

# **Science and Technology of Writing:**

## **The Earliest Books**

Presented by Joey Cross

Teacher Cohort Academy  
Oriental Institute

# Papyrus (*Cyperus papyrus*)

An unrolled Ancient  
Egyptian scroll





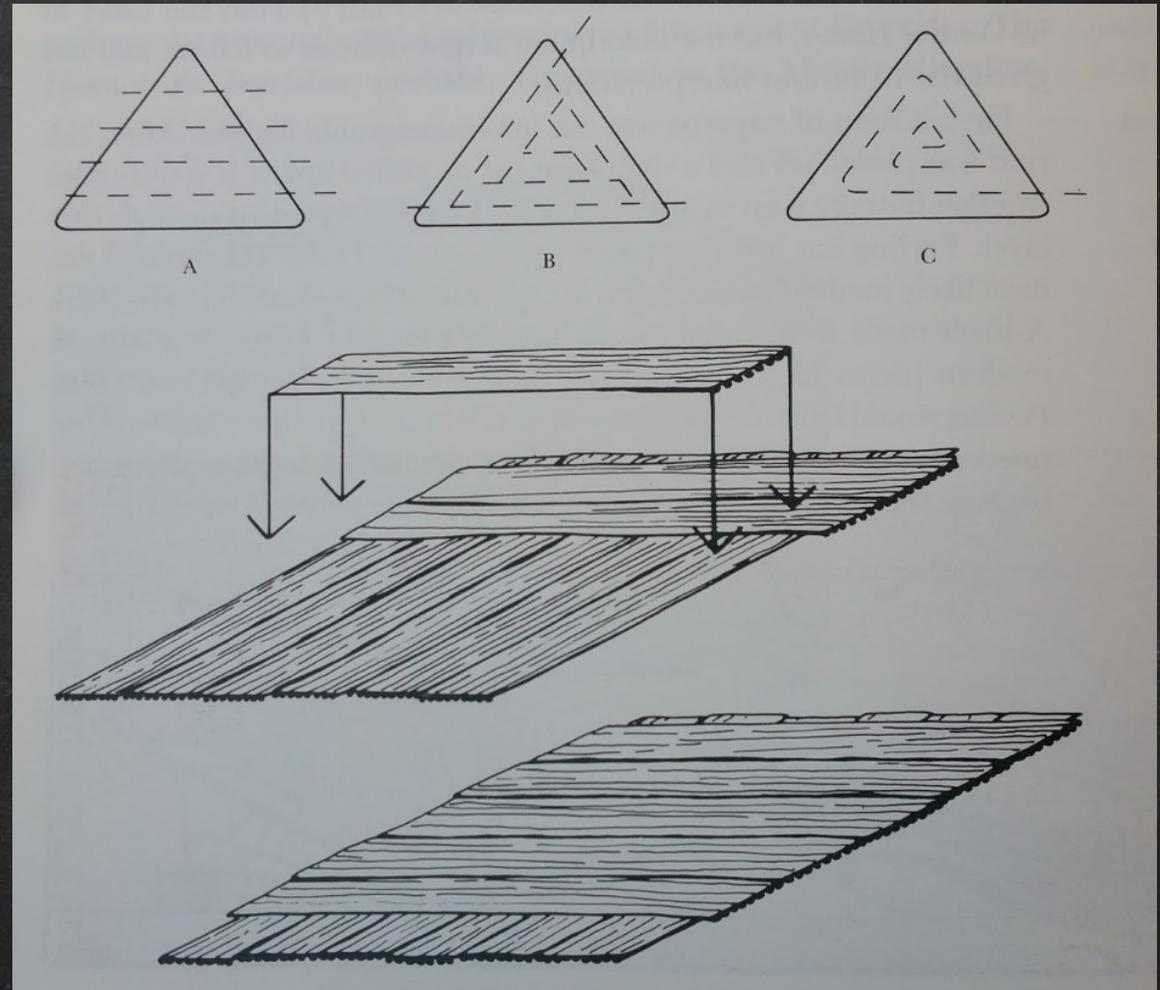
Den (standing)  
First Dynasty Pharaoh  
29<sup>th</sup> century BCE

Earliest example of a papyrus scroll found in his tomb (pictured to right, reconstructed)



# The earliest book: papyrus scrolls

- How to make a sheet of papyrus



# Joins between two sheets



Fragment of a Greek papyrus scroll with columns of text in ancient Greek script. The text is arranged in approximately 10 columns. The script is a cursive form of ancient Greek. The papyrus shows signs of age, including discoloration and some damage at the bottom edge.

Ruling dot

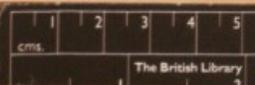
Ruling dot

Ruling dot

Ruling dot

Kollesis (K8)

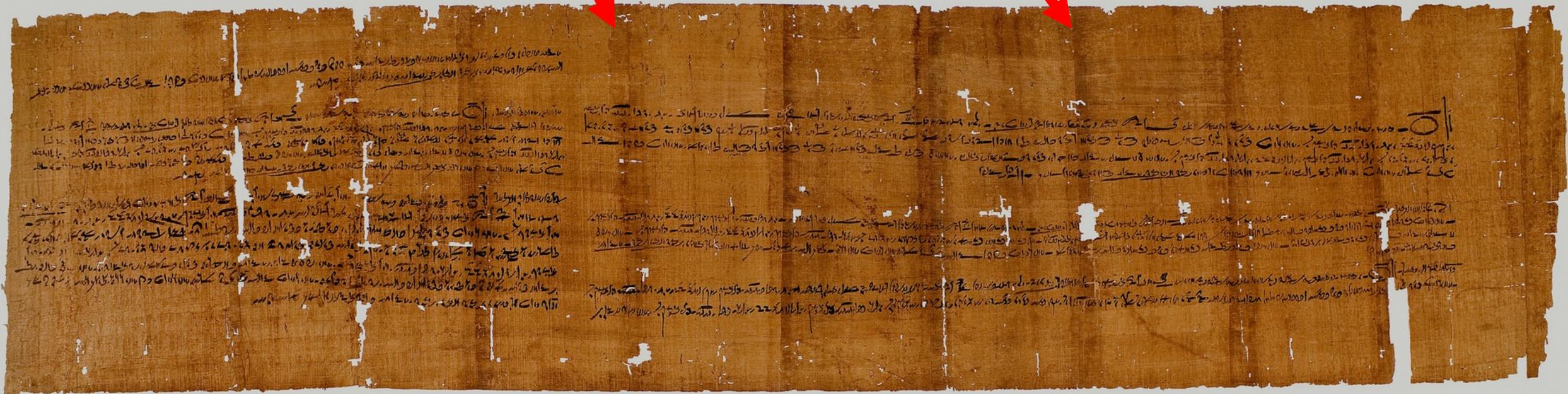
Kollesis (K9)



A Greek papyrus from Egypt  
(from Johnston, *Bookrolls and Scribes in Oxyrhynchus*)

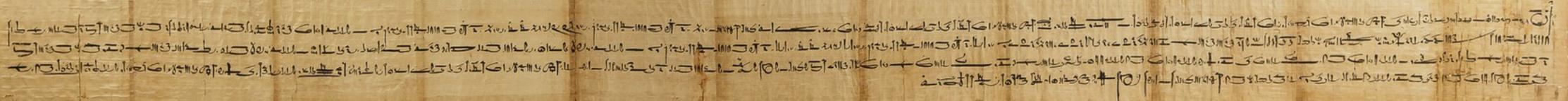
Modern cut

# Joins between two sheets



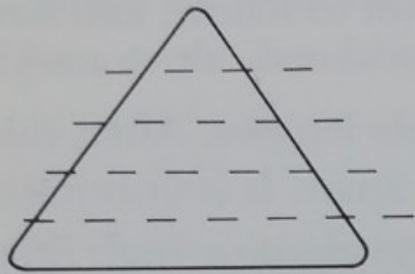
An Egyptian marriage contract (ca. 310 BCE)  
(OIM E25259)

## Joins between two sheets

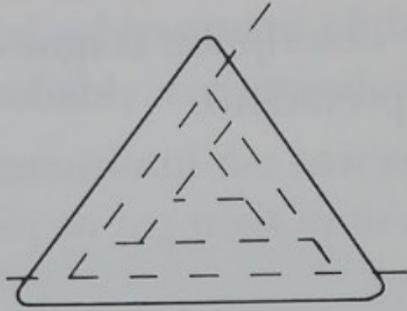


The image displays a fragment of an ancient Egyptian papyrus document, specifically a marriage contract. The text is written in hieroglyphs and is arranged in two columns. The papyrus strip is light-colored and shows several vertical lines where two sheets were joined together. The text is written in black ink and is clearly legible.

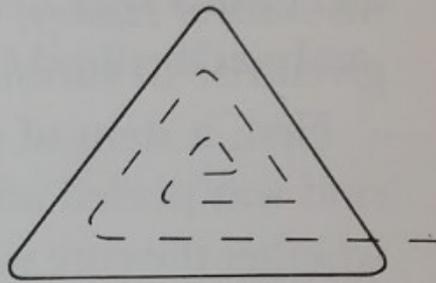
**An Egyptian marriage contract (ca. 362 BCE)  
(OIM E17481)**



