

Woodcuts from a 1497 edition of Jerome's letters in Italian translation with very good lion. Ferrara, Laurentius de Rubeis de Valentia

# **The Printed Book**

## **Week 2**

- 1. Paper east and west**
- 2. Printing in Asia**
- 3. Block Books in Europe**
- 4. Alternative theories of  
Gutenberg's typecasting**
- 5. Show & tell**

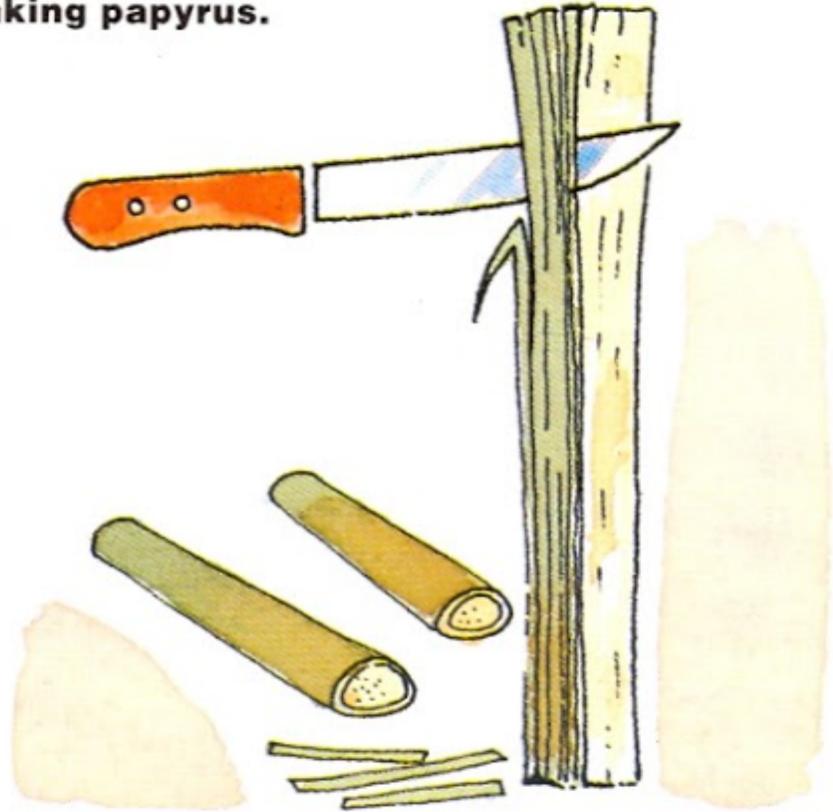
# Writing Materials: A Review

**PAPYRUS:** Sheets made from the pith of the papyrus stalk, with strips laid perpendicular to each other and mashed together. Normally formed into rolls. A monopoly of Egypt.

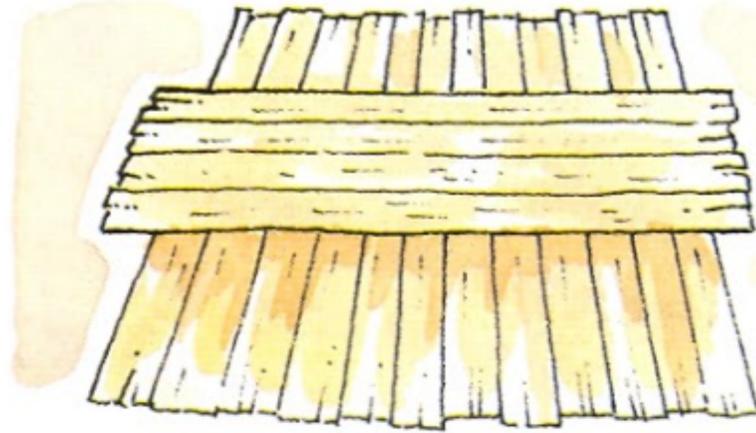
**PARCHMENT (VELLUM):** Animal skins soaked in lime solution, stretched, and scraped clean.

**PAPER:** Made of pulped fibers (plant or fabric) suspended in water in a slurry and formed into sheets by draining in sieve-like molds.

## Making papyrus.



Slicing the outer green skin off the stem.



Layers of thin slices of pith are placed on top of each other at right angles.



Beating the layers gently with a mallet to facilitate bonding of the fibers.

