“The World, its Resources, and the Humankind”

Edgar M. Moran, M.D.
Professor of Medicine, Emeritus
University of California, Irvine
WHY THIS NEW COURSE?

• A life-time preoccupation about world resources and their impact on human development

• Human settlements and life depend on resources \(\Leftrightarrow\) economy of life \(\Leftrightarrow\) social life \(\Leftrightarrow\) politics \(\Leftrightarrow\) civilization \(\Leftrightarrow\) culture

• The world is a complex physical-chemical and biological phenomenon in continuous evolution
WHAT DO WE NEED FOR THIS COURSE?

1. Some knowledge of geography
2. Some knowledge of history
3. Some knowledge of how things work and human relationships
4. Abandon any bias. Keep an open mind
5. Willingness to acquire new knowledge

Bibliography is provided
WHAT I WILL AND WHAT I WILL NOT DO

I will answer questions
I will avoid giving medical consultations
I will regret absences
I advice not to miss lectures because of their interconnection and
Lecture topics may extend on more than one session
I will avoid talking about religion
I will avoid talking about politics

My aim is to stimulate wonder, thought, and knowledge
“KNOWLEDGE IS POWER”

SOCRATES (469–399 BCE)
Nothing to declare

Source of data:

- Personal files, notes, and photos
- Textbooks, journals
- Internet
The World, its Resources, and Humankind. Topics of Study
Eight sessions

Resources to be reviewed:

- Air
- Water
- Food
- Metals and Minerals
- Construction materials
- Energy: Renewable: Solar, water, wind, and nuclear
- Energy: Coal, oil, and natural gas

Comments on:

- Geography
- History
- Economy
- Politics
LECTURE # 1
HUMANKIND
Key Events/Situations in Human Development

Serendipity
Observation ⇔ Action and Reaction
Chance vs. Need (?)
Contagious diseases and other calamities
  ⇔ Massive destructions
  ⇔ Belief in the Supernatural
Survival
Reconstruction
Communication (oral and written)
**MILESTONES OF HUMANKIND**

*Homo erectus* – 1,200,000 - 200,000 BC

**Fears** cold, hunger, thunder, lightening, wild animals

**Dies** of exposure, accidents, infections

**Lives** in caves about 20-40 years. Procreates many children

*Invents the fire*

Is a hunter and gatherer. *Invents fishing*

Doesn’t have an articulate language

Eats berries, fruits, roots, raw meet

Is not very mobile, does not go far from his place
Fire – Man’s Worst Enemy
*Homo erectus* (reconstruction)
Earliest Human who Controlled the Fire
1.7 – 0.2 Million Years ago - Kenya
Anatomically, modern humans first appear in the fossil record in Africa about 195,000 years ago.

Studies of molecular biology give evidence that the approximate time of divergence from the common ancestor of all modern human populations was 200,000 years ago.
Homo Sapiens
The Only Survivor From Homo Erectus

Presumed Characteristics

- Adaptability
- Endurance
- Perseverance
- Curiosity
- Inquisitiveness
- Observation
- Imagination
- Inventiveness
- Dexterity
- Constructiveness
- Pragmatism
- Artistic imagination
Homo Sapiens vs. Mankind

Helpful to his mates but also ignoring the needs of his neighbors

Envious, greedy, and violent

Evolving and reinventing self to master new conditions of life

Ancient foragers were the most knowledgeable and skillful people in history

Self-reliant
A Lot of What Happened in the Past Was Not Understanding Why or Where We Were

A Recordless Human Society
The Cognitive Revolution
~ 70,000 years ago

Observation ⇒ Imagination
Self-questions: “What if?” “Why not?” “Let’s try it”
Thinks outside the box

↓

Breaks established modules

Fiction ⇒ Myths ⇒ New Concepts (not physical)
⇒ Abstract thought ⇒ Societal Evolution
(customs, religions, languages, manufacturing, finances, human rights, political ideology, etc.)
Homo sapiens Conquers the World