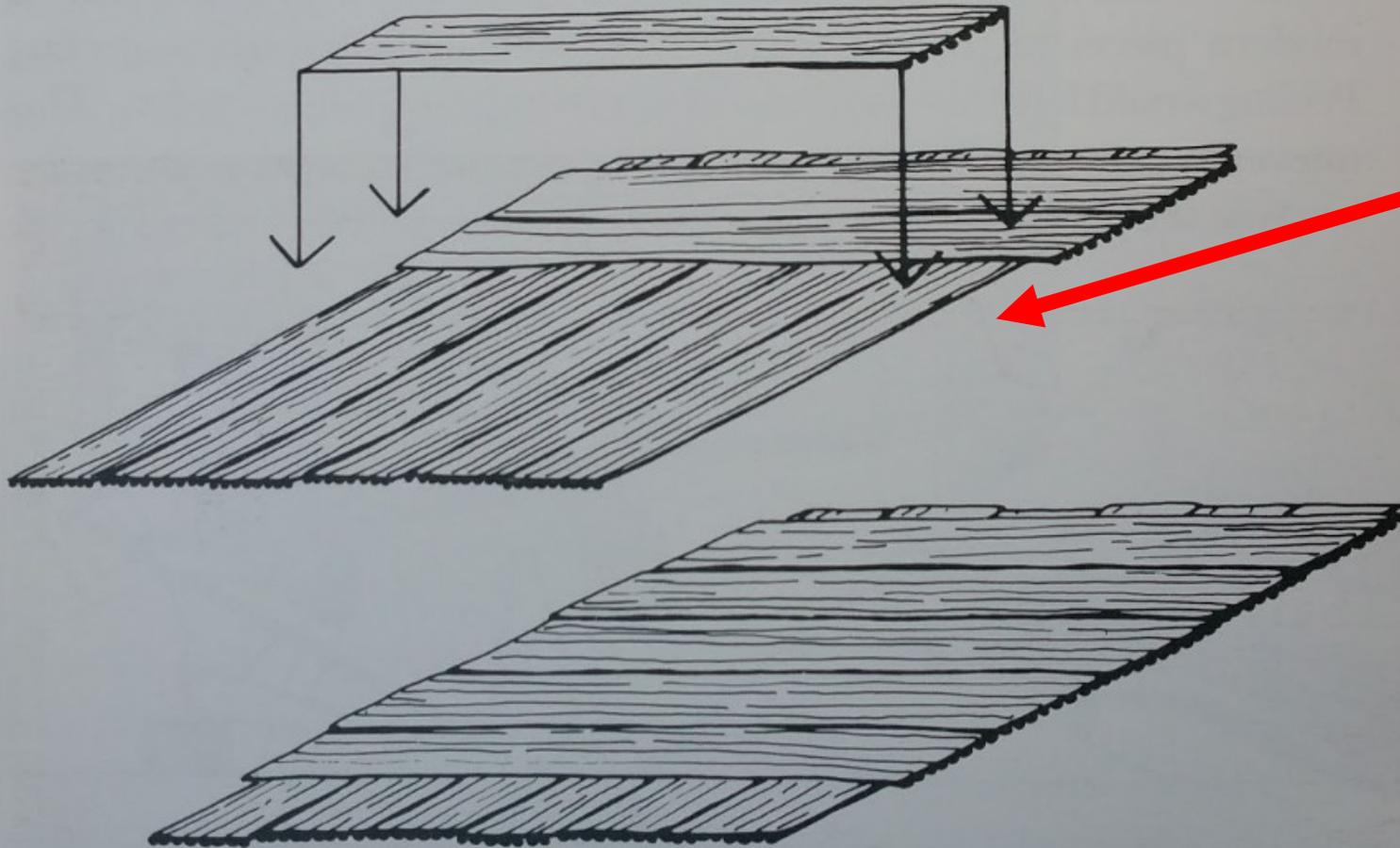
A



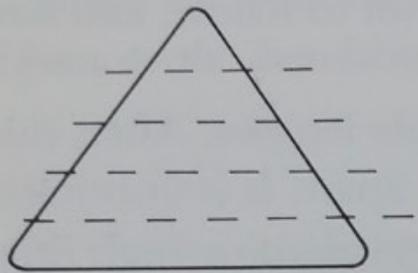
B



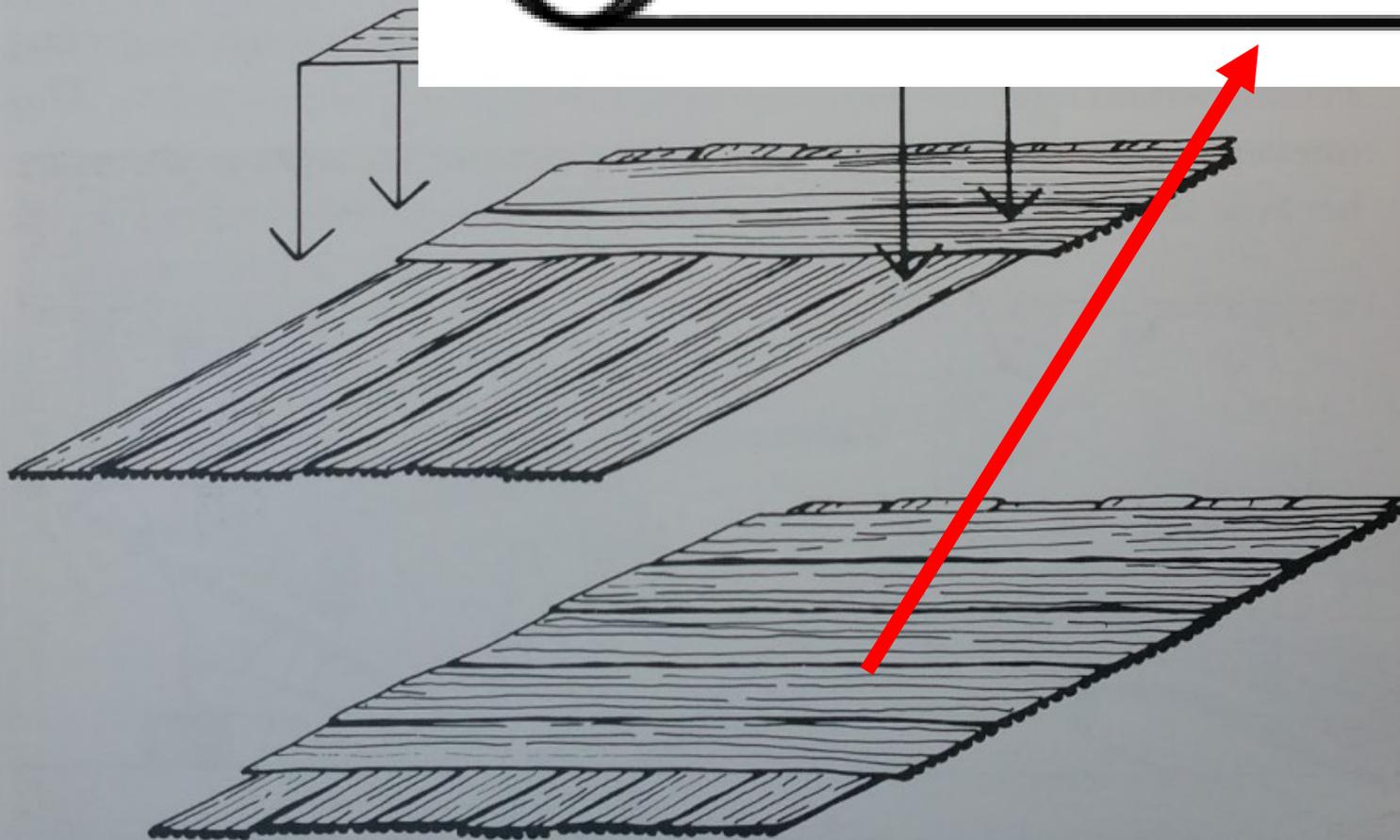
C



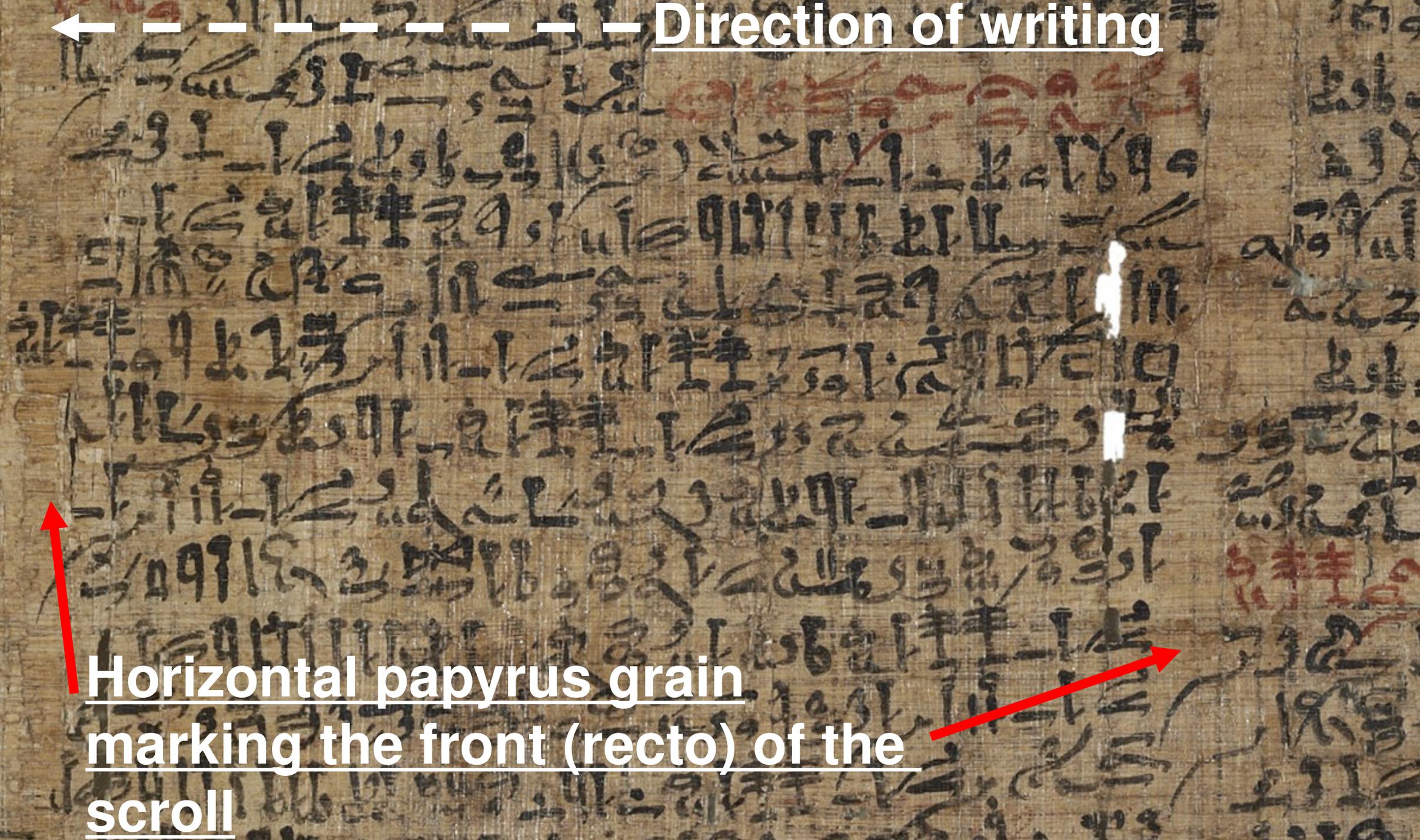
Overlay of strips, typically  
2 layers



A



 Direction of writing

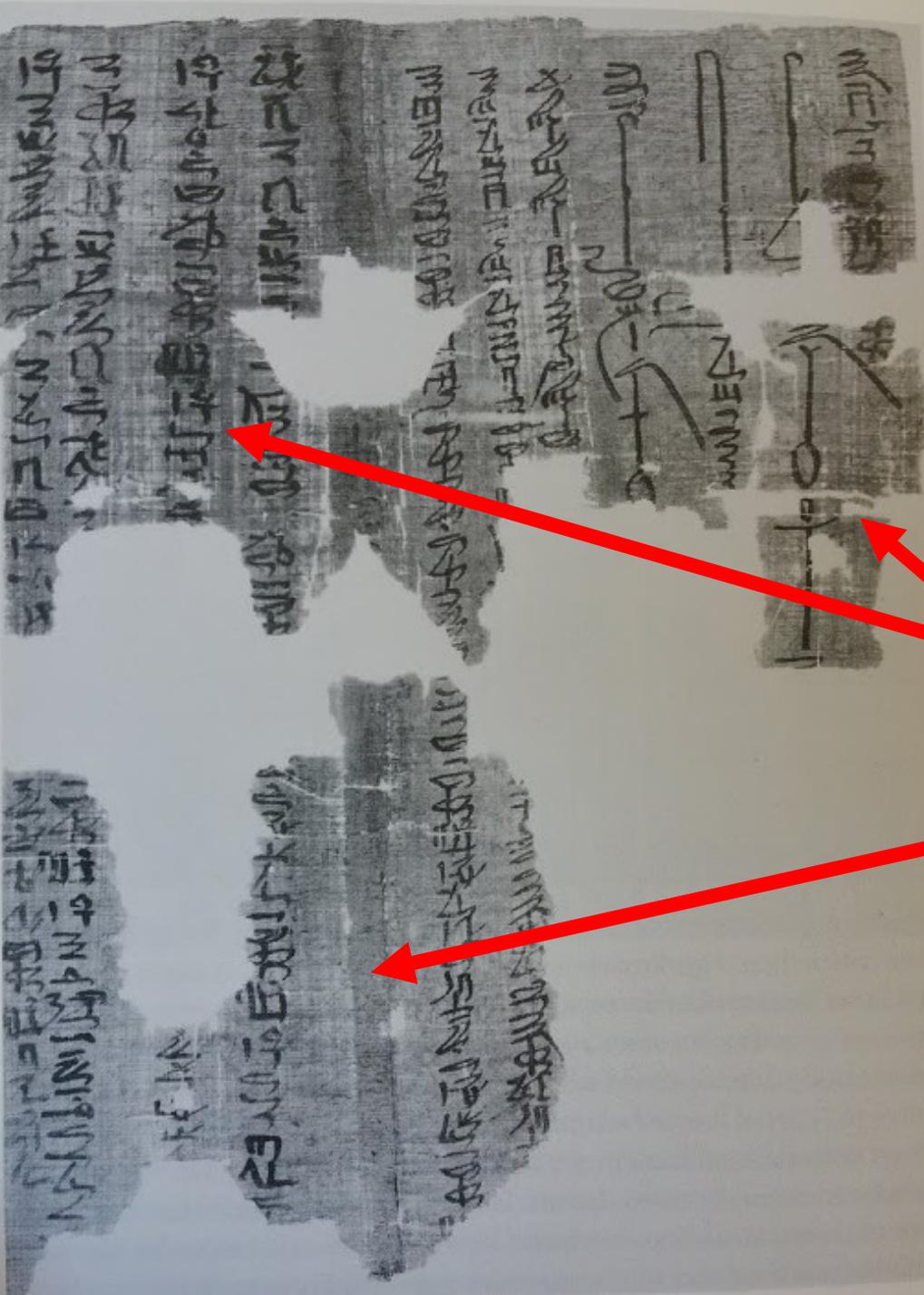


 Horizontal papyrus grain  
marking the front (recto) of the  
scroll



# *The parts of a scroll*

- Recto: the front of a scroll where the fibers are horizontal. Typically where the scribe begins to write.
- Verso: the back of a scroll where the fibers are vertical