Korean papermaking by traditional methods:  
Pulp from the inner bark of the paper mulberry tree  
is rinsed; bamboo mat is placed over a frame before  
dipping in the pulp.



Right: Water mill-driven machine for pulping linen rags, 17th c., from Basel Paper Mill museum.

Below: Stephen Fry helps make paper. Slurry of linen pulp is lifted out of the vat on a mold.



# Paper in Asia

Vegetable product

Made in rural settings

Pulped with hand tools

Can be produced in small quantities at need

Thin, suited to printing by rubbing rather than pressing

# Paper in Europe

Post-consumer product, requires population density to yield enough rags to supply the trade

Produced in proximity to cities with sufficient population for materials and market

Pulped by water mill-driven machines

Thick, works well with printing by press

# PAPER CHRONOLOGY

Bark pulp papers known in China from 2nd century CE, made in Asia ever since.

Rag (linen pulp) paper replaces papyrus in the Middle East 9th c.

Rag paper introduced to Europe via Muslim Spain; first paper mills in Spain 12th c., Italy 13th c., France, Germany, and Holland 14th c.

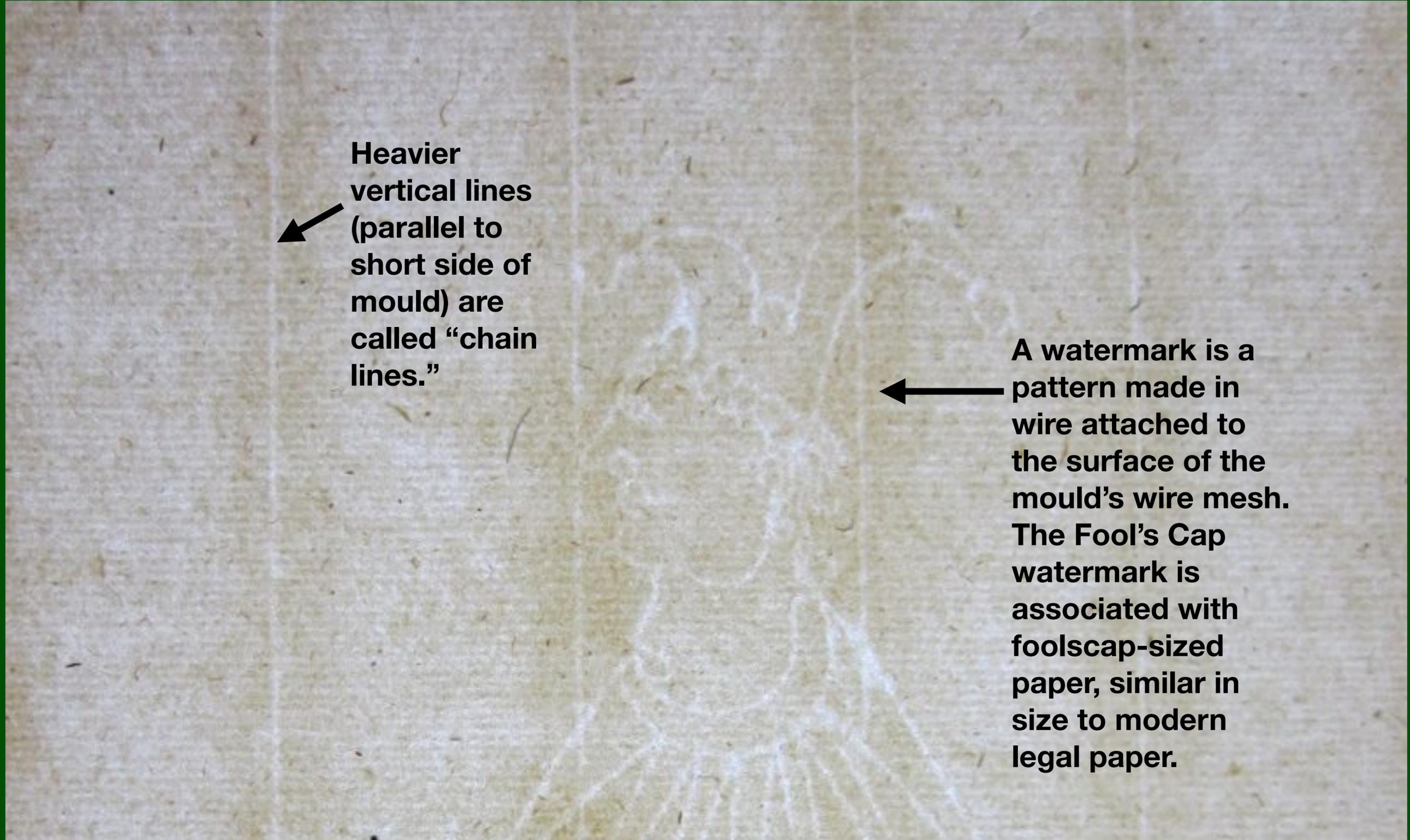
Italy rapidly overtook Spain as the chief European producer and introduced innovations including water-powered pounding of rags and use of watermarks.

