



## Nature and Society

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## Nature, Society and Technology

- Relationship between people and the environment is the central topic of geography
- Nature is both a physical realm and a social creation
- Social ideas of nature present today



## Nature, Society and Technology

- Explore the ways that society has used technology to transform and adapt to nature
- Human and environmental impacts of the technological adaptations



## Nature, Society and Technology

- **Nature**
  - Social creation as well as the physical universe that includes human beings
  - Is not only objects, it is the reflection of society in that philosophies, belief systems, and ideologies shape the way people think about nature and the way they deal with it



## Nature, Society and Technology

- **Society**
  - Sum of inventions, institutions, and relationships created and reproduced by human beings across particular places and times



## Nature, Society and Technology

- Two-way relationship between nature and society
  - Society shapes people's understandings and uses of nature
  - Nature shapes society
  - Mutual relationship between society and nature is mediated through technology
  - The amount of shaping by society is dependent to a large extent on the state of technology



## Nature, Society and Technology

- **Technology**

- Physical objects or artifacts, activities or processes, and knowledge or know-how
- Affects the environment in three ways:
  - Through the harvesting of resources
  - Through the emission of wastes in the manufacture of goods and services
  - Through the emission of wastes in the consumption of goods and services



## I=PAT

- Attempt to conceptualize the relationship between social changes and environmental changes
- attempts to describe the role of multiple factors in determining environmental degradation
- **I=PAT**
  - I = Impact on the Earth's resources
  - P = Population
  - A = Affluence (level of consumption of the population)
  - T = Technology factor (processes used to obtain resources and transform them into useful goods and wastes)



## Nature as a Concept

- Two Models of Nature-Society Relationship
  - Environmental Determinism
  - Cultural Determinism



## Nature as a Concept

- Environmental Determinism
  - Nature limits or shapes society through its power
- Cultural Determinism
  - Society also shapes and controls nature, largely through technology and social institutions



## Transformation of the Earth by Ancient Humans

- **Paleolithic Impacts**

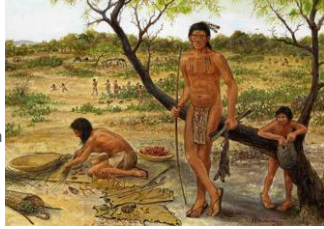
- Use of chipped stone tools
- Hunting and gathering
- Use of fire
  - For cooking and burning the habitat of game animals
  - Caused destruction of floral and faunal species, soil erosion, siltation, flooding



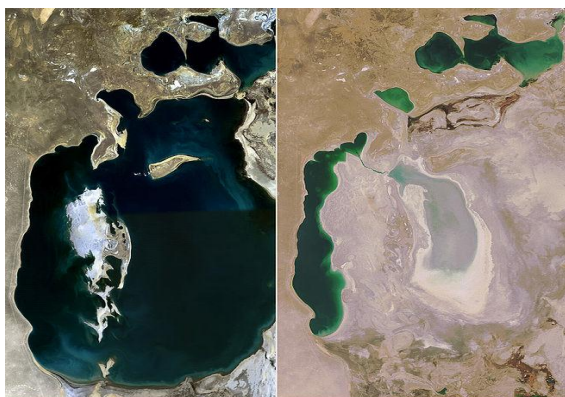
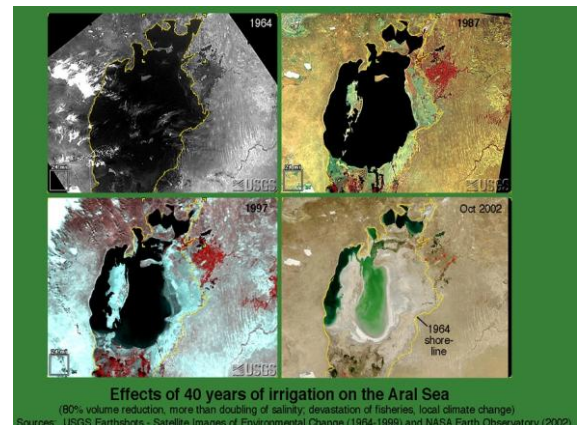
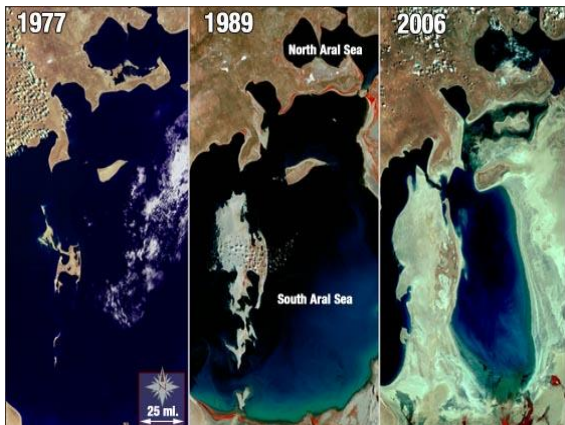