**A letter made by combining two sheets from different letters**

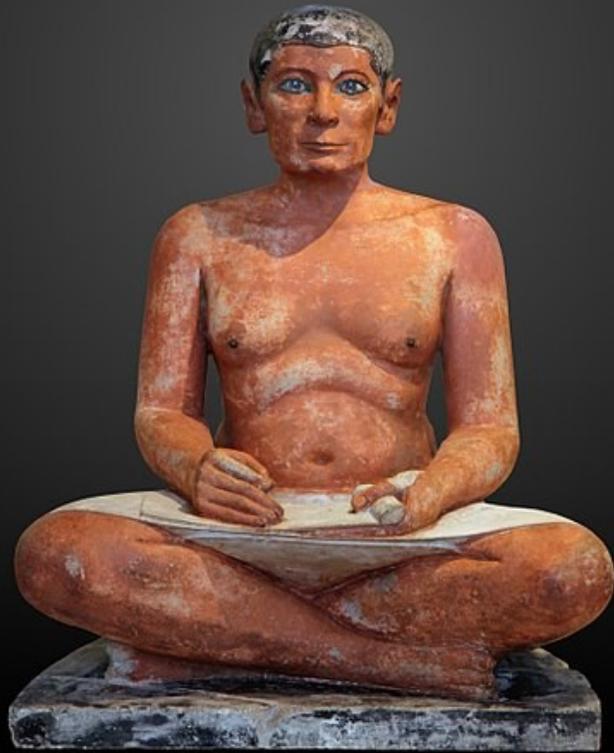
**Note different handwriting**

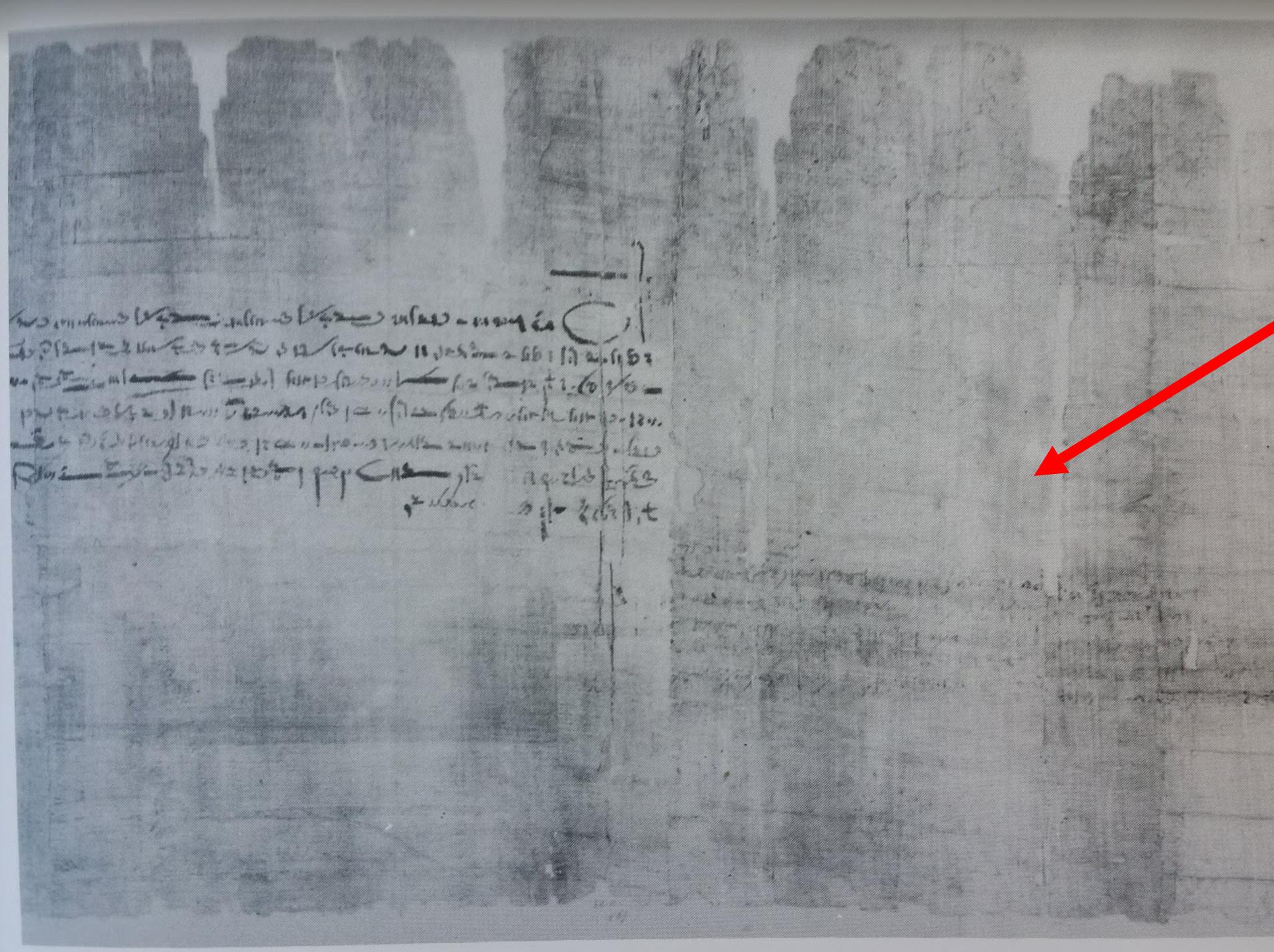
**Note papyrus join**

(from Parkinson and Quirke, *Papyrus*)

**Seated scribe sculpture from  
Old Kingdom (ca. 25<sup>th</sup>-24<sup>th</sup>  
century BCE)**

**(Louvre)**



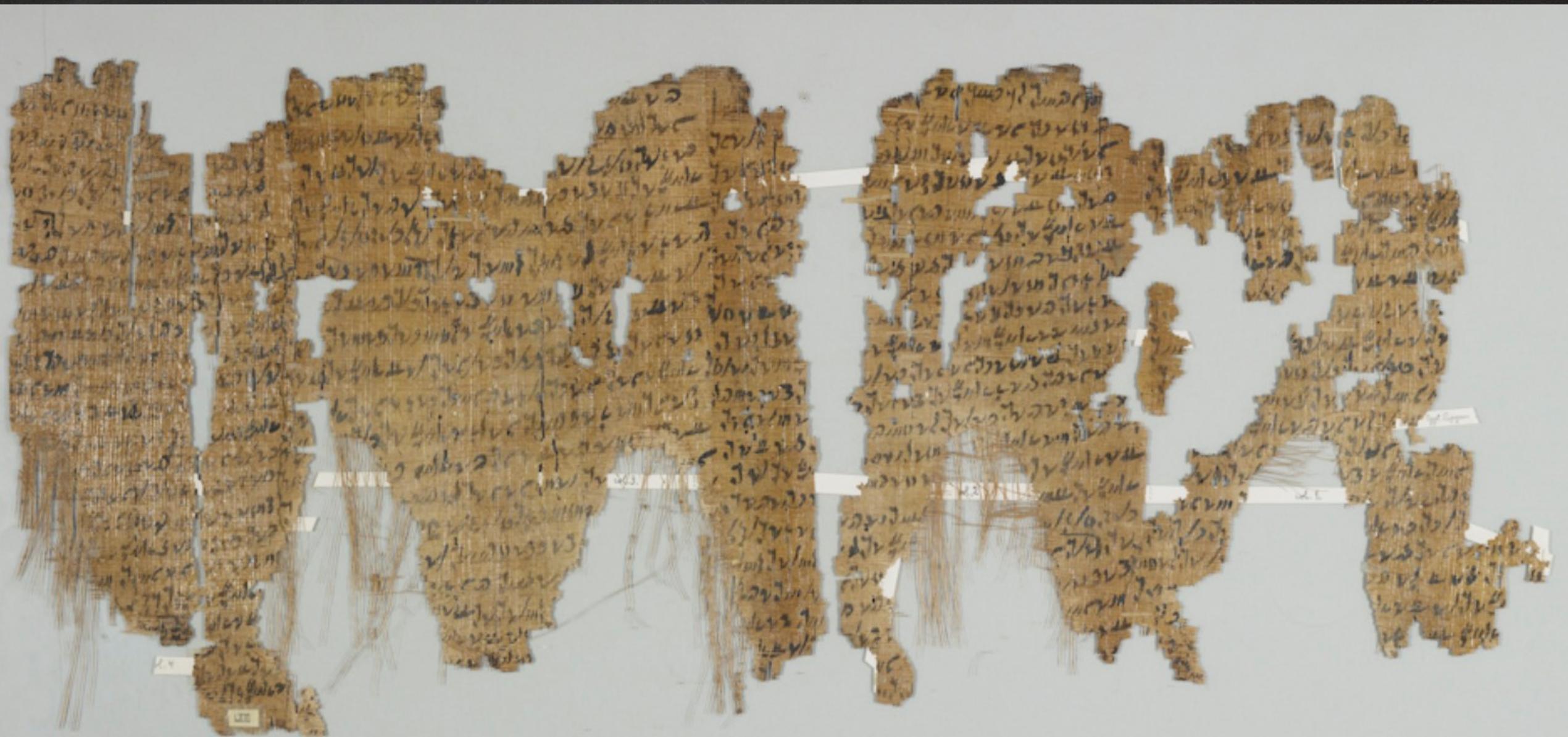


Blank sheet at  
beginning of  
scroll

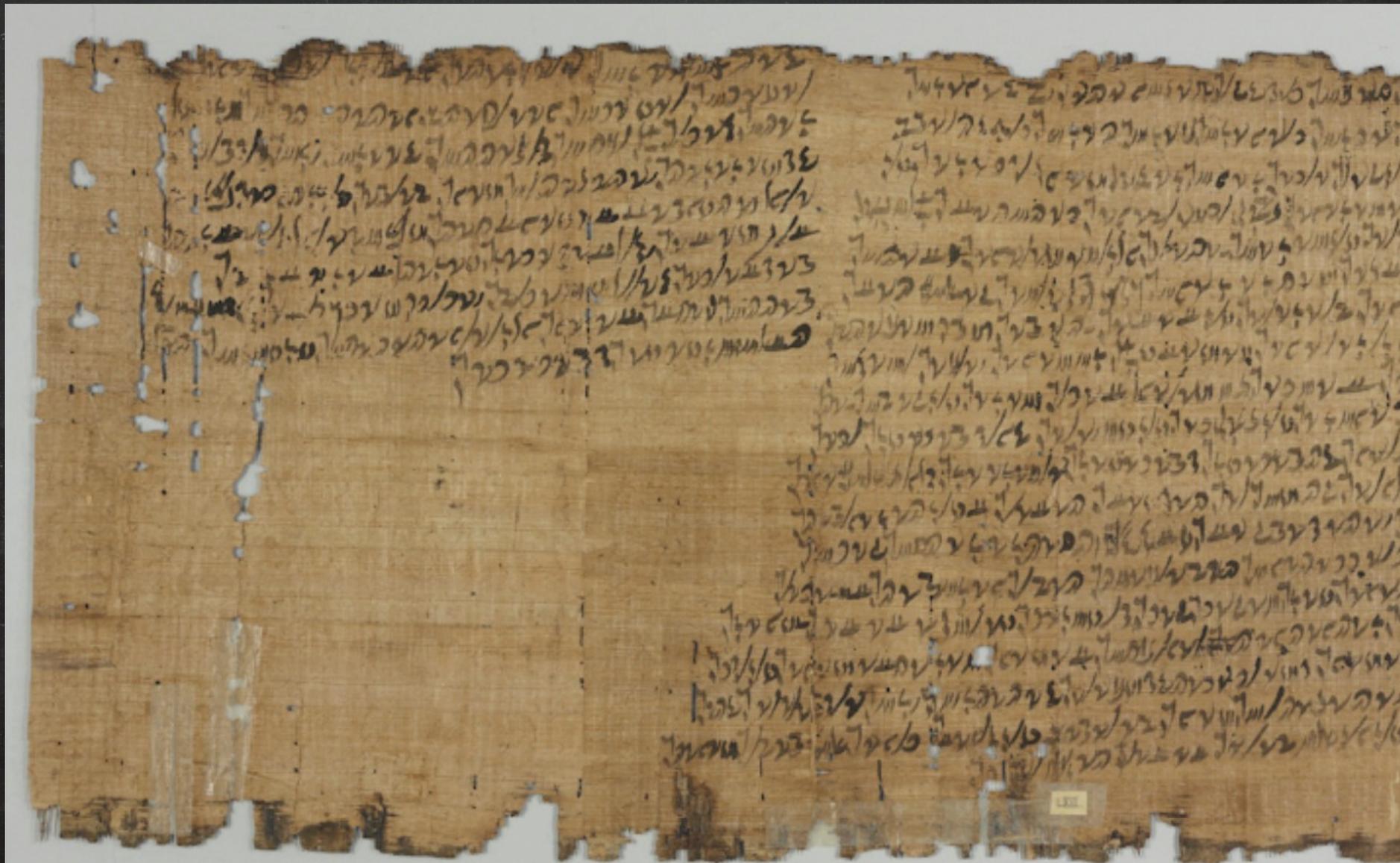


(from Parkinson and  
Quirke, *Papyrus*)

# Beginning of a scroll....



...compared to end of the front of the same scroll



Top margin

First words

Handwritten text in a cursive script, likely a medieval manuscript. The text is arranged in approximately 12 horizontal lines across the page. The script is dense and characteristic of Gothic or similar medieval bookhands. The first few words of the first line are clearly legible as 'In nomine'. The text continues down the page with various words and phrases, though many are difficult to decipher due to the cursive style and some fading or damage to the parchment.