FROM Y. N. HARARI “SAPIENS, A BRIEF HISTORY OF HUMANKIND”
Lion-man (Löwenmensch) ~35,000-40,000 years ago – Stadel cave, Germany, ivory ~12” x 3” x 3”
Venus of Schelklingen (Germany) – Upper Paleolithic ~35,000 - 40,000 Years
Mammoth ivory tusk
Human Art ~30,000 Years Ago
Chauvet-Pont-d‘Arc Cave, SE France
A Venus – Clay figurine
Before 25,000 BC
Altamira, Spain ca. 18,500 Years ago
Art of 17,000 Years ago
Lascaux Cave, SE France
The oldest depiction of human sex ~12,000 BCE
The “Ain Sakhri Lovers” - Natufian culture - Betlehem
(British Museum)
History of Mankind and the Agricultural revolution

2,000,000 Years

10,000 Years

50 Years

10 Years

100 Years
Mankind and its Environment

1. Damage people inadvertently inflict on their environment (deforestation)
2. Climate change
3. Hostile neighbors (Roman empire and the Barbarian invasions)
4. Decreased support by friendly neighbors (changing economic opportunities)
5. Society’s response to its problems

FROM J. DIAMOND – “COLLAPSE”
Mankind and its Environment
Failures of Group Decision-making:

1. Group’s failure to anticipate a problem;
2. Group’s failure to perceive it (false analogies: French generals and the Maginot line in WW2);
3. Group’s failure to solve the problem;
4. Collapse of the society
Governments and Politicians

Leaders may use the “90-day focus,” ignoring the later effects because the later bad effects affect citizens who cannot vote today.

Politicians think of the next election. Statesmen think of the next generation.

Tacitus (Roman historian 56-120 AD): “Chief among the forces affecting political folly is the lust for power, the most fragrant of all passions”.
Citi-States and Civilizations

- Agriculture
- Central government ⇔ Cities
- Social structure
- Economy
- Language
- Writing
- Religion
- Arts
Major Formative Events in the Neolithic Era (Mesopotamia, Nile’s banks, Indus River valley, and major rivers of China)

By 10,000 BC humans colonized all ice-free parts of the globe.

Future of humankind was molded by:

- **Domestication** of animals and plants

- **Agriculture** - developed c. 8000 - 5000 BC. Man settled becoming a farmer

  Oldest continuously inhabited towns: Jericho, Byblos (wells)

- The **wheel** - invented – 6.500 – 4.500 BC in Mesopotamia

- **Navigation** – from rivers to the sea
Major Formative Events in the Neolithic Era (cont’d)

- **Agriculture** and the **wheel** allowed the greatest human progress
- Accounting became necessary
- **Writing invented** - 3500 BC ⇒ Accounting ⇒ Communication
- Grains in excess of the need
- Social classes ensued ⇒ “Haves” and “Have-nots”
- **Humans are in 3 classes:** nobility, citizens, and slaves
- Creation of **city-states** and military for defense
- “Have nots” ⇒ revolts or “Outsiders” ⇒ invasions

- **Destruction and rebuilding became the norm**
The World and its Mankind

10,000 BCE - **5-8 Mil. hunters-gatherers** (foragers)

1\(^{st}\) cent. CE - 1-2 Mil. foragers (Australia, Africa)

and **250 Mil. farmers**

1500 CE - 500 Mil. mostly farmers occupying 2% of the Earth
Imagination and Inspiration = hallmarks of the forager

The forager was physically well developed, sturdy, muscular, flexible, alert, highly intelligent, and knowledgeable of the surroundings, with a keen memory.

Was the man better after the agricultural revolution?

As a farmer, he became less alert, less knowledgeable of the surroundings, more sedentary, and dull.

His food was more assured and plenty.
The Wheel (Mesopotamia, 6,500 – 4,500 BC)
Ceramic Vessel from Mesopotamia
4,500 – 4,000 BC
Major Formative Events in the Neolithic Era
The NAVIGATION

On rivers and on seas
Exchange of goods, ideas, inventions ⇔

*Development of new civilizations and conquest*

1. Resources ⇔ Trade ⇔ Dominance ⇔ Conflicts
2. Humankind evolution – Actions and Reactions
Dugout Canoe of Ancient Americans
First Sailing Ship on the Indian Ocean
First Egyptian Ship 1,420 BC
Major Cultures in the Neolithic Era
The “Cradle of Civilization”

5000 - 1750 BC – Sumer (Mesopotamia)

3300 - 1300 BC - Harappa civilization (India-Pakistan)

3500 - 1800 BC - Norte Chico Civilization (S. America)

