

Dawn of Modern Technology



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Team 3



Consuming Power

✦ How did the United States become the world's largest consumer of energy?

✦ The Beginning:
Native American Ideals

Native American Prayer for Peace

Oh Great Spirit of our
Ancestors, I raise
my pipe to you.

To your messengers the four winds, and
to Mother Earth who provides
for your children.

Give us the wisdom to teach our children
to love, to respect, and to be kind
to each other so that they may grow
with peace of mind

Let us learn to share all good things that
you provide for us on this Earth.

Eotechnic, Paleotechnic and Neotechnic Phases

Phases distinguishable by:

- Geographical origins
- Characteristic resources and raw materials
- Energy usage and generation
- Modes of production
- Worker: training, specialization etc.

Definitions



Eotechnic:

Eo-: Oldest/earliest

Eotechnic: dawn of modern technics;
characterized by use of **wood**

Definitions

Paleotechnic:

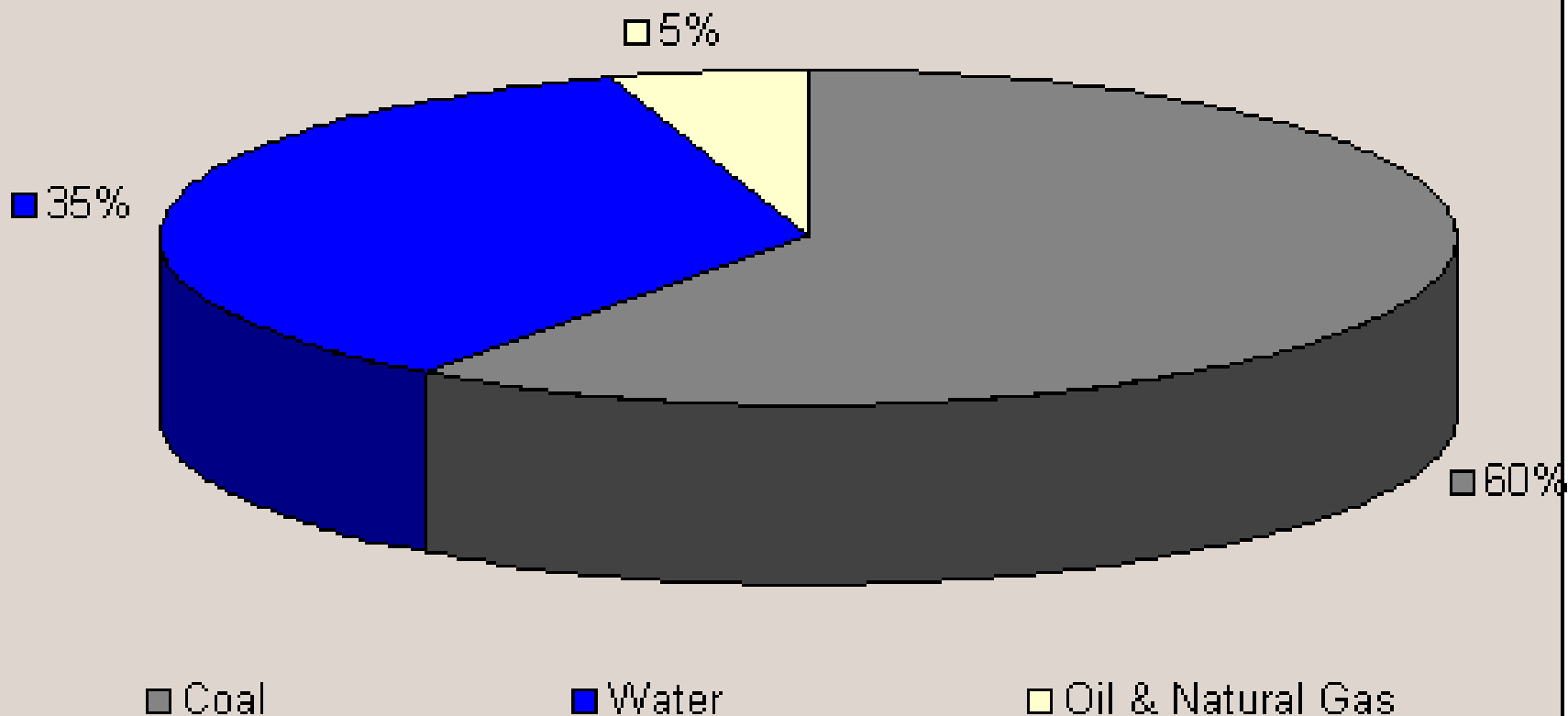
Paleo- : Early/ancient/primitive

Paleotechnic: Of, relating to or constituting a period of industrial development marked by the predominance of hand tools and craft industries or by complex industries;
characterized by use of **coal and iron**

The Rise of Coal



US Energy Use in 1890



Definitions

Neotechnic

Neo-: New/recent

Neotechnic: most recent period of industrial development;
characterized by use of **electricity and alloys.**

Eotechnic: 1000 – 1750 AD

Lewis Mumford:

“Civilizations are not self-contained organisms..drawing freely on the cultures that preceded him or that continued to develop about him.”

