

Weds: Cover Ch8 Burnett.

Fri: Research Paper 1

Timekeeping systems in the late Middle Ages

We have seen that purely mechanical timekeeping devices, verge-and-foliot clocks, appeared at some point in the late 1200s. Adaption of this technology accelerated rapidly by the mid 1300s. The evidence for this consists of:

- 1) literature and records describing construction of clocks, paying for clocks
- 2) remnants of clocks and the buildings that housed them.

This proliferation of such clocks raises other points:

- 1) for whom were the clocks intended?
- 2) how did the clocks indicate the time?
- 3) how was time recorded/kept? What system of hours was used.

We will see that this period represents a departure from older ways and the emergence of our current way of reckoning with time.

Consider the situation before the arrival of the mechanical clock

| | |
|--|---|
| Q → For whom were clocks intended or used? | * mostly clergy and people in monasteries * astronomers |
| Q → How did clocks indicate time? | * some sort of bell system, often manual |
| Q → What systems of hours were used? | * generally - temporal hours * astronomers - equal hours |

Now consider the records of clocks around the late 1200s and into the 1300s.

Striking clocks

Rossum pg 106-108 We first consider how clocks indicated time. We have seen that there were monumental astronomical clocks and such clocks were often displayed on towers in prominent places.

Demo: Prague Clock

Demo: Strasbourg Clock.

Rossum pg 108 pg 133 The goal of such clocks does not appear to have been to communicate time but rather attract people to churches, where they often appeared.

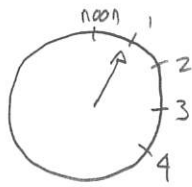
- Chartres cathedral

- Strasbourg

As time indicators these were clearly not very practical.

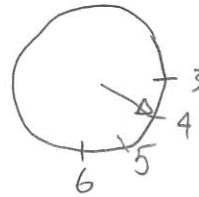
The practical alternative was an hour striking clock

- this is a clock that strikes the number of hours on each hour.



strikes bell
once

→



strikes bell
few times

These appeared in the early 1300s mostly in northern Italy

↳ Rossum pg 109

Demo: YouTube video - Blackburn Cathedral Clock Chimes 12

Thus the time was indicated by striking the number of hours on a bell.

Hours and time keeping

Prior to the 14th century two systems of time keeping had existed:

1) temporal hours - divide sunrise to sunset into twelve hours

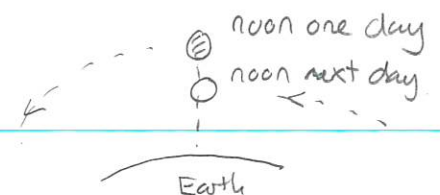
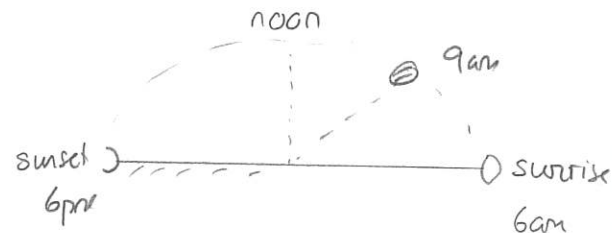
- the actual duration of the hour varied depending on

latitude and season

- used by clergy + coincided with times for worship.

2) equal hours - noon to noon divided into 24 hrs

- required small corrections to deal with non-uniformities in Sun's apparent motion



Now consider mechanical verge + foliot clocks

Q: Are these more suited to measuring equal hrs or temporal hrs?

Q: What would one have to do to ^{indicate} ~~measure~~ temporal hours with an ~~str~~ hour striking clock?

What did eventually emerge was a change in the way in which hours were counted and this emerged by the mid 1500s. Rossum
Pg 113

There were three systems:

1) a 24 hour period starting one half hour after sundown. ("Italian clock")

Q: What connection does this have to any natural cycle? How does this depart from conceptions of time using sundials, astronomical ~~for~~ observations?

Q: What is a possible operational disadvantage of this?

As the days pass the time of sundown passes and therefore the clock needs to be adjusted from time to time

Q: What is a mechanical disadvantage to the 24 hr period for a striking clock

The total number of strikes in a day would be 300 and this produced significant wear + tear on the machinery.

read pgs

113-117

2) a hybrid system that divided the 24hr period into day and night with

- * an adjustable start for each part

- * variable division of day night into
8 vs 16 hrs
9 vs 15 hrs
10 vs 14 hrs.

-mostly used in Germany.

3) the "small" / "half clock" system

- * use two sequences of 12 hrs each

- * division from one day to next at midnight.

Q: Which is most familiar to you?

Q: Which seems most / least detached from the natural world?

Constituency for clocks

Rossum Ch 4

It is clear that public clocks emerged overwhelmingly in urban areas in Europe in the 1300s. There appear to be two threads:

1) the resurgence of urban life in Europe and the resurgence of ruling classes and merchant classes

2) a resurgence of non-ecclesiastical / church activities in Europe.