3100 BC - 300 CE - Egypt Kingdom

2700 - 1200 BC - Minoan (Knossos, Crete) - First in Europe

2500 - 612 BC - Assyria empire (Mesopotamia)
2334 - 2083 BC - Akkadian Empire (Mesopotamia)
3300 – 700 BC - The Bronze Age
Sumer Civilization c.5,000 – 1,750 BC

Major inventions:
The wheel
Writing Pictograms ⇔ Cuneiform script
The sail boat
Agricultural processes such as irrigation
The concept of the city
Trade
Cuneiform Writing
Sumerian (Mesopotamia) 3,500-3,000 BC
Major Cultures in the Neolithic Era

5000 - 1750 BC – Sumer (Mesopotamia)

3500 - 1800 BC - Norte Chico Civilization (S. America)
Norte Chico Civilization 3,500 – 1,800 BC

North-central coast of Peru. **Oldest known civilization in the Americas**

Contemporaneous with the Egyptian pyramids

Located and developing at the confluence of 3 rivers

Founded on **seafood** and **maritime resources**

Growth of **cotton** → Textile technology

Economy of maritime subsistence

**Maize** - staple presence
Major Cultures in the Neolithic Era
The “Cradle of Civilization”

5000 - 1750 BC – Sumer (Mesopotamia)

3500 - 1800 BC - Norte Chico Civilization (S. America)

3300 – 1300 BC - Harappa Civilization
Harappa Civilization (3,300 – 1,300 BC)  
Indus valley: So. Pakistan, NW India, Afghanistan
Harappa Civilization 3,300 – 1,300 BC

~1000 settlements in the Ghaggar-Hakr river valley. Mohenjo-daro a city in Pakistan

Brick-built houses. Conventional city plan

Script

E. MORAN - 2017
Harappa Civilization (3,300 – 1,300 BC)
Mohenjo-daro
(Excavated ruins in Sindh, Pakistan)

Contemporaneous with the Civilizations of Ancient Egypt, Mesopotamia, Minoa (Crete), and Norte Chico
Major Cultures in the Neolithic Era
The “Cradle of Civilization”

5000 - 1750 BC – Sumer (Mesopotamia)

3500 - 1800 BC - Norte Chico Civilization (S. America)

3300 - 1300 BC - Harappa civilization (India-Pakistan)

3100 BC - Egypt
EGYPT

~3100 BC - Make **papyrus** from reed plants

~3000 BC – Major agriculture along the Nile Valley

~2650 - 2500 BC - Built Pyramids - by slaves

Know to **Cut stones** precisely

Know astronomy

**Navigators** on the Nile and on the Mediterranean Sea
Egyptian Agriculture c. 3,000 BC
Domestication of Wheat and Cattle
Egypt 2000 BC
Domestication of Animals in Egypt
2,200 BC
Egyptian Hieroglyphs
3,300 BC
The Scribe – Egypt – 2,600 BC
The Louvre Museum
First Egyptian Ship 1,420 BC
Bust of Nefertiti (c. 1,370 – 1,330 BC)
Neues Museum, Berlin
Major Cultures in the Neolithic Era
The “Cradle of Civilization”

5000 - 1750 BC – Sumer (Mesopotamia)

3500 - 1800 BC - Norte Chico Civilization (S. America)

3300 - 1300 BC - Harappa civilization (India-Pakistan)

3100 BC - Egypt

2700-1200 BC - Minoan (Knossos, Crete) = First in Europe
2,700-1,200 BC - The Minoan Civilization

A Minoan copper ingot

The Snake Priestess
2,700-1,200 BC Minoan (Knossos, Crete)
First In Europe
The Palace of Minos, king of Minoan Empire
Minoan Fresco Showing the Fleet and Settlements
There were 90 Cities in Crete
Major Cultures in the Neolithic Era
The “Cradle of Civilization”

5000 - 1750 BC – Sumer (Mesopotamia)
3500 - 1800 BC - Norte Chico Civilization (S. America)
3300 - 1300 BC - Harappa civilization (India-Pakistan)
3100 BC – Egypt
2700-1200 BC Minoan (Knossos, Crete) = First in Europe

2500 - 612 BC - Assyria empire in Mesopotamia
The Fertile Crescent in Mesopotamia
Mesopotamia (Land Between the Rivers)
The Fertile Crescent

Dramatic variety of elevation \(\Rightarrow\) many species of \textbf{edible plants}

Home to the eight Neolithic \textbf{crops} important in early agriculture: progenitors to \textbf{emmer wheat}
\textbf{einkorn, barley, flax, chickpea, peas, lentils}