Bottom margin

# *How to inscribe a scroll*

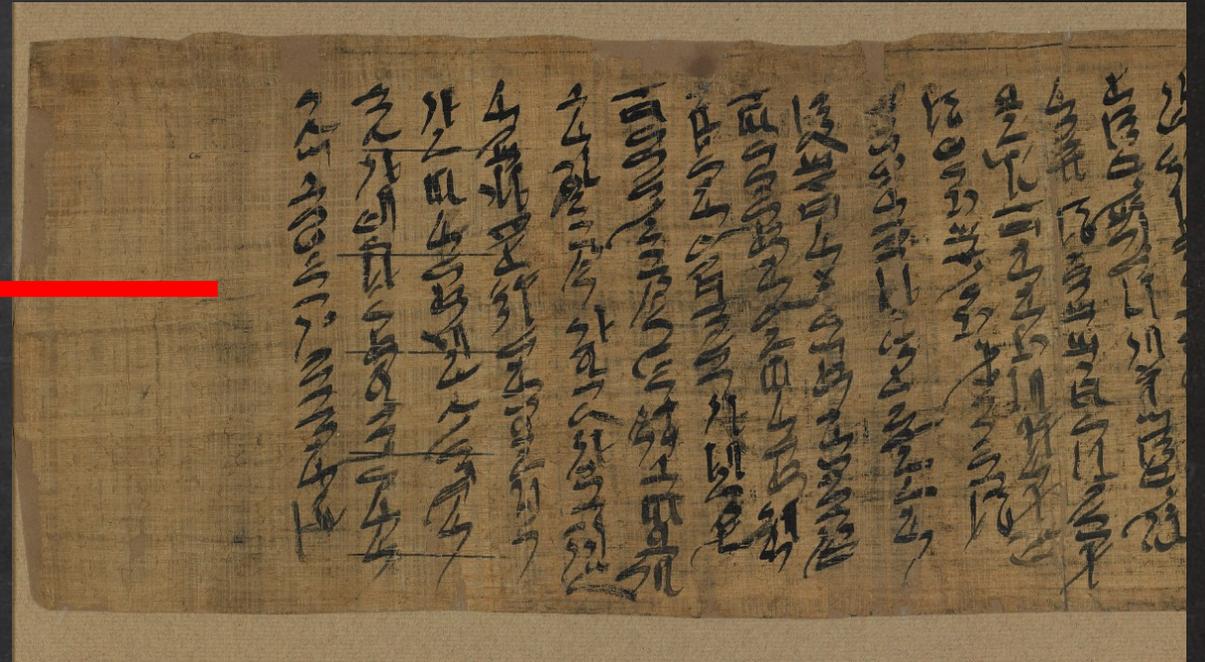
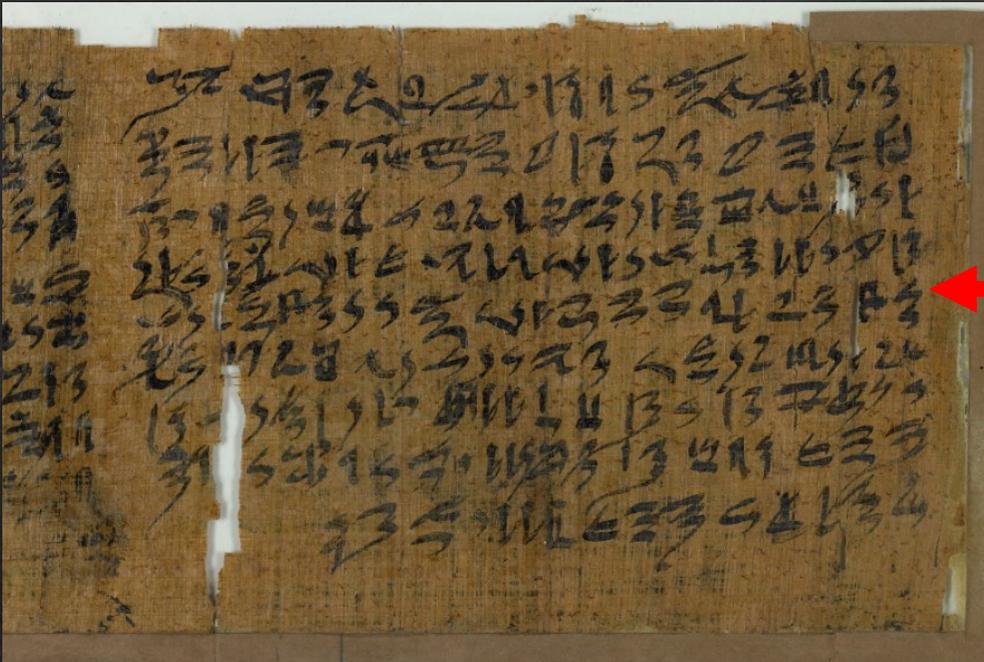
1. Leave space at the beginning for a handle and to prevent against wear and tear
2. Leave a margin at the top and fill in a square- or rectangle-shaped column of writing
3. Once the bottom margin is reached, begin a new column
4. Continue on the back if necessary

# The Instruction of Amenemope, formatted with one sentence per line



**Beginning of back  
(flipped, back of beginning of front)**

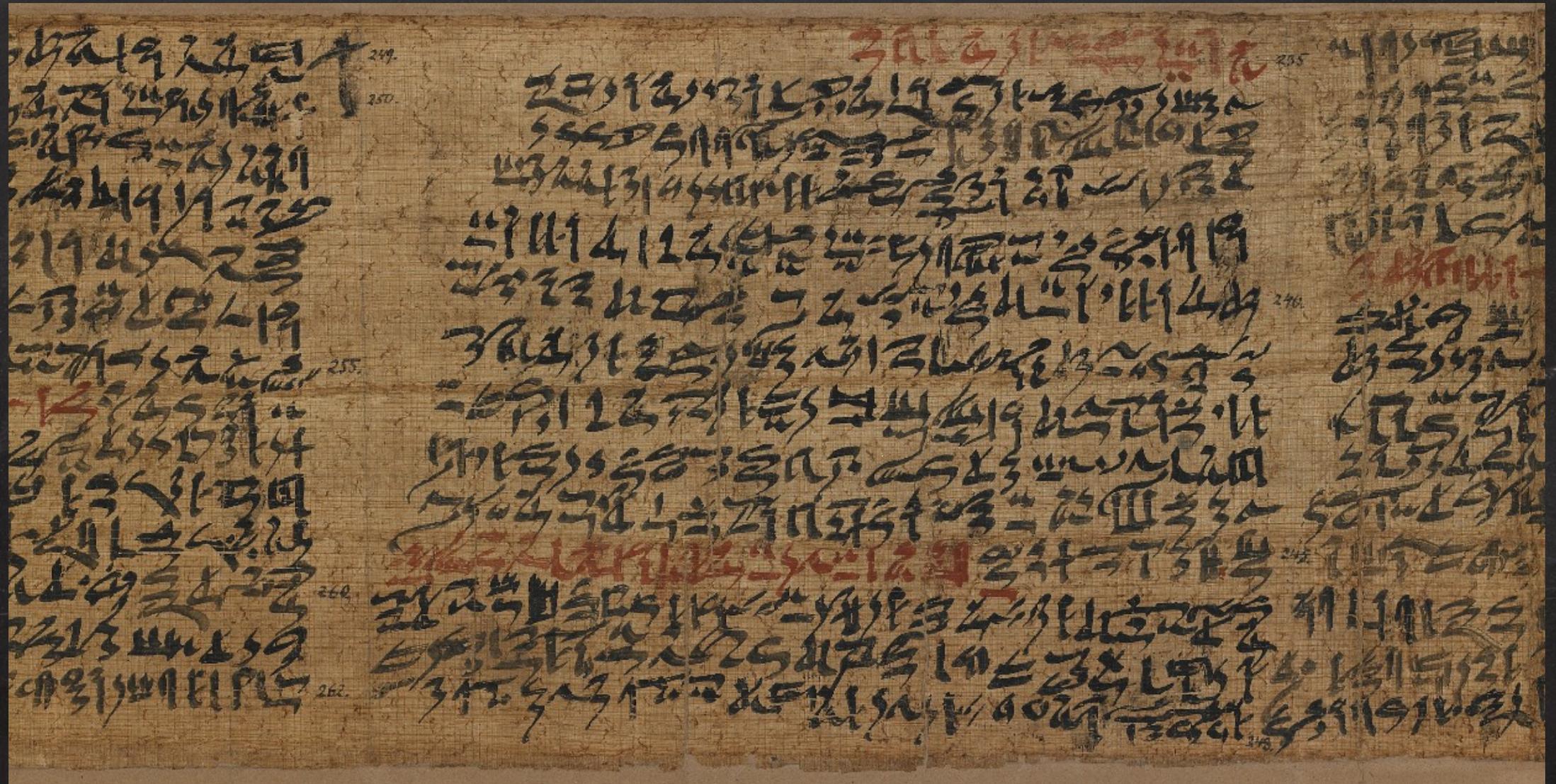
**End of front**



*The Eloquent Peasant* (Middle Kingdom)



# Red ink used in a short story to mark sections



The Tale of Sinuhe (Middle Kingdom)