### • Neolithic Impacts

- Domestication of plants and animals
  - Simplification of the ecosystem
  - Increased production of food that improved health and increased human population



- Settlements had to be supported through irrigation, which led to salinization of the land and siltation of rivers
- Mesopotamian, Mayan and Anasazi civilizations
  - Perished because of environmental mismanagement
- Modern day example of salinization
  - The Aral Sea



### • European expansion

- Development of science using nature detached, mathematically constructed concepts
- Embracing of Judeo-Christian beliefs
- Population increased from 36M in 1100 to 80M in 1300
- Forests reduced from 90% to 20%



## European Expansion and Globalization

- Caused great losses in human life in the New World through transported diseases that caused **virgin soil epidemics**
  - Conditions in which the population at risk has no natural immunity or previous exposure to the disease
- **Columbian Exchange**
  - Intervention between the Old and New Worlds, starting with the voyages of Columbus



## European Expansion and Globalization

- **Columbian Exchange**
  - Transferred the following diseases:
    - Small pox
    - Measles
    - Chicken pox
    - Whooping cough
    - Typhus
    - Typhoid fever
    - Bubonic plague
    - Cholera
    - Scarlet fever
    - Malaria
    - Yellow fever
    - Diphtheria
    - Influenza



## Old World Plants and Animals in the New World

- **Ecological imperialism**
  - The introduction of exotic plants and animals into new ecosystems crowded out the less hardy species
    - Dandelion
    - Thistle
    - Starling
  - Corn, cocoa, tomatoes, potatoes, tobacco, cotton



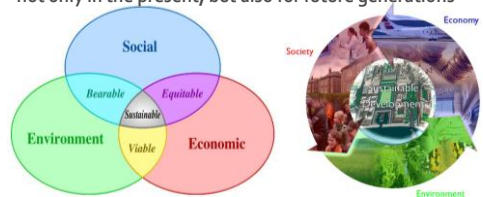
## Nature as a Concept

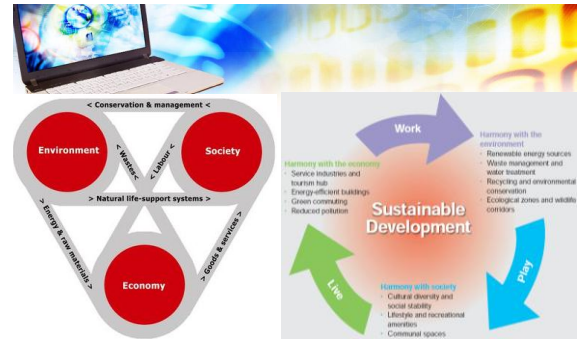
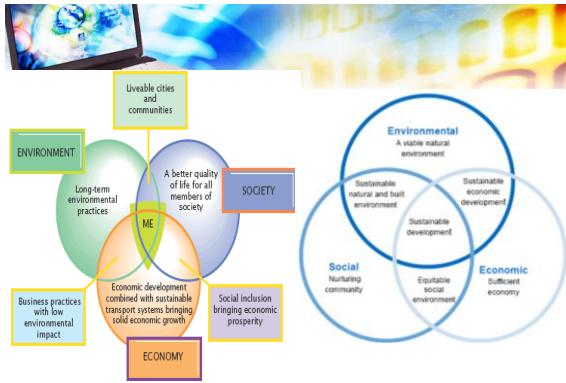
- First Earth Summit (1972)
  - Focused on local pollution issues such as air and water pollution
- Second Earth Summit (1992)
  - Focused on ensuring a sustainable Earth future through treaties on global issues such as climate change and biodiversity



## Nature as a Concept

- Sustainable Development
  - pattern of resource use that aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for future generations