Home to five most important species of \textbf{domesticated animals}: \textbf{cows, goats, sheep, pigs, and horse}
The Assyrian kingdom was **well organized**
Major source of **metal ore**, as well as **lumber**
The **priesthood** became a major power in the Assyrian society
Long wars fought that helped build Assyria into a **warrior society**
Social position of **women** was **lower** than in the neighboring societies.
Assyria was open to **homosexual relationships** between men
Under Ashurbanipal (669–627 BC), Assyrian domination spanned from the Caucasus Mountains in the north to Egypt, Lybia, and Arabia in the south, and from Cyprus in the west to Persia and the Caspian Sea in the east

**Decline due to civil wars** and **political instability**
Assyria conquered by Alexander Macedon in 322 BC
Assyrian Art - Ishtar Gate – Babylon, 575 BC
Pergamon Museum, Berlin
Major Cultures in the Neolithic Era
The “Cradle of Civilization”

5000 - 1750 BC – Sumer (Mesopotamia)

3500 - 1800 BC - Norte Chico Civilization (S. America)

3300 - 1300 BC - Harappa civilization (India-Pakistan)

3100 BC – Egypt

2700-1200 BC Minoan (Knossos, Crete) = First in Europe

2500 - 612 BC - Assyria empire in Mesopotamia

2334-2083 BC - Akkadian Empire (Mesopotamia)
The Akkadian Empire – 2,334-2,083 BC

Unified indigenous Akkadian and Sumerian speakers for the first time under one rule.

The Akkadian Empire included Mesopotamia (modern Iraq, Kuwait, northeast Syria, and southeast Turkey), modern Syria and Lebanon, and eastern and southern parts of Iran.
The Akkadian Empire and the direction of its military campaigns
Akkadian Empire and Sargon of Akkad (2,334–2,279 BC)

“Trade extended from the silver mines of Anatolia to the lapis lazuli mines in modern Afghanistan, the cedars of Lebanon and the copper of Magan (Oman).”

Consolidation of the city-states of Sumer and Akkad ⇒ Growing economic and political power of Mesopotamia.

The empire's breadbasket was the rain-fed agricultural system of Assyria and a chain of fortresses was built to control the imperial wheat production.

Many cruel battles

Resources ⇒ Trade ⇒ Dominance ⇒ Destruction
Sargon of Akkad

“It’s for your own good that we must conquer you”

Emperor Sargon, Akkadian Empire, first empire in the world, c. 2400 BC
INTERMISSION
The Bronze Age – Diffusion of Metallurgy

Darkest areas are the oldest
Patterns of Human Societies Since the End of the Ice Age (12,000 yrs. BC)

**Tools used**

- Hunter-gatherer: Stones
- Farming society: Metals
- Industrial societies: Writing
THE BRONZE AGE

Near East - c. 3300 - 1200 BC
South Asia - c. 3000 - 1200 BC
Europe - c. 3200 - 600 BC
China - c. 2000 - 700 BC
Major Civilizations in the Bronze Era

2070 – 1600 BC - Xia Dynasty in China

2000 – 771 BC - Bronze Age of China

1600 – 1160 BC - The Hittite Civilization

1600 – 1100 BC - Mycenaean civilization
Xia Dynasty in China
c. 2,070 – c.1,600 BC

First dynasty in the traditional Chinese history
Yu – First emperor of this dynasty
Stopped the Yellow river floods by building canals for drainage and irrigation of fields
Vast agricultural progress
Early medicine
Major Civilizations in the Bronze Era (cont’d)

2070 – 1600 BC - Xia Dynasty in China

2000 – 771 BC – Bronze Age of China
The Bronze Age of China
(2,000 – 771 BC)

Started under the Shang dynasty – Yellow river valley, Henan province

Imported technology or invented locally (?)

**Bronze artifacts**: utilitarian, ritual, tools, weapons

*Taotie* motifs (animal-like masks)

**Jade carving**

**Irrigation**

**Innovative medical thinking**
Bronze Age of China

“China has been long one of the richest, one of the most fertile, best cultivated, most industrious, and most populous countries in the world.”

