

THE HOURGLASS

[by John H. Lienhard](#)

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Today, let's take a look at the hourglass. The University of Houston's College of Engineering presents this series about the machines that make our civilization run, and the people whose ingenuity created them.

How old is the hourglass? 2000 years? 4000 years? Oddly enough, historian R.T. Balmer dates it at about the same time as the first mechanical clocks. It's only about 700 years old.

The hourglass had some strong characteristics. On the positive side, it was far simpler and cheaper than the mechanical clock or the earlier water clock. Resetting it after it ran down couldn't be simpler. And it didn't vanish when you used it, the way a graduated candle did. It's accuracy wasn't bad either, once some problems had been solved. You couldn't load just any old sand into it. You had to find a free-flowing material that was unresponsive to humidity.

On the downside, hourglasses were pretty short-term timepieces. The very name tells you it's hard to find one that'll run more than an hour. The other big drawback is that they can't be calibrated. Sand moves downward in jerks. The edge of the sand is uneven. If you mark five-minute intervals on the glass, the sand will hit those marks differently each time you turn it. An hourglass really tells you only when an hour is up.

Hourglasses found their place in setting off blocks of time. The time between canonical hours in a monastery, or between watches on board ship. Of course, they didn't run long enough or accurately enough for marine navigation. They were a poor man's timepiece -- a kind of clock for everyman.

Both the mechanical clock and the hourglass found powerful symbolic roles during the Renaissance. The complex mechanical clock with its rotary gears became a metaphor for the heavenly spheres or the wheel of fortune. But the hourglass, whose sands run out, became a metaphor for that running-out-of-the-sands that we all inevitably face. It became, and it remains, a universal symbol of death.

Two technologies, one simple, one complex, running side by side -- the clock making a continuum of time, and the hourglass segmenting it -- the clock speaking of timelessness, and the hourglass showing us finality -- the clock evoking things celestial, and the hourglass reminding us of base earth.

Two technologies, Yin and Yang. Why was the hourglass so late in coming? Maybe it had to wait for its opposite, the clock, to be invented.

I'm John Lienhard, at the University of Houston, where we're interested in the way inventive minds work.

(Theme music)

Balmer, R.T., The Operation of Sand Clocks and Their Medieval Development.
Technology and Culture, Vol. 19, No. 4, 1978, pp. 625-632.

This episode has been considerably revised as [Episode 1469](#).



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