~ p. 109, Technics and Civilization

Eotechnic phase is an “important period of preparation, when all the key inventions were either invented or foreshadowed.”

p. 109

→ Paleotechnic and Neotechnic Phases built upon innovations from the Eotechnic Phase

Eotechnic Phase



Isaac Newton:

“If I have seen further ... it is by standing upon the shoulders of giants.”

~from letter to Robert Hooke, 1675

“So far from being unprepared for in human history, the modern machine age cannot be understood except in terms of a very long and diverse preparation.”

p. 109

Eotechnic Phase: Motive for the Machine

From last week:

- machines existed much earlier than western industrialization;
- machine itself does not intrinsically come to dominate

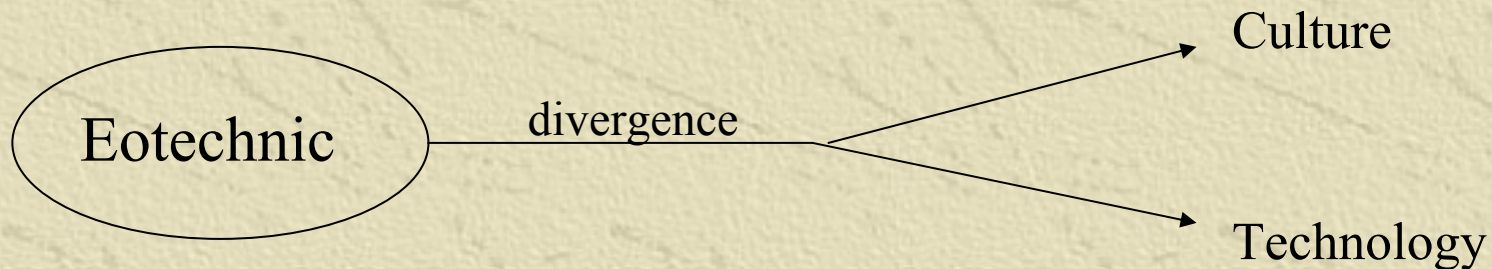
Chapter 2, p. 102:

“In the past, even in Western Europe, men had worked to obtain the standard of living traditional to their place and class...”

Eotechnic Phase: Goals

“The goal of the eotechnic civilization as a whole until it reached the decadence of the eighteenth century was not more power alone but a greater intensification of life: color, perfume, images, music, sexual ecstasy, as well as daring exploits in arms and thought and exploration.” ~p. 149

“If the gospel of work took form during this period, it did not dominate.” ~p. 150



Eotechnic Weaknesses

Social Decline:

- * Although not initially dominated by consumption
 - set stage for gospel of work
 - decadence and consumption appeared in the latter eotechnic phase
 - gospel of work & allusion to “Animal Farm”

Utilizing Wind



Cultural Decline

“...with increasing technical advances of this society there was, for reasons partly independent of the machine itself, a corresponding cultural dissolution and decay”

~p. 112

“...isolation and helplessness afflicted the handicraft worker after the structure of the town guilds had become dilapidated.”

~p. 139

~ Read p. 147

“...private profit—a system which lent itself to adulteration and to deteriorated standards of production almost as much as it lent itself to technical improvements.”

~ p. 146

Cultural Decline

Psychological decay

* advent of mirrors → accurately perceive one's physical self

“Indeed, when one is completely whole and at one with the world one does not need the mirror: it is in the [eotechnic] period of psychic disintegration that the individual personality turns to the lonely image to see what in fact is there and what he can hold on to...”

~ p 129

Can we imagine life before the mirror?

How many hours would be free for us each week if appearance didn't dominate our society?