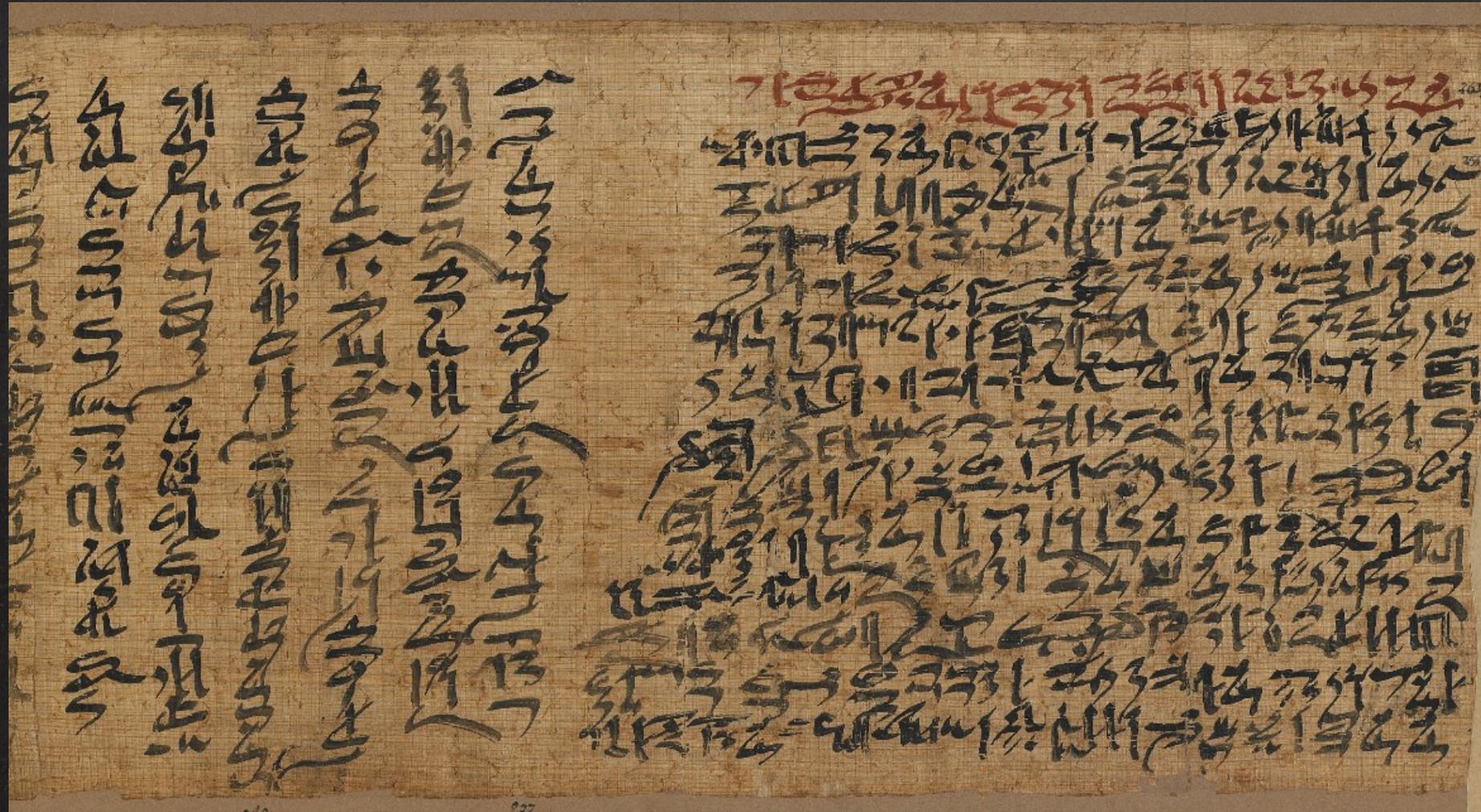
Dots (“verse points”) used to mark units of poetry

The image shows a fragment of an ancient Egyptian papyrus scroll. The text is written in hieroglyphs, arranged in approximately ten horizontal lines. Small red dots are placed above certain hieroglyphs, serving as verse markers. Two red arrows point from the text on the right towards these dots. The scroll shows signs of age, with some staining and wear.

The Teaching of Amenemhat (New Kingdom)

Wadi Jarf  
papyrus

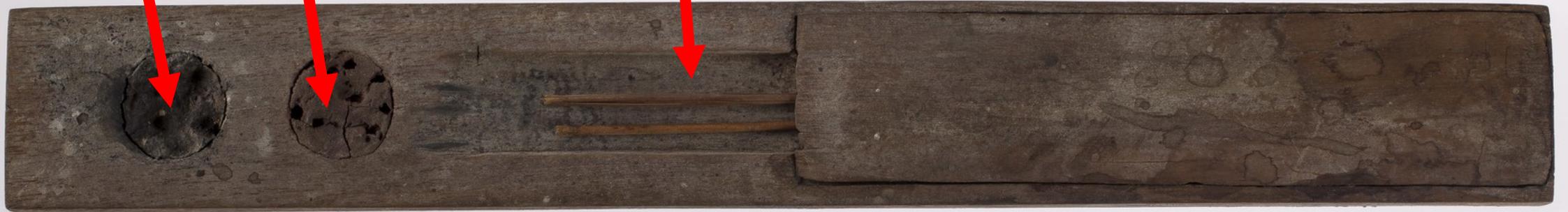




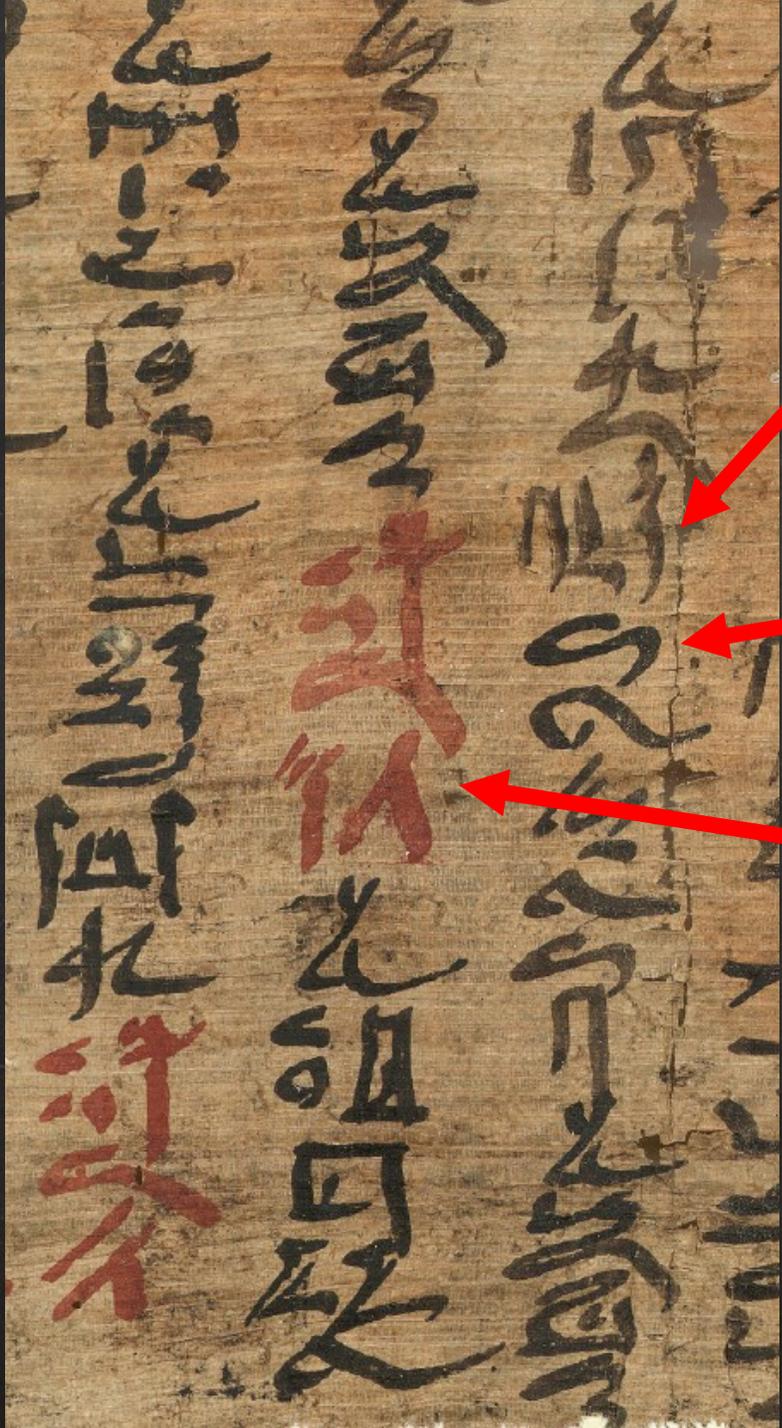
Two directions  
of writing in  
the same scroll,  
a Middle Kingdom  
short story  
(*Sinuhe*)

**Blank ink**  
**Red ink**

**Brushes**



Egyptian scribal kit (OIM E10780C)



**Ink running out**

**Scribe dips brush in ink**

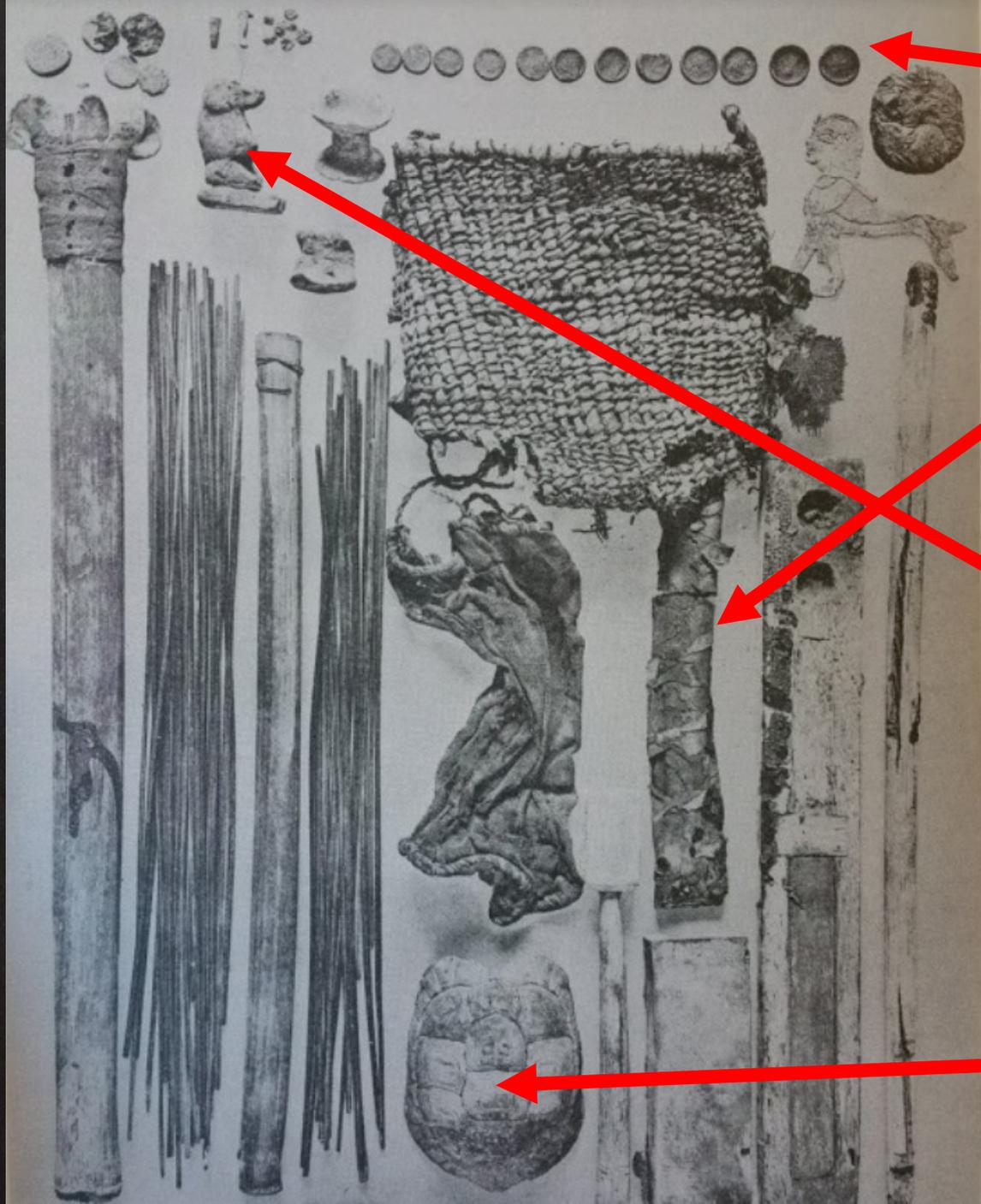
**Seamless switch to red ink  
and back to black**

Blank ink  
Red ink

Brushes



Egyptian scribal kit (OIM E10780C)