*The Wealth of Nations*

Adam Smith (1723 – 1790)
Major Civilizations in the Bronze Age (cont’d)

2070 – 1600 BC - Xia Dynasty in China

2000 – 771 BC - Bronze Age of China

1600-1160 BC – The Hittite Empire
The Hittite Empire c.1,600 – c.1,180 BC
Cappadocia, Turkey
The Hittite Empire (1,600 – 1,160 BC)

Book of Kings: Hittites supplied Israelites with **cedar, chariots, and horses**

1906 - Archeological discovery in Boğazköy of 10,000 tablets written in cuneiform
Hittites – Masters of Metal Work in the Bronze Era
Major Civilizations in the Bronze Age

2070 - 1600 BC - Xia Dynasty in China

2000 - 771 BC - Bronze Age of China

1600 - 1160 BC - The Hittite Empire

1600 - 1100 BC - Mycenaean Greece
Mycenaean Greece
Mycenaean Civilization

Innovations in: Engineering
  Architecture
  Military infrastructure – **Metal work**, defensive walls

The **script** = first written record of the Greek language
**Metal** working. **Gold** ornaments

Homer’s *Iliad* written in 8\(^{th}\) cent. BC

Extensive trade and political influence in Asia Minor (Hitites)

Well-defined three classes:
- King and his court
- People
- Slaves
Mycenaean writing
Syllabic Writing Borrowed from Minoan Writing
Cyclopean Masonry
Walls of Mycenae
Mycenaean Pottery
Mycenaean Krater (c.1,250 BC)
It shows marching soldiers with spears
Mycenaean Gold Earring – 1,600 BC
Mask of Agamemnon – 1,600 BC
National Archeological Museum, Athens
A Mycenaean Boat
Gallery in the Walls of Tiryns, Mycenae
The vault will be introduced much later by the Romans
Mycenaean Civilization Swords and Cups
Major Civilizations in the Bronze Era

2070 - 1600 BC - Xia Dynasty in China

2000 – 771 BC - Bronze Age of China

1600 - 1160 BC - The Hittite Empire

1600 - 1100 BC - Mycenaean Greece

1500 BC–500 CE - Olmec, Maya, Zapotec in Mesoamerica
By 6000 BC, the early inhabitants of Mesoamerica were domesticating plants. Barley and wheat cultivated All regions of Mesoamerica cultivated the base crops of **maize, beans, and squashes** All Mesoamerican cultures used stone age technology After c.1000 AD **copper, silver, and gold** were worked Mesoamerica lacked draft animals. Did not use the wheel, and possessed few domesticated animals The principal means of **transport** was on foot or by **anoe**
Olmec Civilization – 1400 – 1200 BC
1,500 BC – 1,697 CE – Mesoamerica – Olmec, Maya, Zapotec

OLMEC – Southeast Mexico (Veracruz and Tabasco)
Well-watered alluvial soil $\Rightarrow$ **High soil productivity** $\Rightarrow$ Rich class
The elite class demanded the production of the symbolic and sophisticated luxury artifacts
Many of these luxury artifacts were made from materials such as **jade, obsidian, magnetite (iron oxide)** – far away – extensive trading network in Mesoamerica

Colossal heads and **jewelry**
- Bloodletting
- First writing 900 BCE - 650 BCE
- Concept of **zero**
- **Calendar**

Decline caused by earthquake
“The Wrestler,” an Olmec Era Statuette, 1,200 – 800 BCE
Olmec Art. Face Mask Made in Jade African origin (?)
Maya Civilization

Area: Yucatan, Guatemala, Belize, San Salvador, Honduras
First Maya cities developed around 750 BC, and by 500 BC these cities possessed monumental architecture.

Abilities: Hieroglyphic script - the only known fully developed writing system of the pre-Columbian Americas.
Art, architecture, mathematics, calendar, and astronomical system.

Diet: Sophisticated agriculture, shifting fields, terracing, Irrigation.
Maize, manioc, sunflower, cotton, and other crops. Pressing seeds for cooking oil.
Chilies and tomatoes. Cotton, cacao and vanilla.
Cotton was spun, dyed, and woven into valuable textiles – traded.

Aztec capital Tenochtitlan fell to the Spanish in 1521 CE. Successive battles.

