



ENGR 195B



Global and Social Issues in Engineering



Kyle Yrigoyen
Philosophy Department

kyle.yrigoyen@sjsu.edu

Overview.

- Lewis Mumford's "The Monastery and the Clock" from *Technics and Civilization*

Mumford on “The Monastery and the Clock”

“Where did the machine first take form in modern civilization?” (12)

“...the first manifestation of the new order took place in the general picture of the world: during the first seven centuries of the machine’s existence the categories of time and space underwent an extraordinary change, and no aspect of life was left untouched by this transformation. The application of quantitative methods of thought to the study of nature had its first manifestation in the regular measurement of time; and the new mechanical conception of time arose in part out of the routine of the monastery.” (12)

Mumford on “The Monastery and the Clock”

Assumptions about Nature and the World in the Middle Ages (Pre-Renaissance):

1. The Universe is ordered by God.
 - a. Nature is uniform in its patterns of behavior.
 - b. These patterns are regulated by general and special laws.
 - c. These general and special laws are intelligible, decipherable, and discoverable to the human mind.
2. The Church oversees the ordering of human behavior on Earth.
 - a. The Church governs the affairs of daily religious observance.
 - b. The Church exemplifies the presence of order in human affairs.

Mumford on “The Monastery and the Clock”

“It was, however, in the monasteries of the West that the desire for order and power, other than that expressed in the military domination of weaker men, first manifested itself after the long uncertainty and bloody confusion that attended the breakdown of the Roman Empire. Within the walls of the monastery was sanctuary: under the rule of the order surprise and doubt and caprice and irregularity were put at bay. Opposed to the erratic fluctuations and pulsations of the worldly life was the iron discipline of the rule.” (13)

Motivations for Order

- Collapse of the Roman Empire → The loss of Civilization in the West (Dark Ages)
 - 200-400 C.E.
- Pope Sabinianus decrees that the bells of the monastery be run seven times in the twenty-four hours. These punctuation marks in the day were known as **the canonical hours**, and some means of keeping count of them and ensuring their regular repetition became necessary. (13)
 - 600s C.E.

Motivations for Order

“The monastery was the seat of a regular life, and an instrument for striking the hours at intervals or for reminding the bell-ringer that it was time to strike the bells, was an almost inevitable product of this life. If the mechanical clock did not appear until the cities of the thirteenth century demanded an orderly routine, the habit of order itself and the earnest regulation of time-sequences had become almost second nature in the monastery.”

“So one is not straining the facts when one suggests that the monasteries...helped to give human enterprise the regular collective beat and rhythm of the machine; for the clock is not merely a means of keeping track of the hours, but of synchronizing the actions of men.”
(13-14)

Benedictine Rule → 40,000 monasteries

Motivations for Order

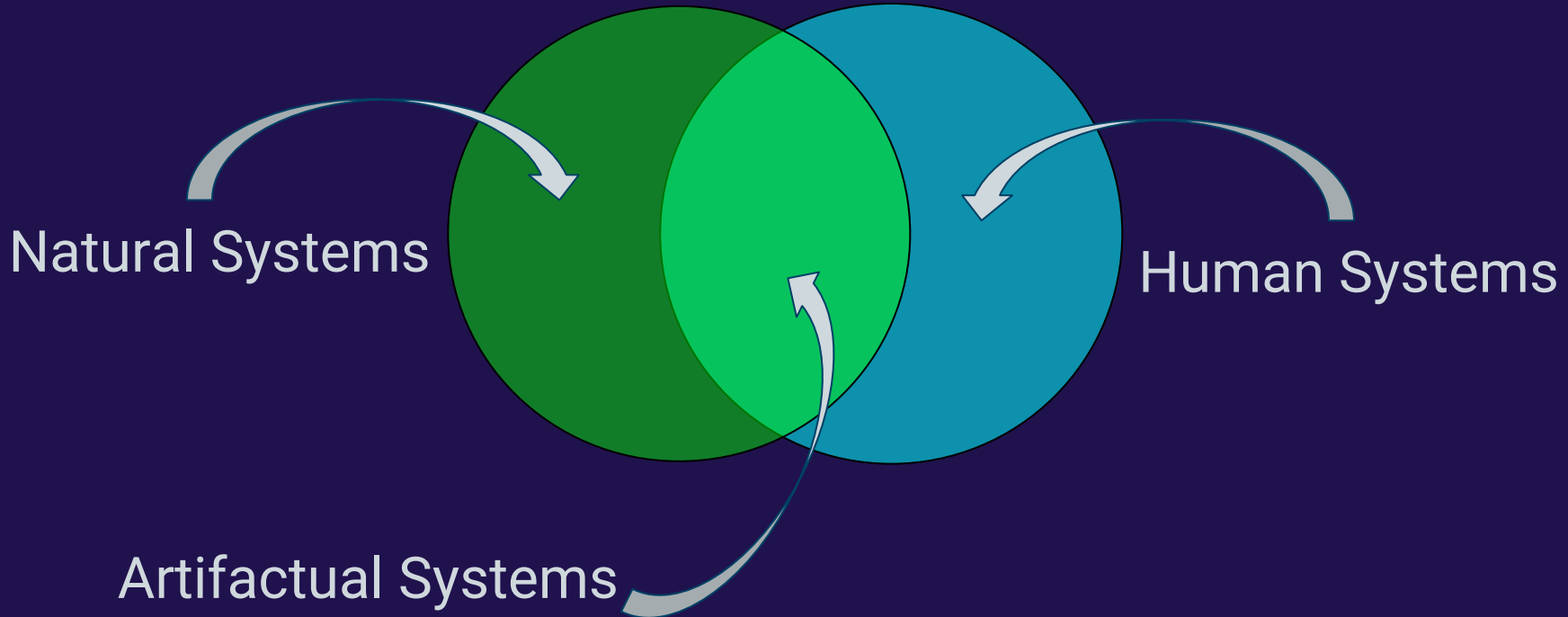
- Religious desire → Economic desire
- By the 13th and 14th centuries, bell towers became common in cities, along with a dial and a hand that translated the movement of time into a movement of space. (14)
- By 1370, Heinrich von Wyck builds a well-designed “modern” clock.

The Mechanical Clock

“The instrument presently spread outside the monastery; and the regular striking of the bells brought a new regularity into the life of the workman and the merchant. The bells of the clock tower almost defined urban existence. Time-keeping passed into time-serving and time-accounting and time-rationing. As this took place, Eternity ceased gradually to serve as the measure and focus of human actions.

“The clock, not the steam-engine, is the key-machine of the modern industrial age.”
(14)

What makes something technological?



Mechanical Time and Organic Time