- Renewed interest in nature-society relationship is the result of the persistence and large number of environmental crises

- Greeks – man should control and rule over nature (Prometheus)
  - Nature and human beings are two separate and non-interacting entities
- Judeo – Christian ethic
  - Nature was created by God and is subject to man in the same way a child is subject to parents
    - Genesis 1:28



- Genesis 1:28
  - <sup>28</sup> God blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground."
    - NIV

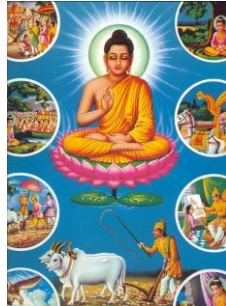
- Taoist perspective
  - Nature has intrinsic value
  - Should be valued for its own sake, not for how it might be exploited
  - Stresses harmony with nature



## Religious Perspectives on Nature

### • Buddhist perspective

- Everything is part of a natural complex and dynamic totality of mutuality and interdependence
- It is man's duty to care for nature



## Religious Perspectives on Nature

### • Islamic perspective

- Humans are sovereign over creation
- Authority over nature is given by Allah, not as an absolute right but as a test of obedience, loyalty and gratitude to Allah
- Abuse of the Earth is opposed to the will of Allah
- Stewardship of it shows respect for the will of Allah



## Religious Perspectives on Nature

### • Hindu perspective

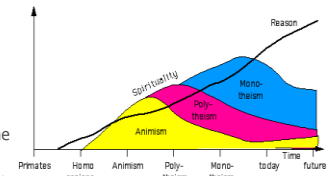
- Mother Earth who nourishes human beings
- Human beings should replenish and protect nature
- Ahimsa – literally the avoidance of violence



## Religious Perspectives on Nature

### • Animistic perspective

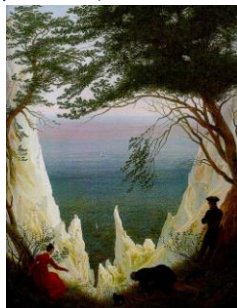
- Natural phenomena, both animate and inanimate possess indwelling spirits or consciousness
- Humans, nature and the supernatural are interrelated and share a sense of kinship



## Environmental Philosophies and Political Views

### • Romanticism

- Interdependence and relatedness between mankind and nature
- All creatures are infused with divine presence that command respect



## Environmental Philosophies and Political Views

### • Transcendentalism

- Person attempts to rise above nature and the limitations of the body to the point where the spirit dominates the flesh
- Mystical and spiritual life replaces a primitive and savage one
- "We will walk on our own feet; we will work with our own hands; we will speak our own minds ... A nation of men will for the first time exist, because each believes himself inspired by the Divine Soul which also inspires all men."





**Conservation**

- Natural resources should be used wisely
- Society's effects on the natural world should represent stewardship and not exploitation
- Sustainable development
- Sierra Club, Greenpeace, Haribon
- "Conservation means the greatest good to the greatest number for the longest time."—Pinchot



**Preservation**

- Certain habitats, species, and resources should remain off-limits to human use
- Regardless of whether the use maintains or depletes the resource in question
- For future generations

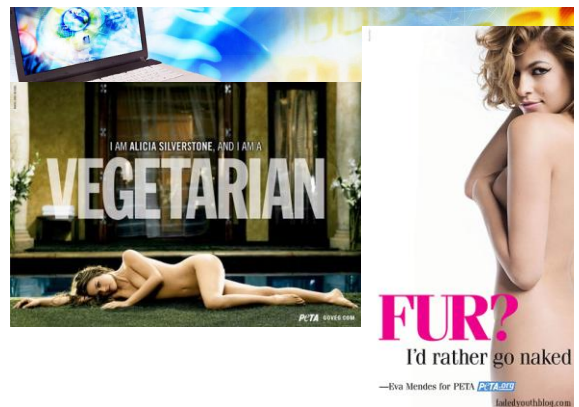
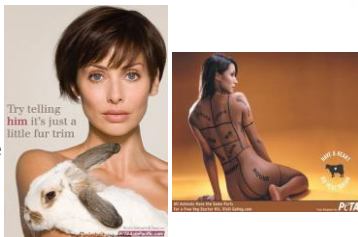


- Take the view that nature is as much a physical universe as it is a product of social thought
  - Environmental ethics
  - Ecofeminism
  - Environmental Justice
  - Deep Ecology