# Paper moulds, laid lines, chain lines, and watermarks

Narrow horizontal lines are called "laid lines" and run parallel to the long side of the mould.

Heavier vertical lines (parallel to short side of mould) are called "chain lines."

A watermark is a pattern made in wire attached to the surface of the mould's wire mesh. The Fool's Cap watermark is associated with foolscap-sized paper, similar in size to modern legal paper.





Chain lines  
and laid  
lines clearly  
visible in a  
well-used  
mould from  
Crane, early  
19th c.

# East Asian printing

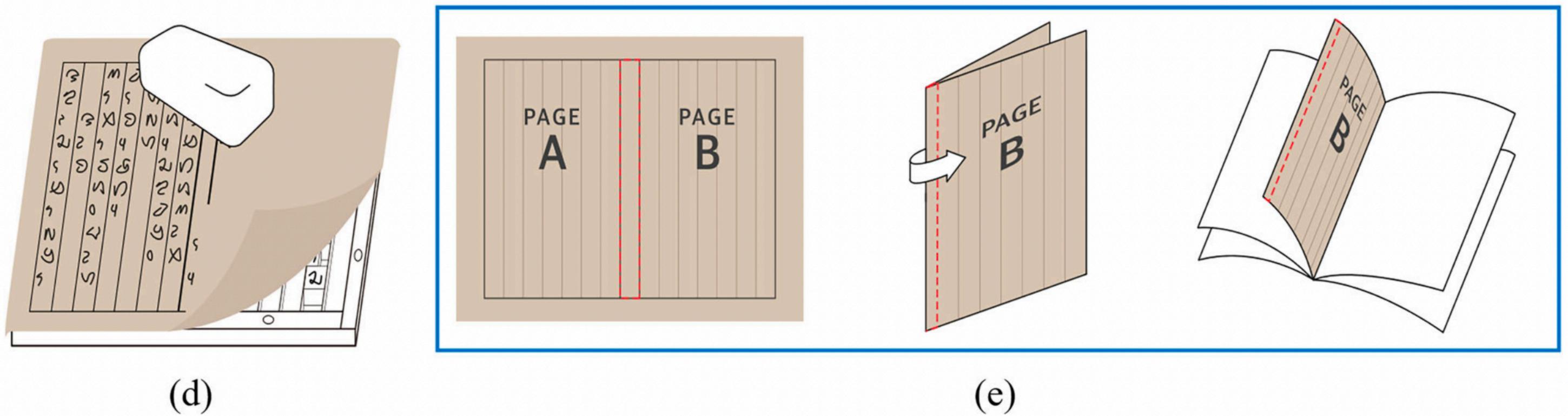
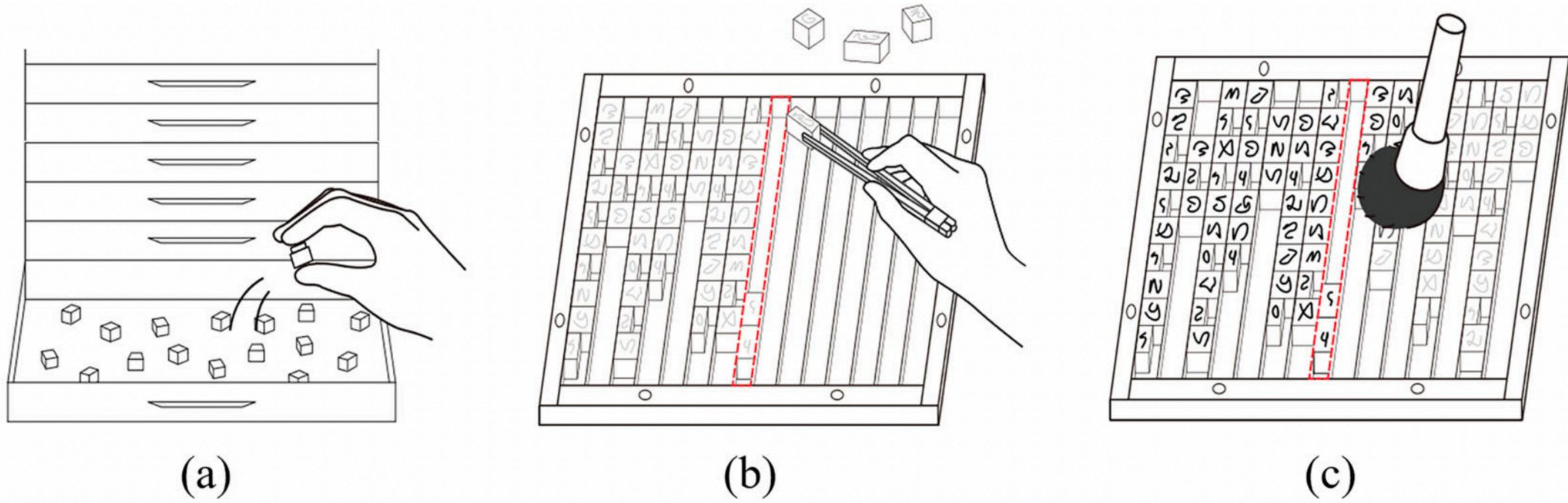


