



## Technology, Culture, & Destiny

### What Makes Humans Unique?

- ◆ Ability to laugh & smile
- ◆ Ability to lie effectively
- ◆ Cook food
- ◆ Use and manipulate symbols

### Culture—A Definition

Acquired  
knowledge  
by a social group

3

### Symbols

- ◆ Humans are dependent upon symbols
- ◆ Primates use symbols but do not depend upon them
- ◆ Humans use symbols to adapt to various environments

4

### Evolution—Two Types


- ◆ Somatic—Physical Evolution
  - Physical changes in body structure
- ◆ Extrasomatic—Cultural Evolution
  - Methods and Techniques
  - i.e., “Technologies”

5

Through culture,  
we do not have to  
wait for somatic  
change

## Australopithecine


- ◆ Family (7 types)
- ◆ 5 to 1.2 million years
  - Lower Paleolithic period
- ◆ “Ape-man” — Man Apes
  - 3-4 feet (1-1.3 meters) tall
- ◆ Tool Making capabilities:
  - chopping & pounding tools
  - Ostodontic-caradic (Bone/tooth/horn)



7

## Homo Erectus


- ◆ 1.5 million years
  - Africa/Europe/S.E. Asia
- ◆ Sophisticated tool maker/user
  - Acheulean (identified by flaked tools)



8

## Homo Erectus

- ◆ First conclusive evidence of:
  - Housing structures
  - Use of fire
  - Cooperative hunting




KNM-WT 15000, "Turkana Boy"

9

## Homo Neanderthalensis

- ◆ Europe/Middle East regions
- ◆ Slightly more advanced tool making and usage
- ◆ Different tool types: Bone, tooth, horned, wooden




10

## Homo Neanderthalensis

Evidence of:

- ◆ Clothing
- ◆ Religion
  - Belief in an afterlife
  - Buried their dead



11

## Homo Sapien

- ◆ Major advancements
- ◆ Great diversity of tools
- ◆ Agriculture and domestication of animals
- ◆ Neolithic (new stone age)

12

## Homo Sapien

- ◆ High energy usage
  - Heat (wood, coal, oil, nuclear)
  - Power (animal, water, steam, electric)
  - Transportation (ships, trains, autos, airplanes)

13

## Law of Cultural Evolution

Culture at large evolves as the amount of energy harnessed per capita per year increases or as the methods of harnessing energy are made more efficient or as both factors work together.

Leslie White (Univ. of Michigan)

14

## Cultural Materialism

- ◆ Leslie White
  - “technological determinist”  
i.e., technology-led theory of social change
- ◆ No one “great man” theory
  - Individuals are insignificant to cultural change

15

## Cultural Materialism

- ◆ Technologies
    - help to shape and define culture
    - fundamental condition underlying the pattern of social organization.
    - technical developments, are the sole or prime antecedent causes of changes in society
- from Chandler, D. “Technological or Media Determinism”

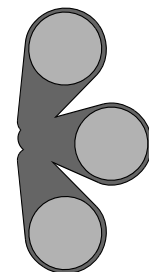
## Cultural Evolution is:

- ◆ Logical
- ◆ Inextricable
  - Complex or interwoven
- ◆ Stupid

17

## Culture: 3 Components

- ◆ Ideological
  - Belief system
- ◆ Social
- ◆ Technological



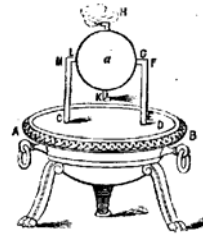
18

## Role of Ideology

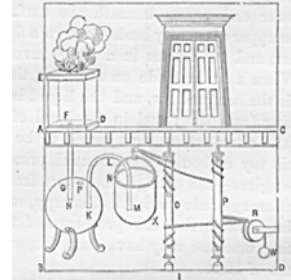
- ◆ Ideology *always* subordinates technology
- ◆ Example The Ancient Greeks
  - Hero of Alexandria (200 B.C.)
    - » or was it Ctesibus???
    - » Rotary Steam Engine & Temple Door Opening System

19

## Hero's *Spiritualia seu Pneumatica*



Sketch of device No. 70 from Greenwood's translation.



Sketch of engine for opening temple doors by steam from Greenwood's translation.

20

Ideological systems prevent technological systems from fulfilling their true efficiencies

## Evolution of Cultural Systems

- ◆ Bands
  - » 90% of all the people who ever lived were hunter/gatherers
- ◆ Tribes
- ◆ Chiefdoms
- ◆ States (up to nations)



22

## Two Important Points...

- ◆ Culture is manifested symbolic knowledge
- ◆ Artifacts *are not* culture

23

## Western Cultures

- ◆ Outstripping biology
  - Ecological problems & disasters
- ◆ People are surrounded by their own creations
- ◆ The natural environment is alien

24

## Western Cultures

- ◆ Technologically and cultural “incestuous”
- ◆ Positive feedback system
- ◆ Unstable, prone to extremism

25

## Web Links of Interest:

- ◆ Physical Anthropology:  
<http://www2.lib.udel.edu/subj/anth/phys/internet.htm>
- ◆ Paleoanthropology Links  
<http://www.talkorigins.org/faqs/homs/links.html>
- ◆ Hominid Species:  
<http://www.talkorigins.org/faqs/homs/species.html>  
<http://www.he.net/~archaeol/9603/newsbriefs/hominid.html>
- ◆ Alternative views to evolution: “Creation Science” & “Intelligent Design”  
<http://emporium.turnpike.net/C/cs/index.htm>  
<http://www.discovery.org/>  
<http://www.venganza.org/>
- ◆ “Technological or Media Determinism” by Daniel Chandler  
<http://www.aber.ac.uk/media/Documents/tecdet/tecdet.html>

26

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- ◆ Information content based in part upon lectures given in June, 1993, by:  
Dr. Anthony Cavender, ETSU Dept. of Sociology and Anthropology  
& Dr. John Ephriam, ETSU Department of Technology
- ◆ Hero’s Steam Engine and Temple Door Opening Images from:  
The Growth of the Steam-Engine, Chapter I by R. H. Thurston, AM,CE;  
<http://www.history.rochester.edu/steam/thurston/1878/Chapter1.html>
- ◆ Hominid images from:  
“Anthropology 1101 HUMAN ORIGINS Website”  
<http://www.geocities.com/Athens/Acropolis/5579/TA.html>  
Australopithecus africanus:  
<http://www.ed.uiuc.edu/students/b-sklar/africanus.html>  
Homo Erectus (“Turkana Boy”)  
<http://www.talkorigins.org/faqs/homs/15000.html>

27