Energy & Technology

Wood

- *primary raw material

- *primary fuel

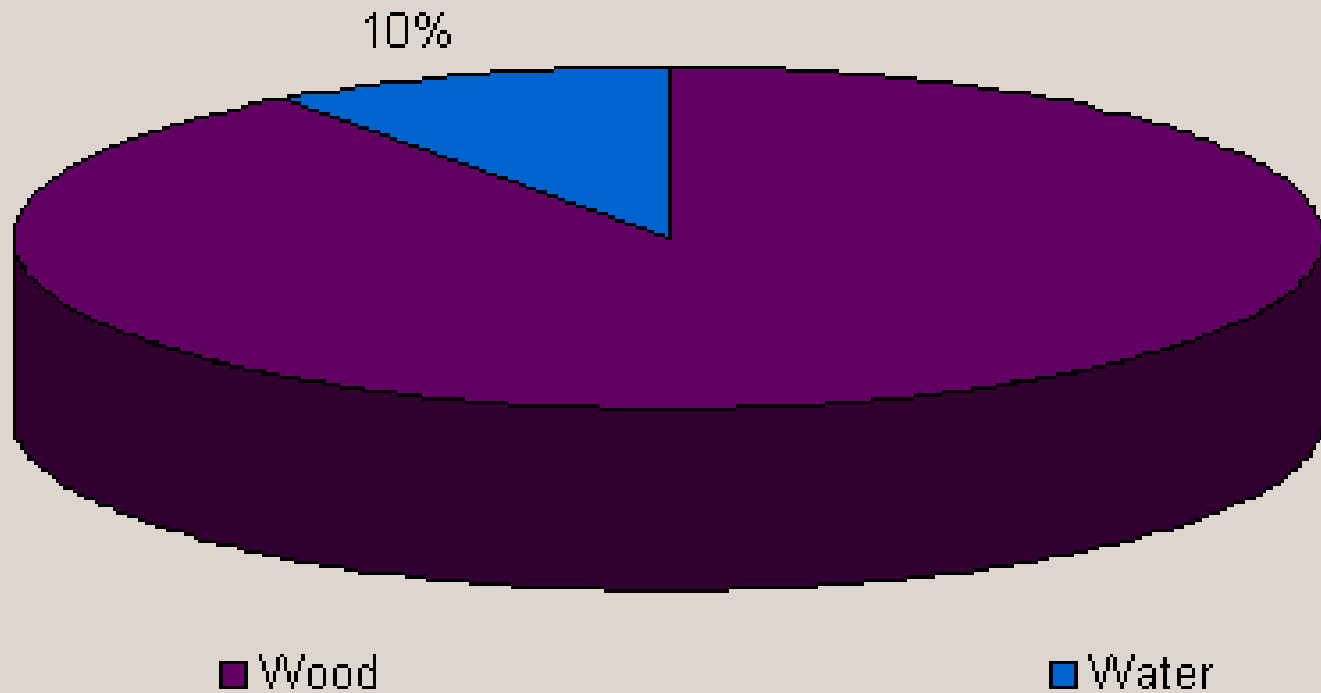
Wind, water:

- * cannot monopolize wind or water: renewable resources

- * post-construction, a mill adds nothing to cost of production

Dependence on Wood

US Energy Use in 1850



Applications of Wood

✠ “Every part of the windmill and the water-mill except for the grinding and cutting elements was made of wood”
-Mumford, 120

✠ “As a raw material, as a tool, as machine-tool, as machine, as utensil and utility, as fuel, and as final product wood was the dominant industrial resource of the eotechnic phase.”

-Mumford, 120

Horse Power



What is Horsepower?

✦ That's what I also wondered, Eric. I just don't have a concrete feeling of what horsepower is.

✦ 1 Horsepower = 745.5 Watts
= 550 ft-lbs/s

The Mill



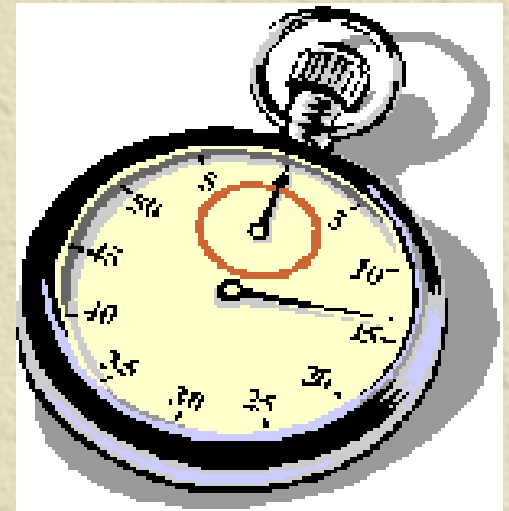
The Miller

✦ Became a:

- ✦ Carpenter
- ✦ Stone Carver
- ✦ Hydraulic Engineer
- ✦ Architect
- ✦ Business Man
- ✦ Landowner
- ✦ Political Figure

Rising Industry

- ✦ Laborers feel the tick of the clock
- ✦ Employers exploit every second
- ✦ Southern industry lags behind the North



Controlling Nature: The Erie Canal



Expansion

✠ “And just as the windmills and water-mills served to distribute power, so the canal distributed population and effected a closer union between town and country.”

-Mumford, 122

However, this was not the perfect system; weakness did exist.

Technological Weaknesses

Production Irregularity:

- * power depended upon weather:
 - water and wind

- * Nevertheless, “What [eotechnic products] lacked in power, it made up for in time: its works had durability.”