11th-c. printed Chinese book, *The Scripture of the Great Flower Ornament of the Buddha*



The Buddhist canon stored on 13th c. woodblocks in a Korean temple





**Fig. 1 | Book-making process in ancient Korea from type selection to binding. a Type selection. b Typesetting. c Inking. d Printing. e Binding.**

Et dyaboli qui deducebat eum. rufinus est in stagnum ignis et sulphuris  
ubi et bestia et plerumque prophete cruciabantur die ac nocte in secula seculorum



Block books

An alternative  
15th-century  
printing  
technology

Et dyabolus qui deducebat eos. missus est in stagnum ignis et sulphuris  
ubi et bestia et pseudo prophete cruciabuntur die ac nocte in secula seculorum



Et vidi thronum magnum candidum et sedere super eum a cuius conspectu fuerat  
caelum et terra et locus non est inuentus ab eis. Et vidi mortuos magnos  
et pusillos stantes in conspectu throni et libri apertis sunt. Et alius  
liber apertus est qui est vite et iudicium sunt mortui ex his que  
scripta sunt in libro secundum opera eorum



Et dedit mare mortuos suos qui in eo erant et mors et infernus deie-  
runt mortuos suos que in ipis erant et iudicium est de sanguine secundum opera eorum  
Et infernus et mors nihil sunt in stagnum ignis est hoc mors sed in stagnum  
ignis est. Et quod non est in libro vite scriptus tollis est in stagnum ignis