1697 - Last Maya city fell.
Maya territory
Yucatan, Guatemala, Honduras
Chichen Itza – El Castillo
Chichen Itza – The Observatory
Painted Mural
Ceramic Vessel with Maya Script
Ethnographisches Museum, Berlin
Maya Scribe
Obsidian spearheads
### Timeline of American Crop Cultivation

<table>
<thead>
<tr>
<th>Date</th>
<th>Crop</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7000 BC</td>
<td>Maize</td>
<td>Mexico</td>
</tr>
<tr>
<td>5000 BC</td>
<td>Cotton</td>
<td>Mexico</td>
</tr>
<tr>
<td>4800 BC</td>
<td>Peppers, squash, avocados</td>
<td>Mexico</td>
</tr>
<tr>
<td>4000 BC</td>
<td>Beans</td>
<td>Mexico</td>
</tr>
<tr>
<td>4000 BC</td>
<td>Nuts</td>
<td>South America</td>
</tr>
<tr>
<td>2000 BC</td>
<td>Sunflowers, beans</td>
<td>South America</td>
</tr>
</tbody>
</table>
Ancient American Crops

**Cereals:** maize (corn), barley

**Pseudo-cereals:** Quinoa, sunflower

**Pulses:** Beans, peanuts

**Fiber:** Cotton, yucca, agave

**Roots:** potatoes, jicama, many tubers

**Fruits:** Tomatoes, peppers, avocados, many sorts of berries, papayas, passion fruit

**Melons:** Squashes

**Nuts:** Peanuts, walnuts, pecan, and others

**Meat and Poultry:** Turkey, bison

**Other:** Tobacco, vanilla, cocoa, chocolate, rubber
American Crops
Corn, a Staple in Mayan Diet
Iron Age 1,200 – 200 BC

Ancient Near East 1200 – 500 BC
India 1200 – 200 BC
Europa 1200 - 1 BC
China 600 - 200 BC
Korea 400 BC - 400 CE
Japan 100 BC - 300 CE
Iron Age

Copper’s melting point 1,085°C
Tin’s melting point 232°C
Iron’s melting point 1,538°C

3000 BC - Steel made in Anatolia - Carbon 0.3%
1200-1000 BC - Large scale iron production
Classical Antiquity

"The Glory that was Greece, and the Grandeur that was Rome"

Edgar Allan Poe

8th – 7th cent. BC – From the Greek poetry of Homer to
5th cent. CE – Decline of the Roman empire

Classical Greece

Greco-Persian wars Naval battles
Athenian-Spartan rivalry
5th Cent. BC - the Century of Pericles
508 BC – Democracy instituted at Athens
Parthenon built, School of Sculpture. Philosophy (Socrates, Plato, Aristotle)
Alexander Macedon empire (356 – 323 BC)
Eupalinos Tunnel
Island of Samos (Greece) - 550 BC
The Greek Triereme
The Parthenon, Athens, Greece
Fifth Century BC
Water Pipes - Madradag Aqueduct
Pergamon, Turkey, 2\textsuperscript{nd} Century BC
Aphrodite (Venus of Milo) 130-100 BC
Discovered 1820, Louvre Museum
Roman Empire

753 BC - Founding of Rome
Roman Republic
Laws
Roman Empire
Roads and bridges
476 CE - End of the empire
The Roman Empire at its best - 117 CE
Pont du Gard, near Nîmes, France
Roman, 60 AD
Length 902 ft., Gradient 1”, Height 160 ft.
The Common Era
Empires and Imperialism

Byzantine empire (476 - 1453)
Arab Caliphates (632 - 1517)
Ottoman empire (1517 - 1924)
Western empires (1492 - ?)
The Stages in the Evolution of an Empire

1. A small industrious and talented people make an empire
2. An imperial culture is forged
3. The imperial culture is adopted by the subjects
4. Subject people demand equal status
5. Empire founders lose their dominance
6. Imperial culture continues to develop
A small group establishes an empire

Romans develop the Roman empire
Arabs establish the Arab Caliphate
Various Europeans develop their empires

Mantra: “It’s for your own good that we conquer you”
Emperor Sargon, Akkadian Empire, first empire, c. 2400 BC
An imperial culture is forged

Greco-Roman culture
Arab-Muslim culture
Western culture
Adopting the new culture

Roman law and political ideas are adopted
Arabic science and architecture is used
The languages of the new empires are learned and used: English, French, Spanish, Portuguese, Dutch
New ideas are learned: Democracy, Human rights, Socialism, and Nationalism

FROM Y. N. HARARI “SAPIENS”
Subject peoples demand equal status

Roman empire: Illyrians, Gauls, Punics
Arab Caliphate: Egyptians, Iranians, Berbers
Western empires: Indians, Chinese, Africans