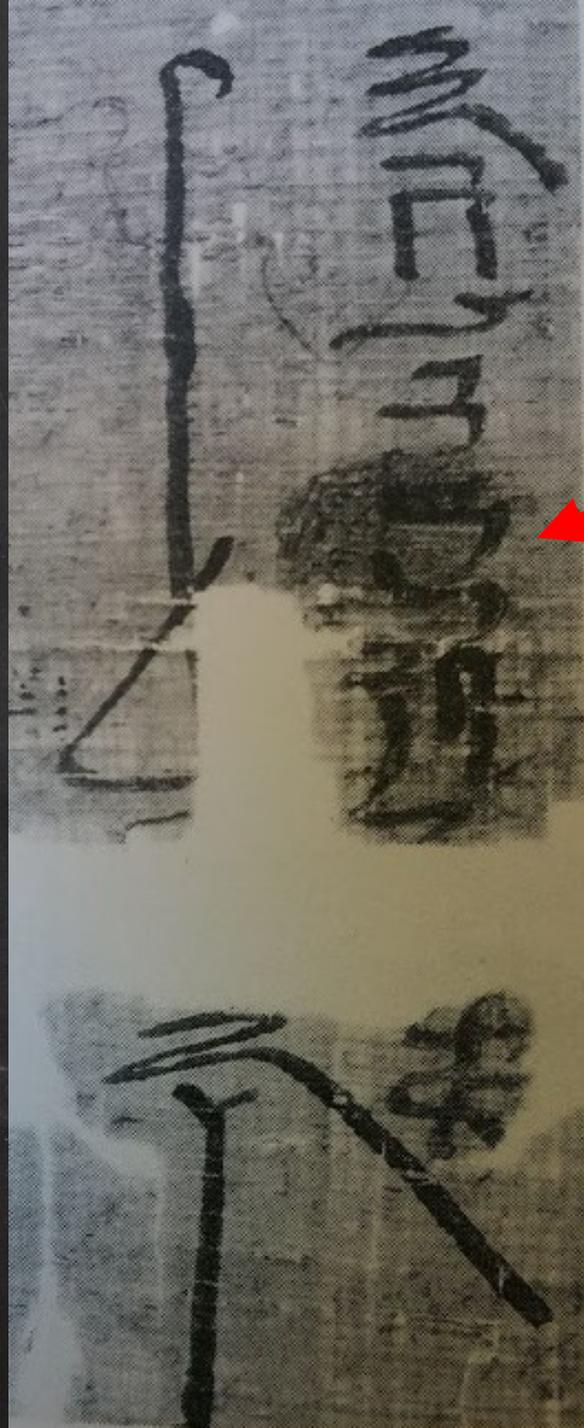
**Clay balls**

**Mallet**

**Statue of Thoth (as baboon)**

**Tortoise shell**

A thumb print left when a scribe  
erased a word on a letter he was  
reusing, and wrote a new one



Egyptian verb *ftt* "to erase"

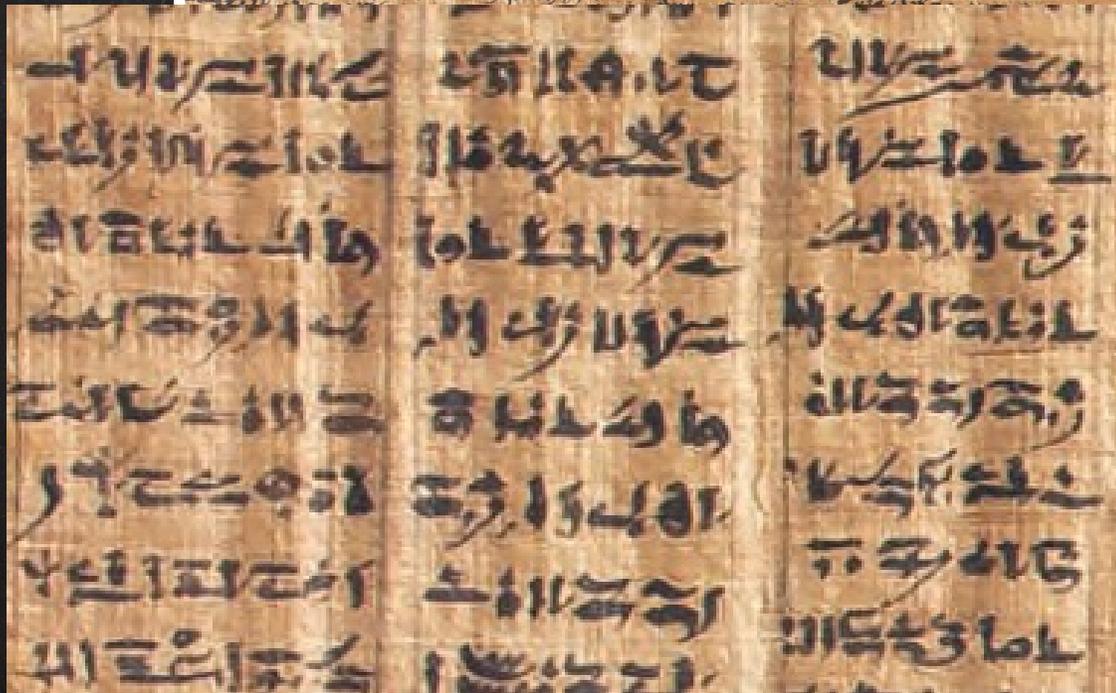
# *Palimpsests*

- Old, unused scrolls which are erased entirely and reinscribed
- Greek word meaning “scraped again”



A section from a Book of the Dead scroll in the Oriental Institute (Papyrus Ryerson)

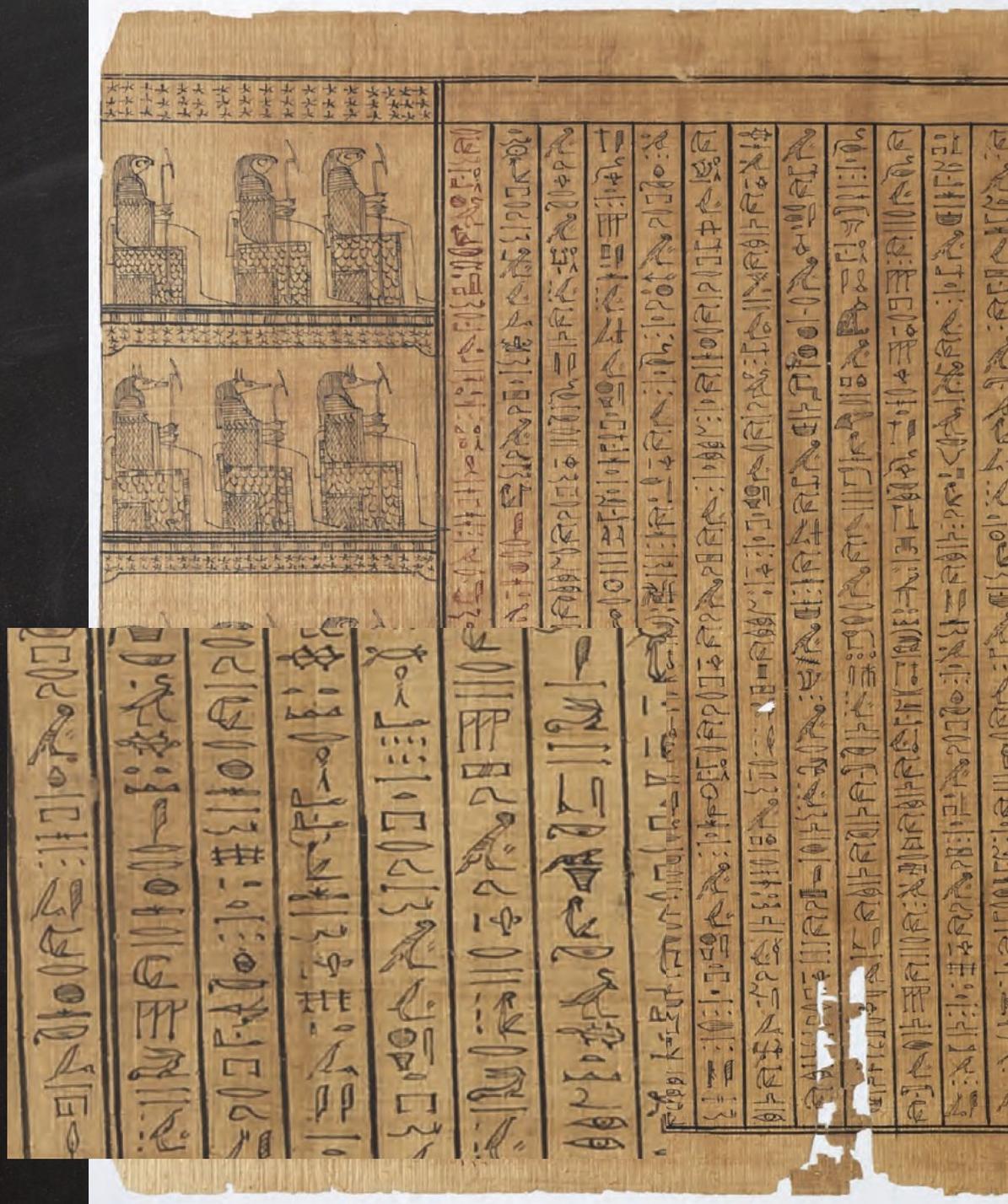
(OIM E9787H)



Note cursive (= everyday) writing



Papyrus of Ani (British Museum)

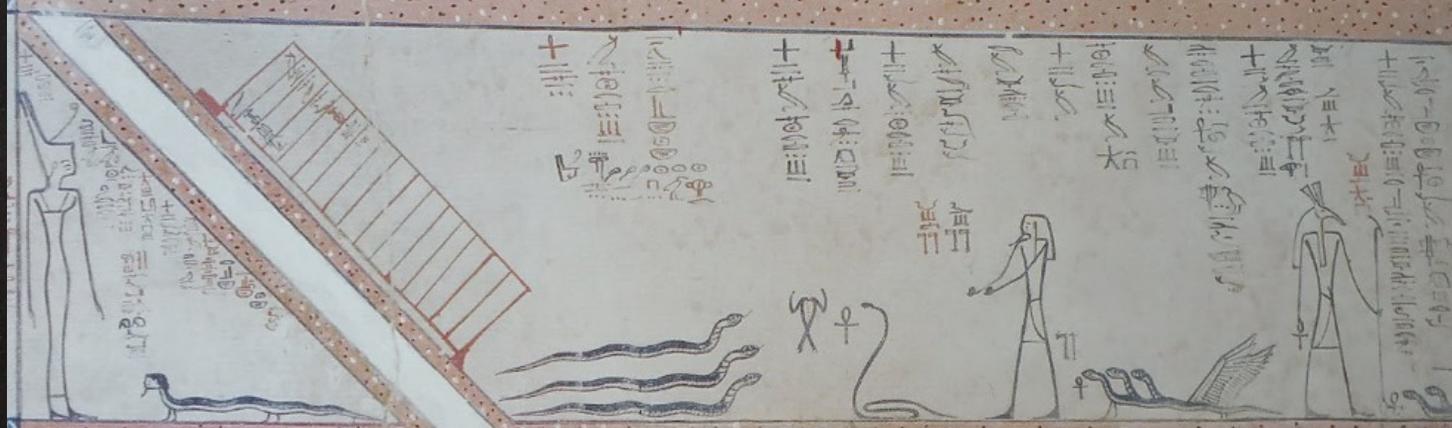
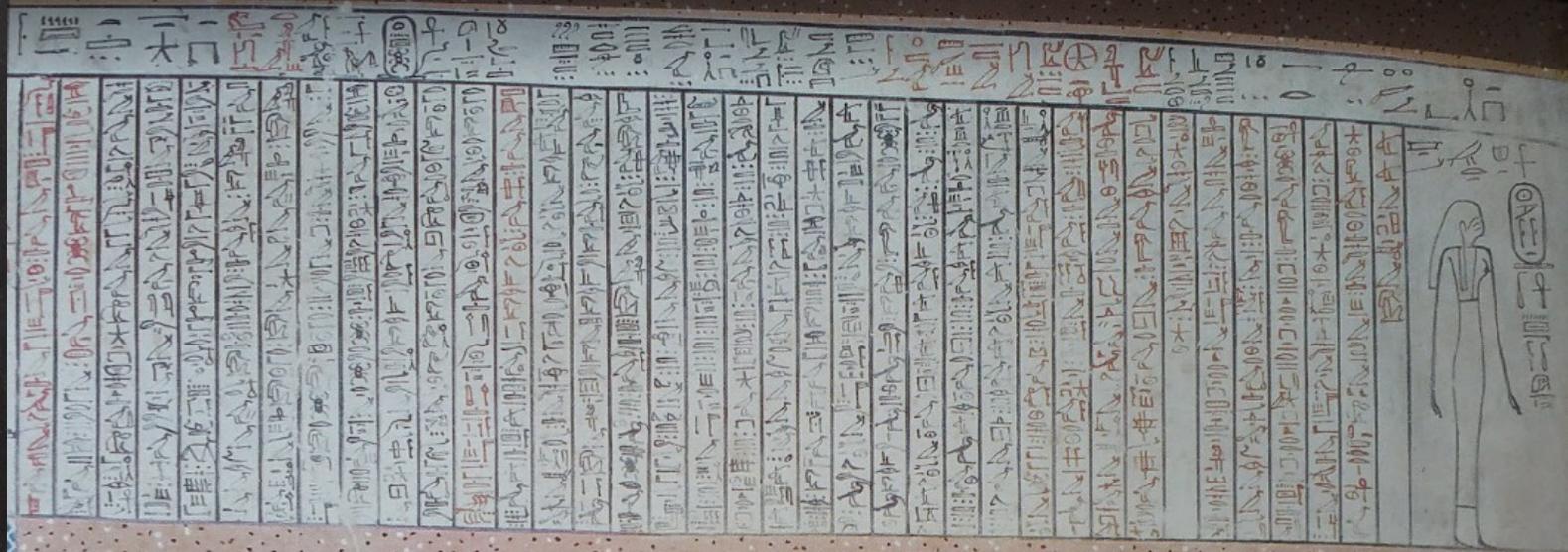