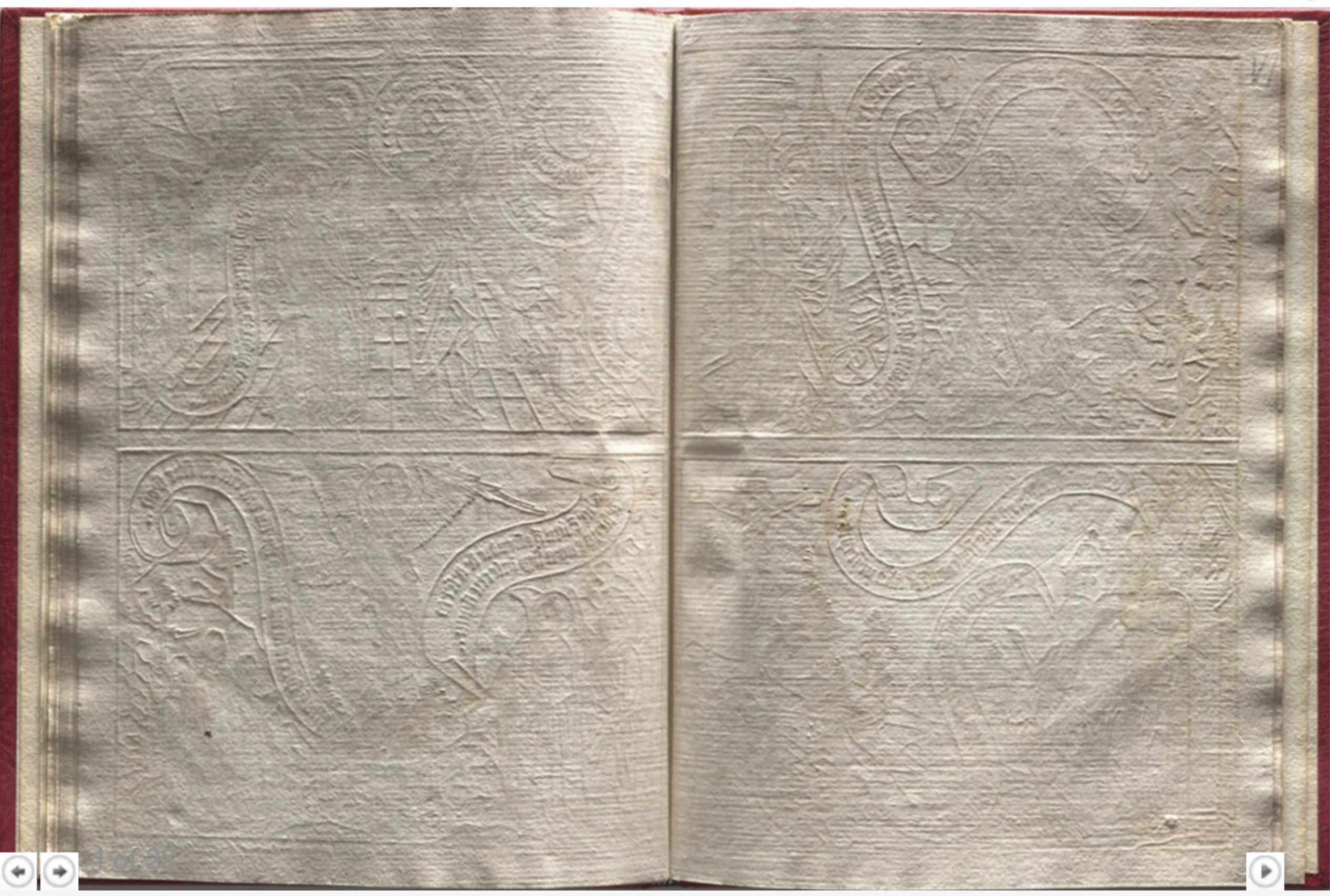
Faint, mostly illegible text at the top of the page, possibly bleed-through from the reverse side.



Multiple columns of faint, illegible text on the lower half of the page, likely bleed-through from the reverse side.



The  
backs of  
printed  
pages in  
a 1465  
block  
book,  
seen in  
raking  
light



**Did Gutenberg actually use  
Korean-style sandcasting?**

Did Gutenberg actually cast identical type pieces using the punch-matrix system?



# Experimenting with other casting methods Gutenberg would have known



## Many letter-form patterns

- Since the patterns are relatively quick to make, and sand-casting takes more time, it makes sense that many were made so that each of several “founders” could have a set.
- This is the inverse of the “standard method” in which a laboriously made die-stamp along with a matrix and hand-mold are labor intensive, while the “founding” is relatively quick and low-skilled.