The empires founders lose their dominance

Multi-ethnic groups with the learned values

Further developments

FROM Y. N. HARARI “SAPIENS”
Byzantine Empire 476 – 1,453 AD
At its greatest extent
Hagia Sophia - Istanbul
Built by Emperor Justinian 532 – 537 CE
Western Imperialism – An Overview

1492 – Columbus Discovery of America

Started the Western expansion

Started the “colonialism” – political

Started the “imperialism” - economical
Discovery of America

Christopher Columbus -1492 - “was one lucky devil” *(Saveur, 2016)*

Brought to Americas: Small pox, chicken pox, syphilis, firearms, gunpowder

Brought to Spain: Peppers (pimiento), corn, potatoes, gold
Taj Mahal – Agra, India
Mughal emperor Shah Jahan – 1,632
Victoria Terminus – Mumbai, India
Built 1887 to commemorate the Golden Jubilee of Queen Victoria
### Major Epidemics

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Disease</th>
<th>Death toll</th>
</tr>
</thead>
<tbody>
<tr>
<td>541</td>
<td>Europe</td>
<td>Plague</td>
<td>40% of pop.</td>
</tr>
<tr>
<td>1346</td>
<td>Europe</td>
<td>Plague</td>
<td>30-60% of pop.</td>
</tr>
<tr>
<td>1616</td>
<td>So. England</td>
<td>?</td>
<td>30-90% of pop</td>
</tr>
<tr>
<td>1816</td>
<td>Asia-Europe</td>
<td>Cholera</td>
<td>&gt;100,000</td>
</tr>
<tr>
<td>1829</td>
<td>Asia, Europe, No. America</td>
<td>Cholera</td>
<td>&gt;100,000</td>
</tr>
<tr>
<td>1852</td>
<td>Russia</td>
<td>Cholera</td>
<td>1,000,000</td>
</tr>
<tr>
<td>1889</td>
<td>Worldwide</td>
<td>Influenza</td>
<td>1,000,000</td>
</tr>
<tr>
<td>1899</td>
<td>Europe, Asia, Africa</td>
<td>Cholera</td>
<td>&gt;800,000</td>
</tr>
<tr>
<td>1918</td>
<td>Worldwide</td>
<td>Influenza</td>
<td>75,000,000</td>
</tr>
<tr>
<td>1960</td>
<td>Congo</td>
<td>HIV/AIDS</td>
<td>&gt;30,000,000</td>
</tr>
</tbody>
</table>
1800 – 1 Billion people on Earth
1930 – Second billion (in 130 years)
1959 – Third billion (in 29 years)
1974 – Fourth billion (in 15 years)
1987 – Fifth billion (in 13 years)

2050 - Expected world population = 9 billion

Declining growth rates $\Rightarrow$ doubling will take 200 yrs.
World Population - 10,000 BC – 2,000 CE
<table>
<thead>
<tr>
<th>Country</th>
<th>Population (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,410</td>
</tr>
<tr>
<td>India</td>
<td>1,297</td>
</tr>
<tr>
<td>USA</td>
<td>324</td>
</tr>
<tr>
<td>Indonesia</td>
<td>258</td>
</tr>
<tr>
<td>Brazil</td>
<td>205</td>
</tr>
<tr>
<td>Pakistan</td>
<td>191</td>
</tr>
<tr>
<td>Nigeria</td>
<td>188</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>162</td>
</tr>
<tr>
<td>Russia</td>
<td>141</td>
</tr>
<tr>
<td>Mexico</td>
<td>162</td>
</tr>
<tr>
<td>Japan</td>
<td>126</td>
</tr>
<tr>
<td>Philippines</td>
<td>103</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>101</td>
</tr>
<tr>
<td>Vietnam</td>
<td>94</td>
</tr>
<tr>
<td>Egypt</td>
<td>86</td>
</tr>
<tr>
<td>Germany</td>
<td>82</td>
</tr>
<tr>
<td>Iran</td>
<td>80</td>
</tr>
<tr>
<td>Turkey</td>
<td>77</td>
</tr>
<tr>
<td>Congo</td>
<td>73</td>
</tr>
<tr>
<td>Thailand</td>
<td>67</td>
</tr>
</tbody>
</table>

2016 World Population = 7,442,000,000
END OF LECTURE # 1