**Environmental Ethics**

- Prescribes moral principles as guidance for our treatment of nature
- Animate and inanimate components of the Earth's surface have rights just like humans





#### • Ecofeminism

- Patriarchal ideology is at the center of our present environmental malaise
- Patriarchy equated men with nature, it has enabled the subordination and exploitation of both



#### • Deep Ecology

- All things are internally related
- Approach to nature revolving around two key components:
  - Self realization
    - Recognition that we are part of the non-human world
  - Biospherical egalitarianism
    - The biosphere is the central focus of all life and that all members of nature, human and non-human, deserve the same sort of respect and treatment
- Would enable society to treat the non-human world with respect and not simply as a source of raw materials for human use



#### • Industrialization and Urbanization

- Revolutionized modern life and effected far-reaching ecological changes
  - Energy use and land use
- Use of inanimate energy (coal)
- Use of machines (mechanization)
- Development of the factory system (mass production)



#### • World's energy sources:

- Renewable
  - Solar, hydroelectric, wind, geothermal, tidal, power
- Non Renewable
  - Oil, coal, natural gas, nuclear fuels
- Present consumption of energy:
  - 35% - oil, 24% - coal, 18% - gas, 6% - hydropower, 5% - nuclear power, 12% - biomass
- Affluent regions of the world far outstrip peripheral regions in terms of energy consumption



#### • Energy conversion process:

- Discovery
- Extraction
- Processing
- Utilization
- Impacts upon the physical landscape





## Impact of Energy Needs on the Environment

### • Effects on the Environment:

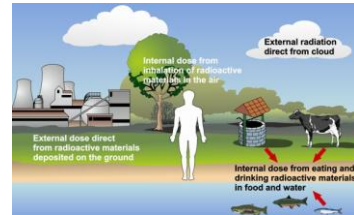
- Loss of vegetation and topsoil
- Erosion
- Water pollution
- Acid and toxic drainage
- Release of harmful chemicals in the atmosphere
- Acid rain
- Oil spills kill flora and fauna
- Oil drilling cause well explosions and fires
- Gas leakages
- Air pollution
- Forest denudation
- Changes in downstream flow



## Impact of Energy Needs on the Environment

### • Effects on the Environment:

- Gas explosions
- Nuclear accidents (Windscale, Three Mile, Chernobyl)



## Impact of Land Use Change on the Environment

### • Land Classifications:

- Forest
- Cultivated land
- Grassland
- Wetland
- Settlement areas



## Impact of Land Use Change on the Environment

### • Land Use change occurs in two ways:

- Conversion or the wholesale transformation of land from one use to another
- Modification or the alteration of existing cover
  - Forested area of the world has been reduced by about 8M km<sup>2</sup>
  - Philippine forest cover went from 97% before the Spanish rule, currently only 17% of forest cover is left



## Impact of Land Use Change on the Environment

### • Ill effects of deforestation:

- Loss of biodiversity
- Loss of potential compounds in a large gene pool that could have medicinal value
- Destabilization of oxygen and carbon dioxide cycles of the forests
- Loss of sustainable resources like fuel, timber and forest products
- Soil erosion



## Impact of Land Use Change on the Environment

### • Ill effects of deforestation:

- Siltation of rivers
- Loss of climatic moderating effects of trees
- Disturbance of the regulated flow of underground water to the lowlands
- Flooding in the lowlands
- Loss of property, destruction of crops, loss of lives



- **Grasslands**

- Used as rangeland or pasture of animals for meat production
- Parts were former rainforests
- Converted into settlements
- Use for grazing that has resulted to desertification
  - Degradation of the land cover and damage to the soil and water in grasslands and dry regions
  - Resulting in the formation of deserts



- **Wetlands**

- Swamplands, marshes, bogs, peat lands, and shores of lakes, rivers, oceans and other water bodies
- Food production, biodiversity preservation, climate moderation, source of industrial, domestic and irrigation water, means of transportation
- Drained and filled for urban and agricultural uses



- Global scope of environmental problems
- Costs have accrued disproportionately to the poor of the peripheral regions
- **Environmental Justice**
  - Growing political consciousness that the world poor's immediate environment is far more toxic than wealthier neighborhoods
  - Struggles are not even quality-of-life issues but issues of sheer economic and physical survival