Lesson 3: Human History I

Lesson Overview

- Origins of the Species
- Basic Requirements
- Population Growth
  - Hunting & Gathering
  - Agriculture

In the beginning . . .
Life...

Requirements for Survival
- Food
- Water
- Air
- Habitat

Human Evolution

Human requirements for Survival
- Air
- Food
- Water
- Habitat (Shelter ?)

World Population Trend
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Population Hazards

- Combat
- Vectorborne Diseases
- Periodic Famine
- Nutritional Deficiencies
- Contagious (Crowd) Diseases
- Industrial Chemical Toxins
- Over-nutrition

Homo sapiens appear

Towns & Cities appear

Industrial Revolution

Source: McMichael AJ. Planetary Overload, 1993

Population Hazards

Hunting & Gathering

- Subsistence
- Hunting & gathering lifestyle provides
  - Limited diet
  - Small bands
  - Limited range --
    - But the range could change due to environmental or other pressures

Animal Husbandry

- Domestication of valuable species
- Close relationship between humans and their animals
- Food preparation and storage becomes an issue

ENVIR 202: Population & Health
**Early Agriculture**

- Supported larger populations??
- Vulnerability of food supplies
- Water supplies
- Sewage disposal
- Solid waste disposal

**Cooperative Labor**

- An assured food supply leads to:
  - Larger populations possible
  - Specialization
  - Organization of society
  - In turn leads to . . .

**Development of Cities**

- New Problems with
  - Food Supplies
  - Water Supplies
  - Wastewater treatment/disposal
  - Garbage disposal
Trade

- Links previously unlinked peoples
- Leads to Trade Routes
  - Roads
  - River and Ocean travel
- Speeds and Facilitates spread of pathogens

War

- Large concentrations of men
- Tends to follow Trade Routes
  - Roads
  - River and Ocean travel
- Speeds and Facilitates spread of pathogens

Völkerwanderungen

- Movement of large people groups
- Europe from the collapse of the Roman Empire to the Middle Ages
- Contact with previously unknown peoples and their pathogens
Industrialization

- Machines save "labor"
- Machines save money
- Machines improve consistency and quality
- Machines free humans to engage in more rewarding activities

Urbanization

- Concentrates People
- Public Works
  - More people = More projects
  - Seasonal migration of workers
- Facilitates spread of pathogens

World Population

[Graph showing world population growth with labels for Population and Industrialized]
Stages of Human Development

Four Stages of Human Development (19th Century Ideas):
1. A “savage” state in which all hunter-gatherers
2. A herdsman or nomad stage
3. A farming stage
4. “Civilization”

Origins of Agriculture

“Through agriculture, we deliberately restructure nature to create artificial ecosystems that increase the environment’s carrying capacity for the human species.”
- McMichael (p. 204)

Origins of Agriculture

But why?
Profusion of models on the origins of agriculture
Hypotheses (20th Century)

- Why did agriculture and domestication start (~10,000 YBP)?
  - Cultural invention
    - agricultural life inherently superior
      (<work, >reliable, >productive)
  - Environmental change
    - correlated with end of the Pleistocene
  - Population pressure
    - population pressure forced development of agriculture

Hypotheses (Continued)

- Coevolution
  - our use causes evolution of traits that increase their dispersal; a byproduct is increased yield
  - “No-model model”
    - emphasizes individuality of agricultural development in different regions
- Garbage Dump

Pre-Agriculture

Red = > 50% agriculture
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Agriculture

Red = > 50% agriculture

Early Agriculture

- How can we identify early agriculture?
  - Archaeological sites
  - Map distribution of wild ancestors
  - Map sequential geographic appearances

Prehistoric Irrigation Canals
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Foraging

Pastoralism

Intensive Agriculture

Horticulture

Extensive agriculture

Intensive agriculture

The genetic origins of some selected crops and livestock

Agriculture
Subsistence Patterns

- Foraging
- Pastoralism
- Shifting Farming (“slash and burn”)
- Traditional Farming
- Modern Farming

Foragers
(Late 19th & Early 20th Century)

Pastoralist Regions
(Late 19th - Early 20th Century)
Agriculture

“If agriculture provides neither better diet, nor greater dietary reliability, nor greater ease, but conversely appears to provide a poorer diet, less reliably, with greater labor costs, why does anyone become a farmer?”

- Cohen 1977: 141

Values of crops and livestock

- More calories
  - more people
    - 1 acre farmland feeds 10-100x more than hunter-gatherer
- Domestic animals
  - Meat, milk, bone, fiber, fertilizer, work, warmth, transportation and disease!
- Plants
  - Food, fiber, containers
Extensive agriculture

- Typical features:
  - Productivity (yield/area) LOW
  - Fallow LONG (10–40 yrs). Requires large amt. land/capita
  - Efficiency (yield/labor time) HIGH
  - Population density LOW
  - Technology SIMPLE
  - Fertilizer LITTLE
  - Land tenure COMMUNAL
  - Economic system SUBSISTENCE
  - Sociopolitical complexity gen. LOW

Intensification

- Prehistoric
  - Identification difficult
  - Find by aerial photography, radar scanning
  - Ancient field systems and settlements rare
  - What survives in landscape? Marginal lands

- Later examples
  - Native North America (canals, wild rice)
  - Africa (flood systems of W. Africa)
  - Mexico (Chinampa fields)

From Smil 2000