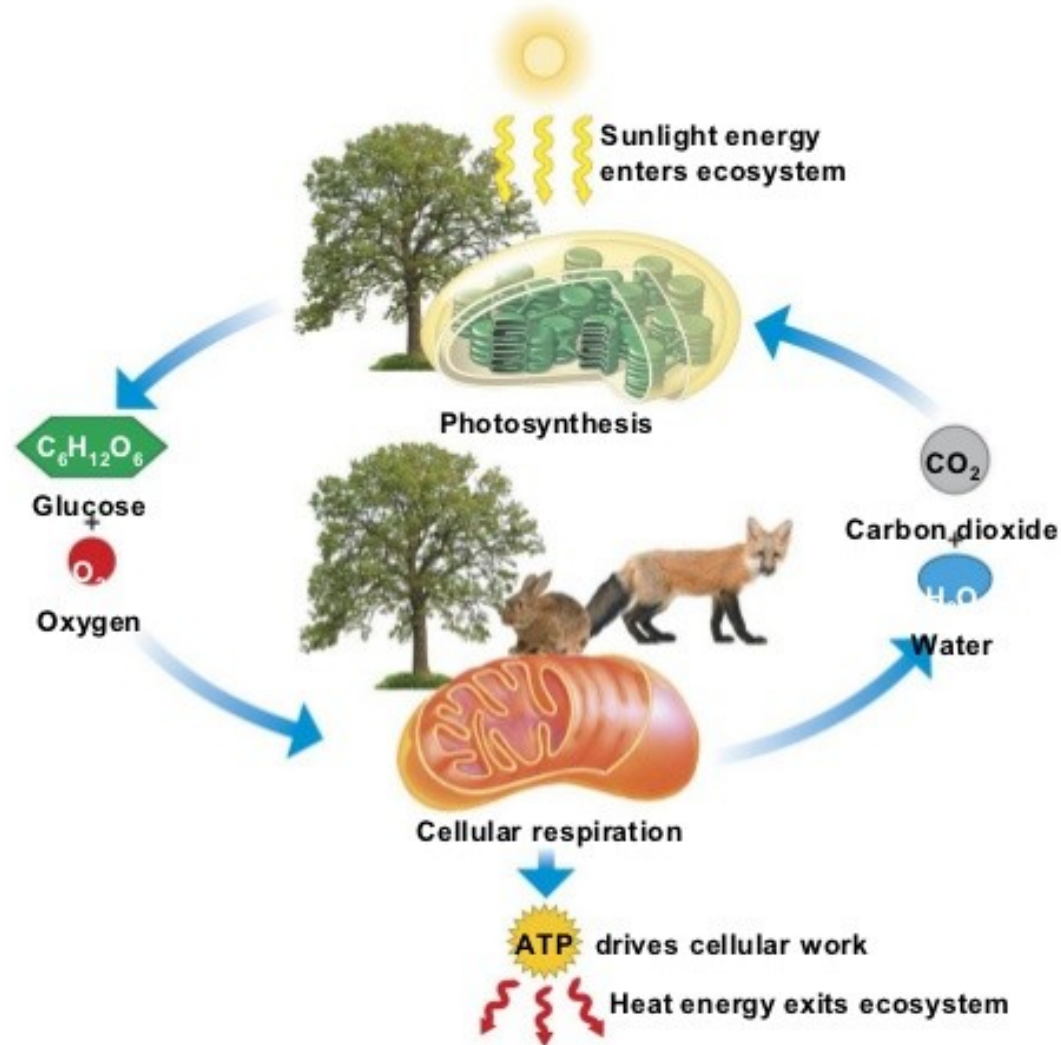


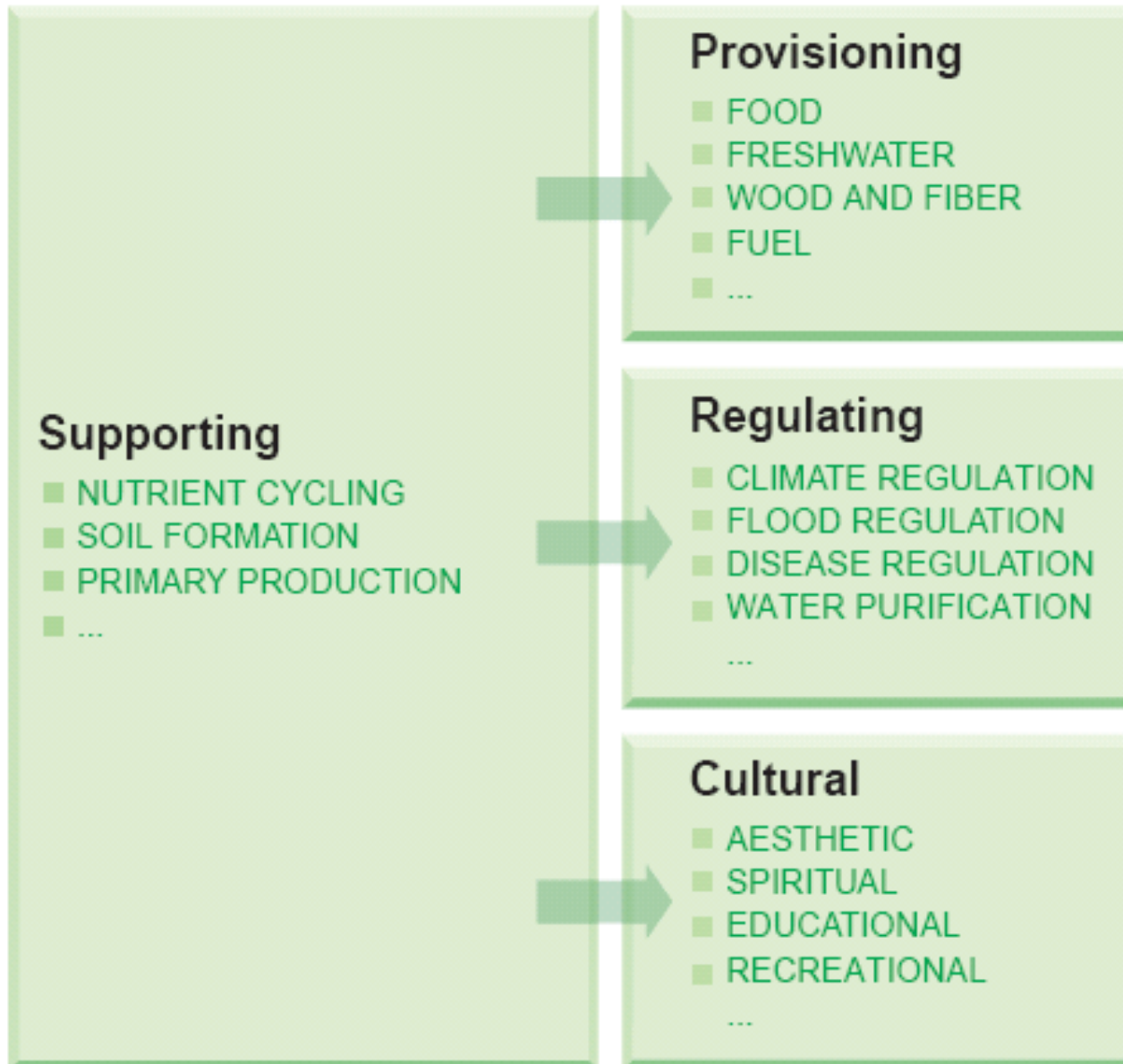
Fig. 6-02