A section from a second Book of the Dead scroll in the Oriental Institute (Papyrus Milibank)

(OIM E10486J)

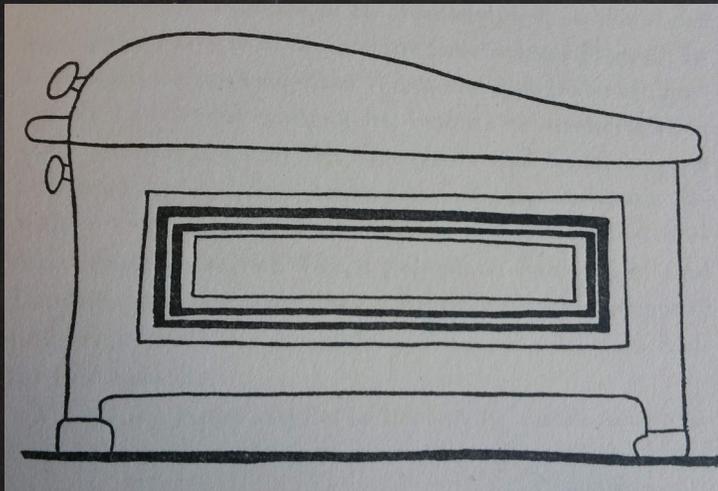
Note more ornate, hieroglyphic writing

Walls in the tomb of  
Thutmoses III  
inscribed with the  
*Amduat* book, using  
cursive writing and red  
ink to imitate what  
scrolls look like



# How to store scrolls

- Chests, frequently depicted in Egyptian art





# *How to store scrolls*

- Chests, frequently depicted in Egyptian art



# *Archive vs. Library*

- Archive: Records for preservation, rarely accessed
- Library: Documents for continued reading

# *The contents of scrolls*

- Multi-scroll works were rare
- Single scrolls which compiled different texts were common
  - Several short texts could be put on the back of a long text at a later time

# *Herculaneum library*



**A charred scroll from the library**

(Image:  
<https://blogs.ucl.ac.uk/dh/2015/08/11/seminar-digital-technologies-and-the-herculaneum-papyri/>)



# Use of leather for scrolls



The "Great Isaiah Scroll"  
from the Dead Sea  
(1<sup>st</sup> century BCE)



**Wall relief from Neo-Assyrian palace at Nineveh (in modern day Iraq), ca. 640 BCE**



**Writing cuneiform on a clay tablet**

**Writing Aramaic on a leather scroll**

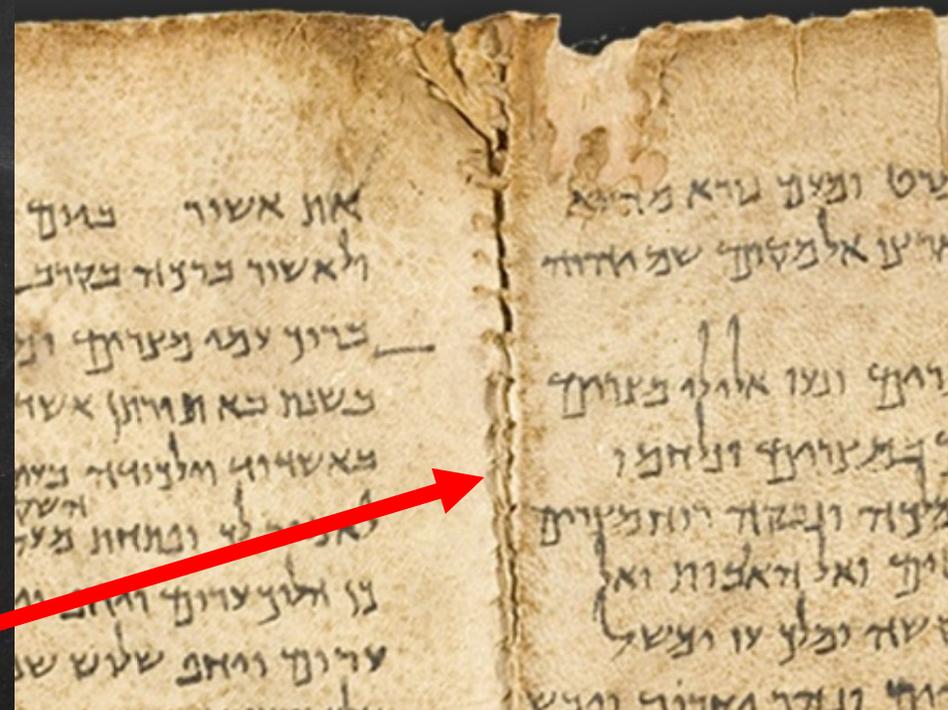
# Use of leather for scrolls



The "Great Isaiah Scroll"  
from the Dead Sea  
(1<sup>st</sup> century BCE)

# Manufacture of leather scroll

1. Soak animal hide (from sheep, cow, or goat) in lime and then strip hair
2. Rinse hide
3. Stretch out hide and scrape clean with a knife
4. Cut into sheets
5. Stitch sheets together to form scroll



Stitches to combine sheets

במה צרא העל וקדוה את חיו שלום ביהוה ודאוישו ולוא עם אמוא דבר צרא צעות  
דאוישו לאפור לוא תענהו

Correction  
above line  
that has been  
scraped away

והבא אליהם על חלקיה אשר על חצות ושונא דמופי והוא זבן אמר דמונה אל  
הווקרה קדוה ביהוה והגידו לוא את צדיה וב שקד והיה צפיו הווקרה ודעל  
והקיע את ביהוה והנצח בשם והבא בת דדוד והשלח את אליהם אשר על חצות

ואת שונא דסטור ואת וקע דצוהים בעמיהם בשם אל השעהוד בן אפינהו  
והאפרו אליו ציה אפינהו וקע דצוהים בעמיהם בשם אל השעהוד בן אפינהו

Corrections  
above line

עו צטור וניהו את ליהוה אלהי השפע והיה אלוהיה את וציה וב שקד אשר שלחו  
בליך אשרו איונה לחורב אלהיהם ויהיה ביהוה אשר שפע והיה אלוהיה ונשאם

תפלה בעו דשאיהם והנצח דין בעור דזואת והבוא עברה דכל אמוקהוד אל השעהוד  
והוא אשר לדעה ושעהוד ציה תראפרו אל אפרו ונצוד ציה אפרו ודוד אל תהרא מכת דדעהו

ואשר שמעוהו אשרו וציה אפרו ונצוד ציה אפרו ודוד אל תהרא מכת דדעהו  
והשוב דב שקד והנצח את בליך אשרו נחם על לבנהו צרא שפע צרא נפע תעיש והשפע  
אל תוהרהו בליך ציש לאפור דעא לדלות את צוד והשפע והשפע והשפע והשפע



**Great Isaiah scroll, 73.5 meters = 24 feet long**

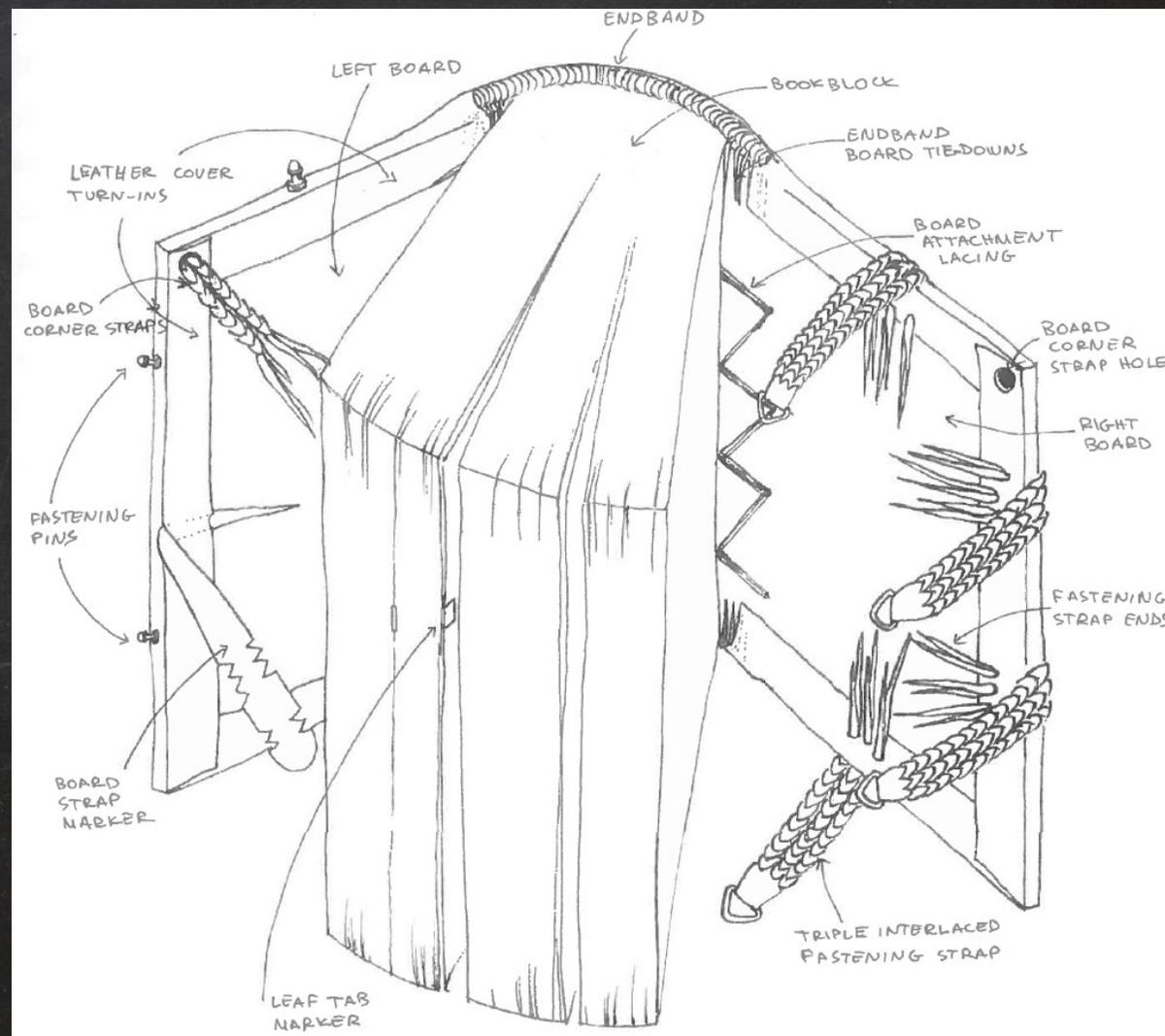
# Continued use of scrolls

- Common in the Mediterranean through the 4<sup>th</sup> century CE
- Specialized use in the Middle Ages:
  - Genealogies
  - Actor's scripts
  - Torah scrolls in Judaism



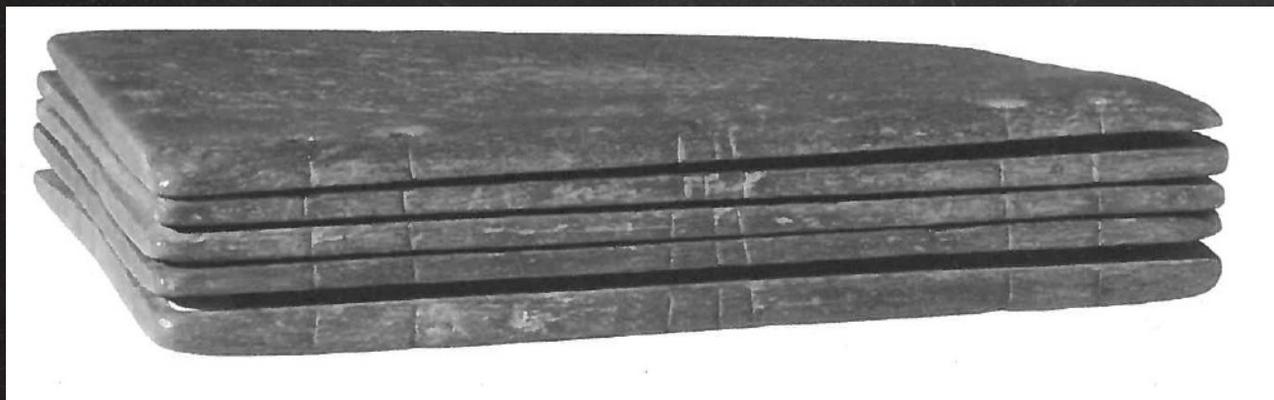
Beginning of a Torah scroll (16<sup>th</sup> century) from the British Museum