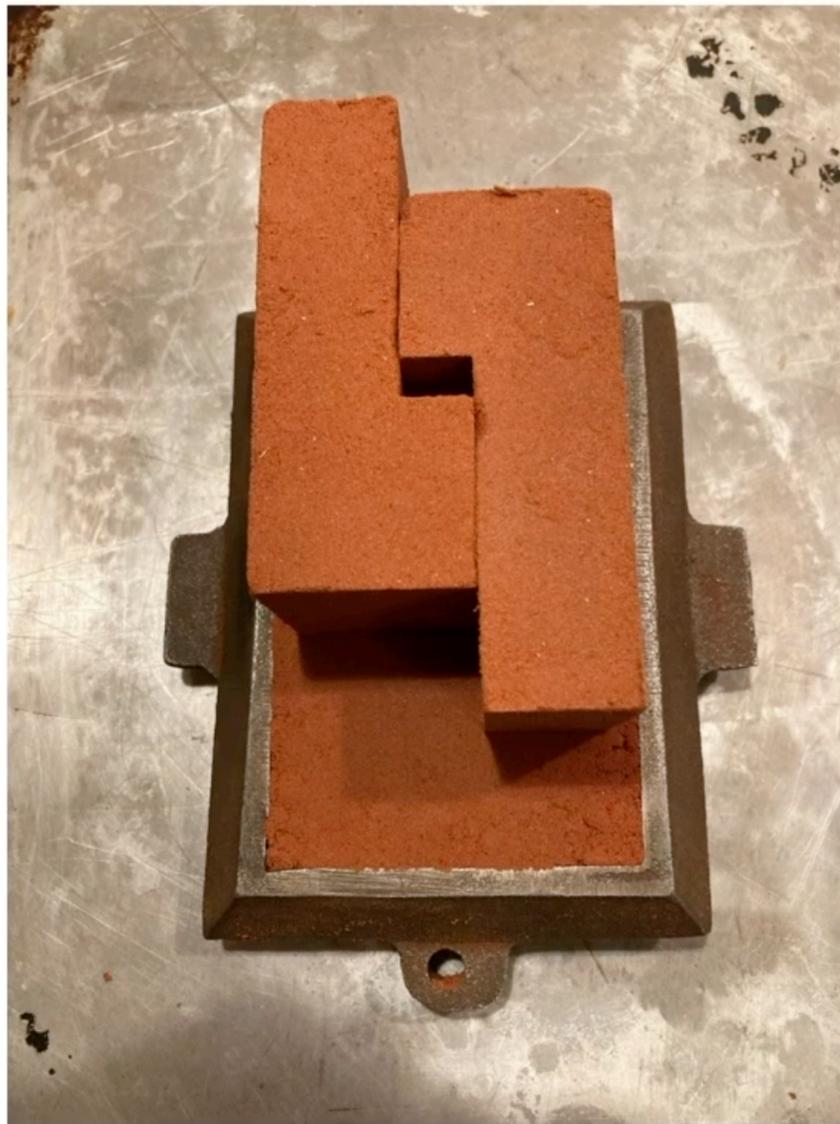
Boxwood pattern sticks.

Three versions of letter “l” quickly made



Fired pattern tile i letters. The superscript dots (highly variable in Guttenberg) are on separate pattern sticks, allowing for a mixture of forms.

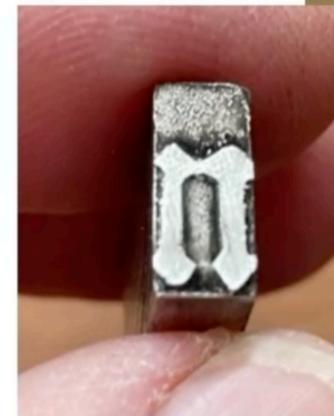
# Experimenting with other casting methods Gutenberg would have known



← The three-part mold with the letter impression on the bottom (enclosed in iron frame) can be made entirely in moist “green sand.” Here the sand is a commercial sand called “Delft Clay.”

→ Green sand molding gives good results, but the mold is destroyed with every letter cast since the sand sticks to the metal. Maybe that was okay!

Letter “n” as cast.  
 (“greensand”)



For greater efficiency I finally settled on a permanent stone mold to contain the metal and form the type-stem, and baked sand for the letter matrix.

# Experimenting with other casting methods Gutenberg would have known



A mold of soapstone was made to contain the metal.  
Soapstone molds are another ancient method of casting metal. It was commonly used for medieval “pilgrim badges” (Gutenberg had been involved in the pilgrim souvenir trade).

Soapstone is magnesium silicate (“talc” in stone-form).

Soapstone is highly heat-resistant (refractory).

Soapstone is soft and easy to shape.

Metal releases from the slippery stone very easily.



Adjustable molds are also of ancient design:

**“Ingot mold”** used by metalworkers to produce simple ingots for further shaping.

# Next time!

- **Format, signatures, book structures**
- **Developments in typography 16th-18th c.**
- **Aspects of the print trade**
- **Control of the press**