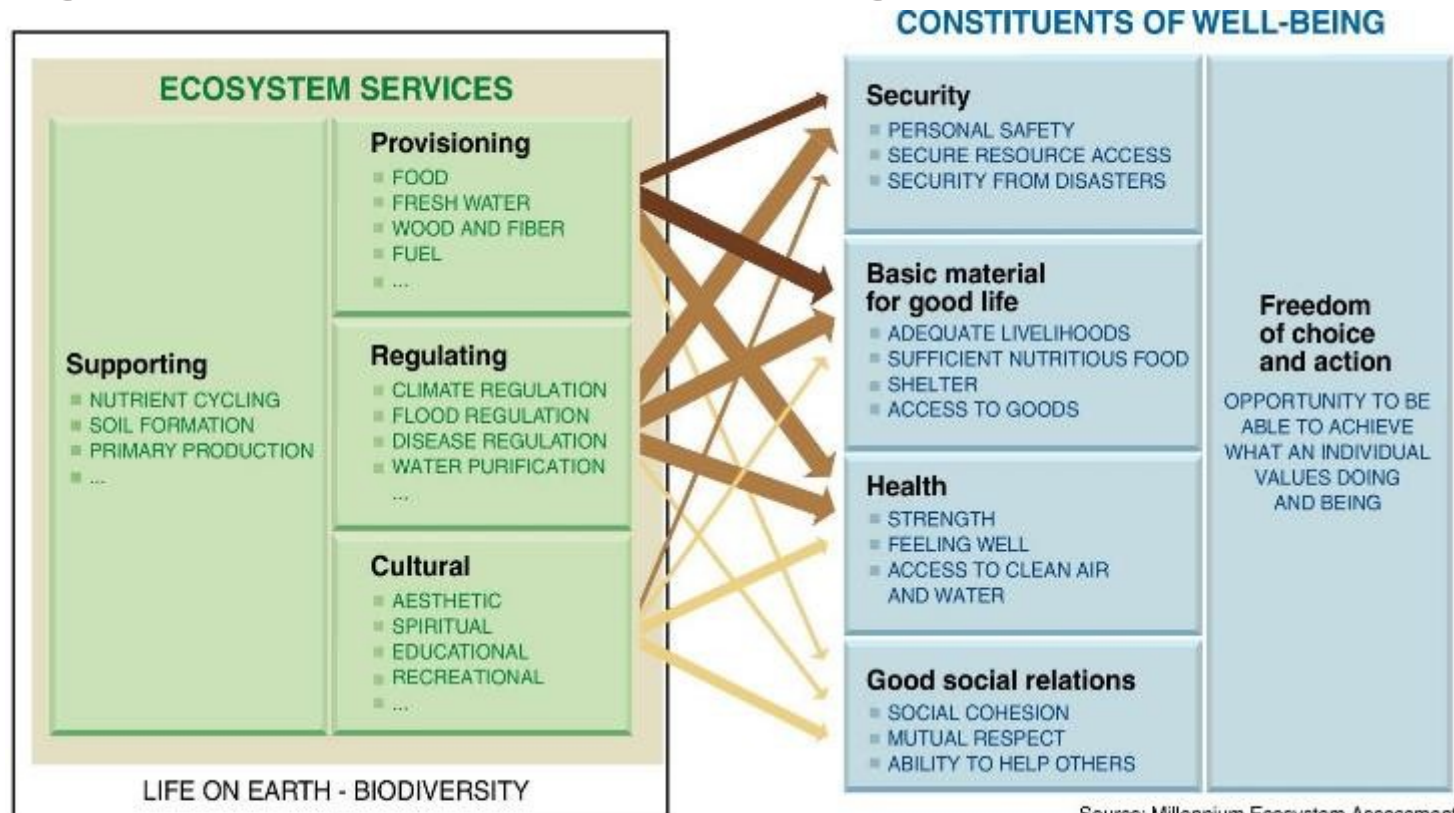
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The “stuff” of nature is reused - in the biogeochemical cycles;
the energy of nature flows through