~ p. 148

Eotechnic Achievements



Mechanically:

Cities, landscapes, buildings, paintings,

Technology:

Wood, Glass, Standardized parts, durability

Thought & Culture:

Scientific Method, Intellectual and artistic stimulation

Technology: Glass

“Glass not merely opened people’s eyes but their minds: seeing was believing.”
~p. 127

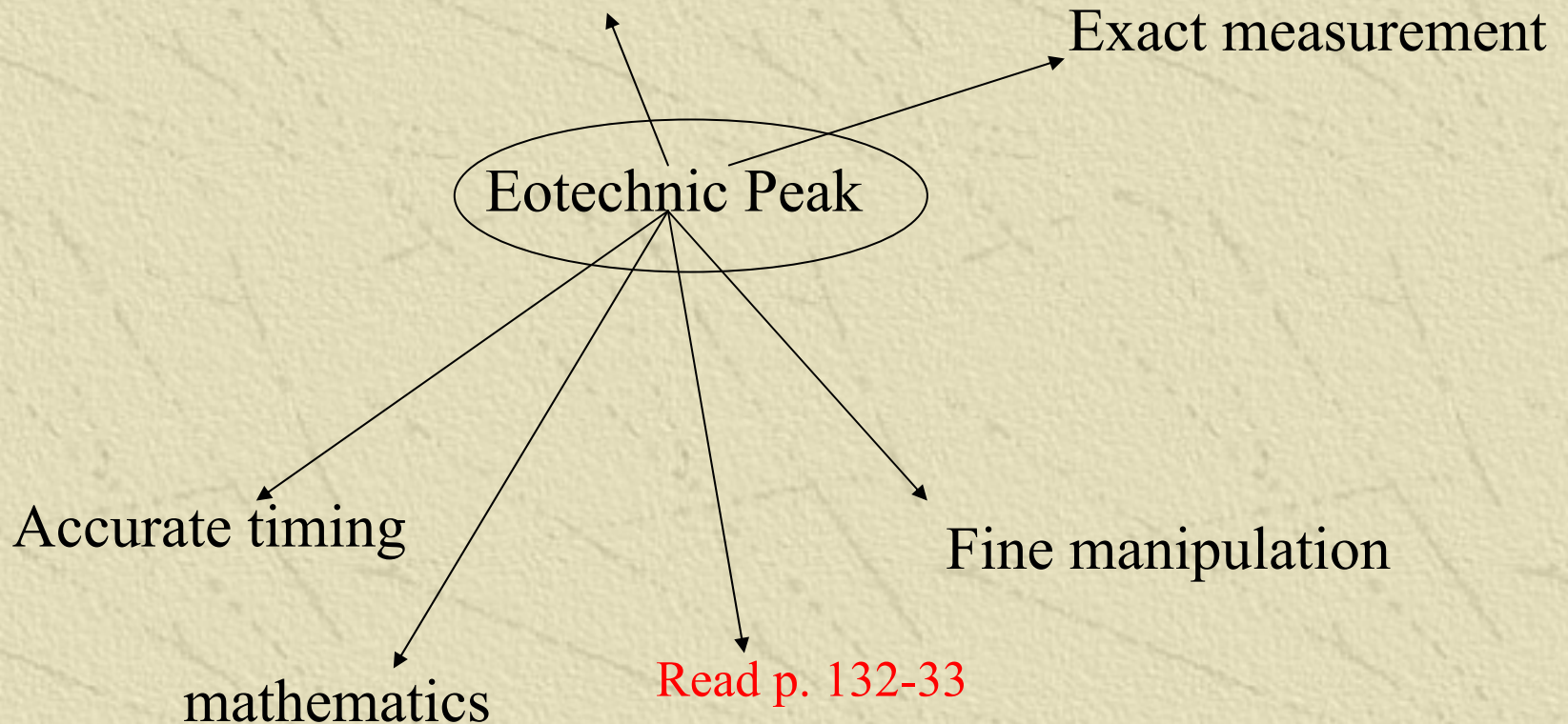
New fields of view:

- * microscopes – expanded understanding of microcosm
- * telescopes – experimental science
- * spectacles – more precise perception of world
 - * longer ability to read → stimulate intellect
 - * to see dirt → increased hygiene
- * windows – lengthened work day in cold and bad weather
- * thermometer – medicine
- * flasks and vials – chemistry

Scientific Thought



Foundation in experimental science



References

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- ✦ Mumford, Lewis. Technics and Civilization Harvest Book, Harcourt Brace & Company. New York, NY, 1963.
 - ✦ Nye, David E. Consuming Power. The MIT Press, 1999.
 - ✦ http://web.bryant.edu/~history/h364proj/fall_01/kelliher/wood.htm

Thank you.