Four categories of ecosystem services



Focus: Consequences of Ecosystem Change for Human Well-being



Source: Millennium Ecosystem Assessment

ARROW'S COLOR
Potential for mediation by socioeconomic factors

- Low
- Medium
- High

ARROW'S WIDTH
Intensity of linkages between ecosystem services and human well-being

- Weak
- Medium
- Strong

MA Framework

Human Well-being and Poverty Reduction

- Basic material for a good life
- Health
- Good Social Relations
- Security
- Freedom of choice and action

Indirect Drivers of Change

- Demographic
- Economic (*globalization, trade, market and policy framework*)
- Sociopolitical (*governance and institutional framework*)
- Science and Technology
- Cultural and Religious

Ecosystem Services

Ecosystem services
PROVISIONING
(e.g., food, water, timber)
REGULATING
(e.g., climate regulation, flood control)
CULTURAL
(e.g., spiritual, recreational, education)
SUPPORTING
(e.g., primary production, soil formation)
LIFE ON EARTH

Direct Drivers of Change

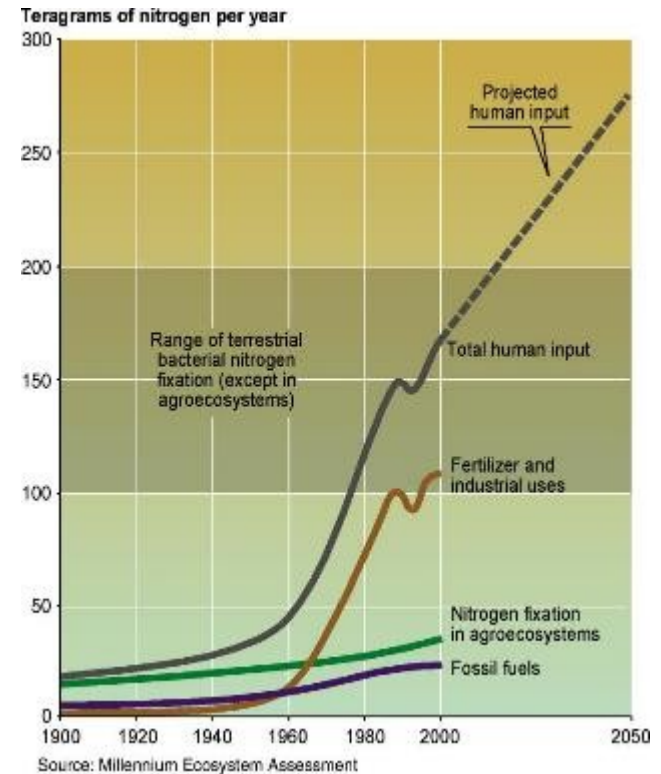
- Changes in land use
- Species introduction or removal
- Technology adaptation and use
- External inputs (*e.g., irrigation*)
- Resource consumption
- Climate change
- Natural physical and biological drivers (*e.g., volcanoes*)

Ecosystem Changes in Last 50 Years

- Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history
- More land was converted to cropland in the 30 years after 1950 than in the 150 years between 1700 and 1850
- 20% of the world's coral reefs and 35% of mangrove area were lost
- This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth

Unprecedented change: Biogeochemical Cycles

- Since 1960:
 - Flows of biologically available nitrogen in terrestrial ecosystems 2x
 - Flows of phosphorus 3x
- 60% of the increase in the atmospheric concentration of CO₂ since 1750 has taken place since 1959



Human-produced Reactive Nitrogen

Humans produce as much biologically available N as all natural pathways and this may grow a further 65% by 2050

Millennium Ecosystem Study

- Ecological changes have contributed to substantial net gains in human well-being and economic development
 - Since 1960, while population doubled and economic activity increased 6-fold, and food production increased 2 ½ times
- But these gains have been achieved at growing costs that, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems

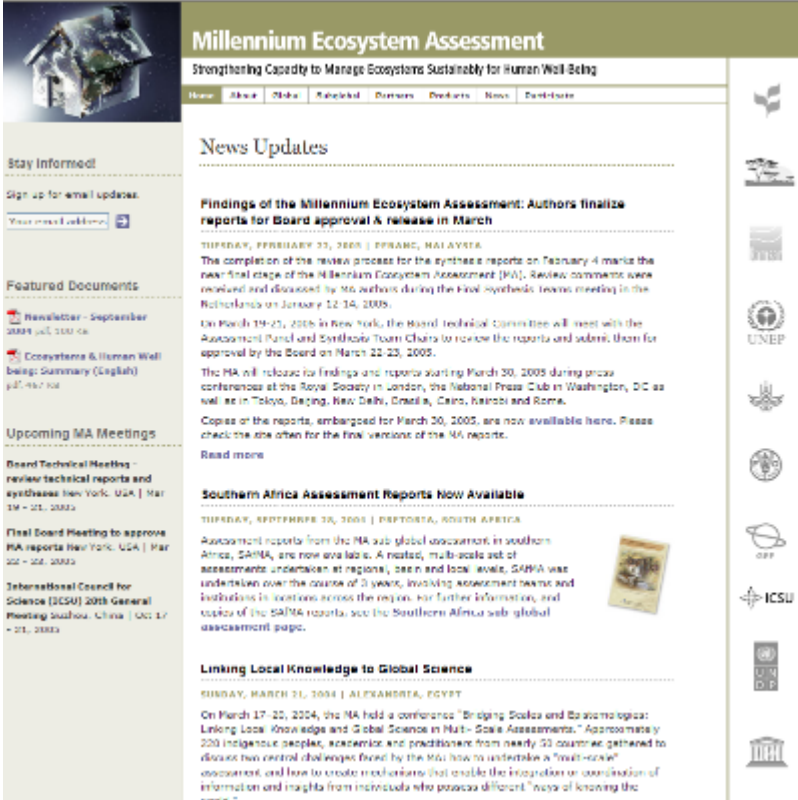
The degradation of ecosystem services represents loss of a capital asset

- Ecosystem services, as well as resources such as mineral deposits, soil nutrients, and fossil fuels are capital assets
- Loss of wealth due to ecosystem degradation is not reflected in economic accounts
- A country could cut its forests and deplete its fisheries, and this would show only as a positive gain in GDP without registering the corresponding decline in assets (wealth)
- A number of countries that appeared to have positive growth in net savings (wealth) in 2001 actually experienced a loss in wealth when degradation of natural resources were factored into the accounts

Visit the Millennium Ecosystem Assessment Website

www.MAweb.org

- All MA reports available to download
- Access to core data
- MA 'outreach' kit
 - Slides
 - Communication tools



The screenshot shows the homepage of the Millennium Ecosystem Assessment website. The header features the title "Millennium Ecosystem Assessment" and the subtitle "Strengthening Capacity to Manage Ecosystems Sustainably for Human Well-Being". Below the header is a navigation menu with links for Home, About, Links, Related, Partners, Products, News, and Feedback. The main content area is titled "News Updates" and contains several news items. The first item is "Findings of the Millennium Ecosystem Assessment: Authors finalize reports for Board approval & release in March", dated Thursday, February 25, 2005, from Penang, Malaysia. It describes the completion of the review process for the synthesis reports and the Board's meeting in New York. The second item is "Southern Africa Assessment Reports Now Available", dated Thursday, September 29, 2005, from Pretoria, South Africa, mentioning the availability of assessment reports from the SA sub-global assessment. The third item is "Linking Local Knowledge to Global Science", dated Sunday, March 21, 2004, from Alexandria, Egypt, describing a conference on linking local and global science. On the right side of the page, there is a vertical column of logos for various organizations, including UNEP, ICSU, and the World Bank. A small image of a book cover is also visible next to the Southern Africa assessment news item.