# The successor to scrolls: the codex

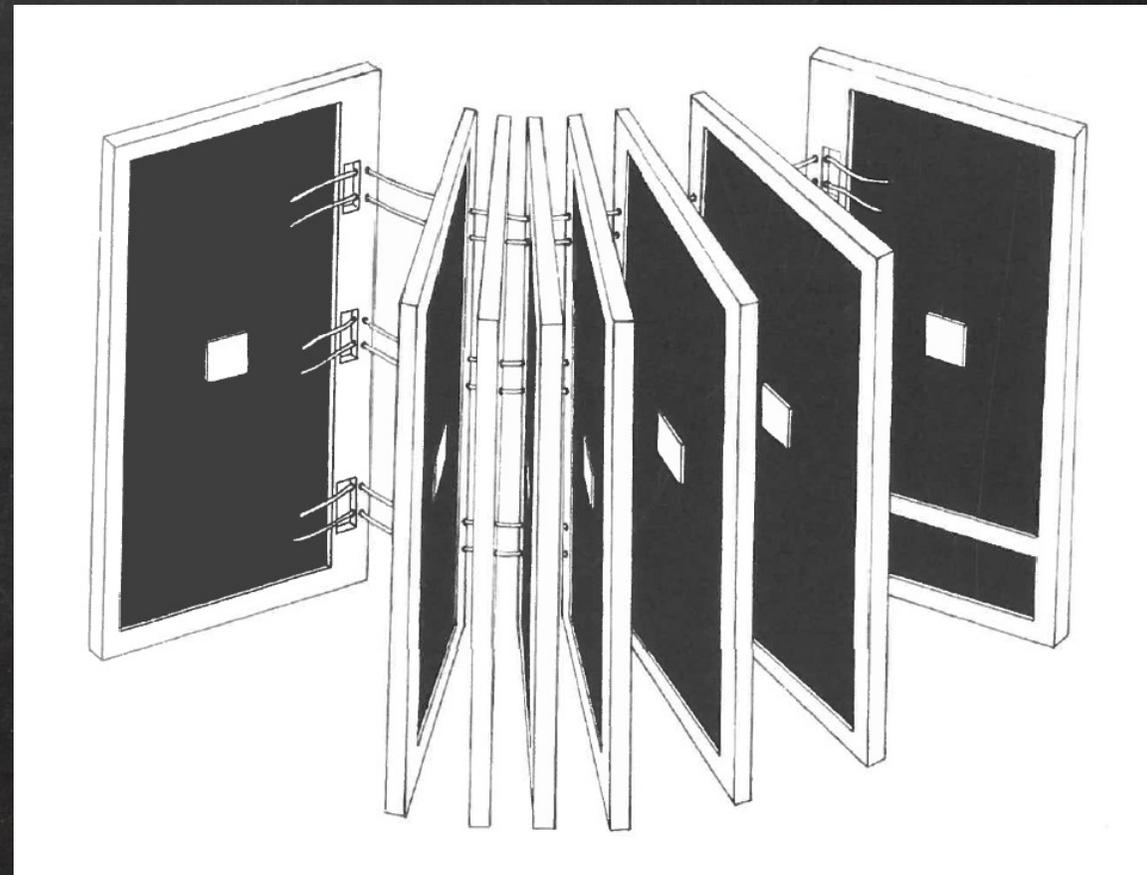


A drawing of a typical early codex  
(from Boudalis, *The Codex and Crafts  
in Late Antiquity*)

# Early codices: writing tablets



4<sup>th</sup> century tablets from Egypt (Brooklyn Museum)  
(from Boudalis, *The Codex and Crafts in Late Antiquity*)



Scraper

Wood tablets

Ink well

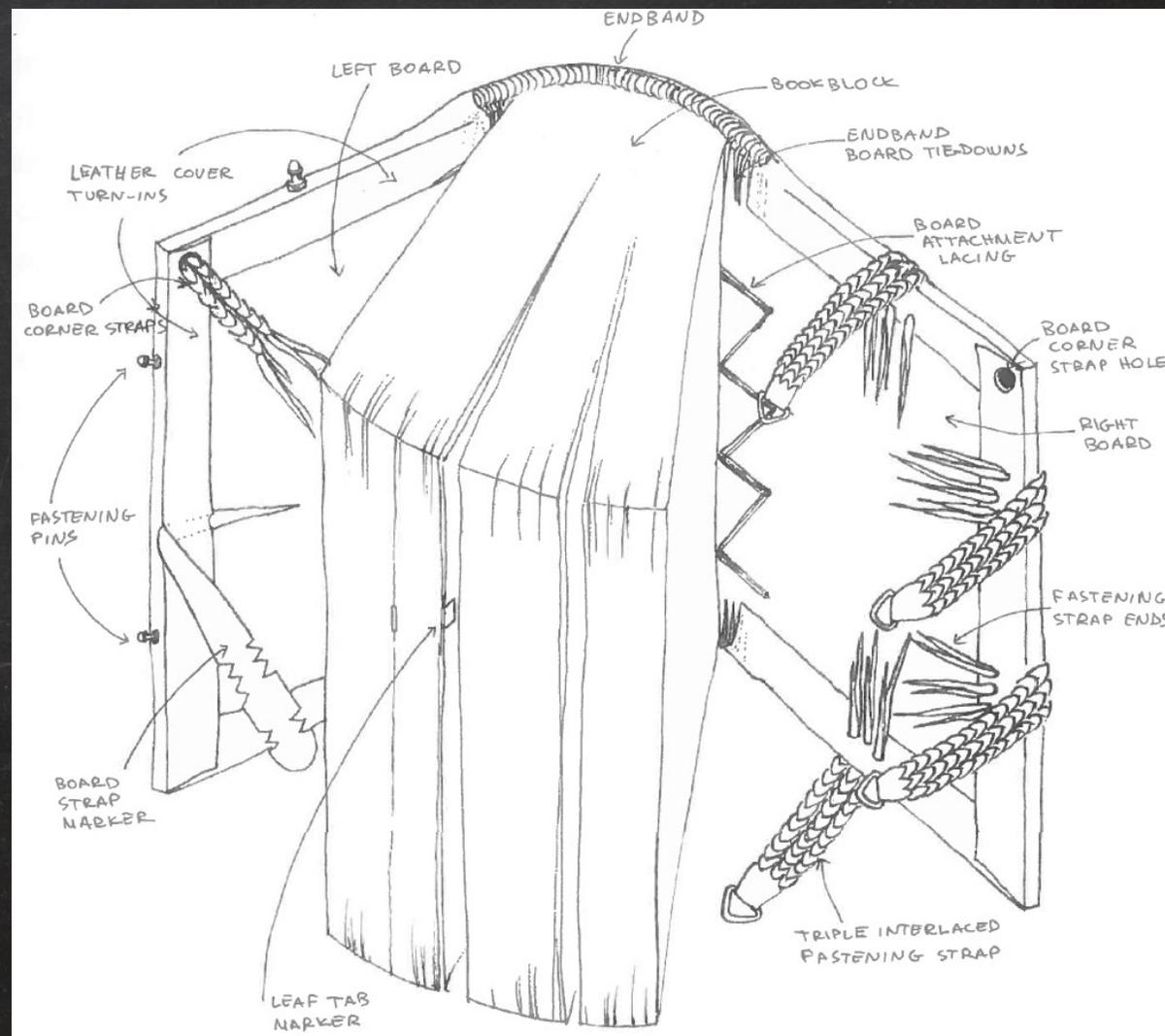
Pen

Scroll



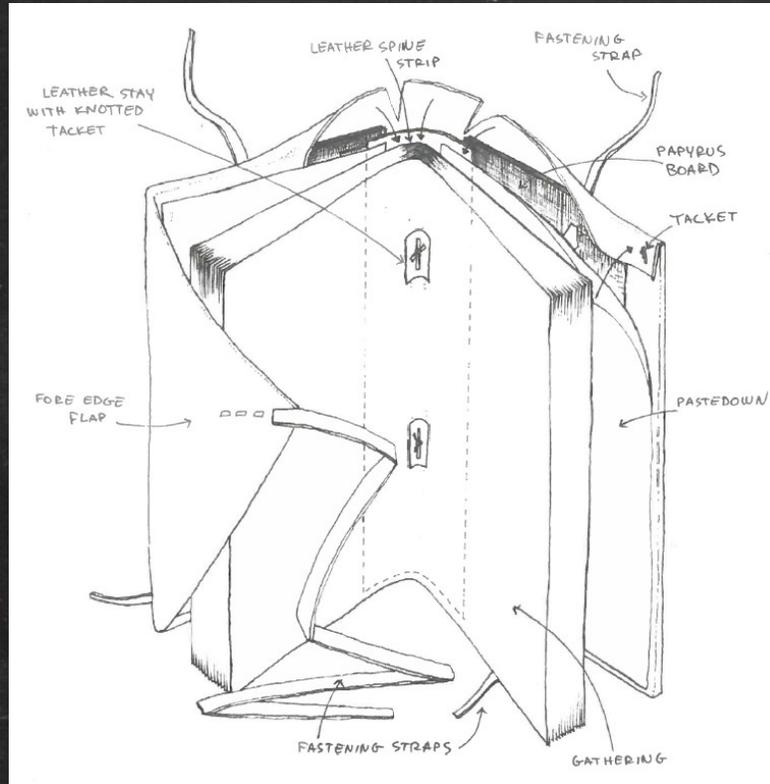
Fresco from Pompeii (1<sup>st</sup> century BCE)

# The successor to scrolls: the codex



A drawing of a typical early codex  
(from Boudalis, *The Codex and Crafts  
in Late Antiquity*)

# Single-gathering codices



from Boudalis, *The Codex and Crafts in Late Antiquity*

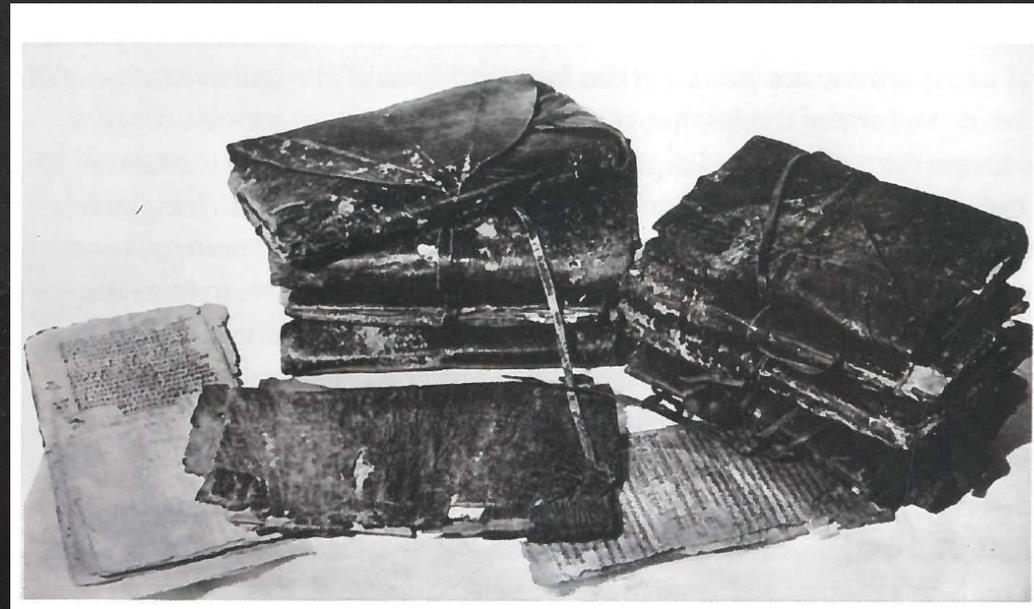


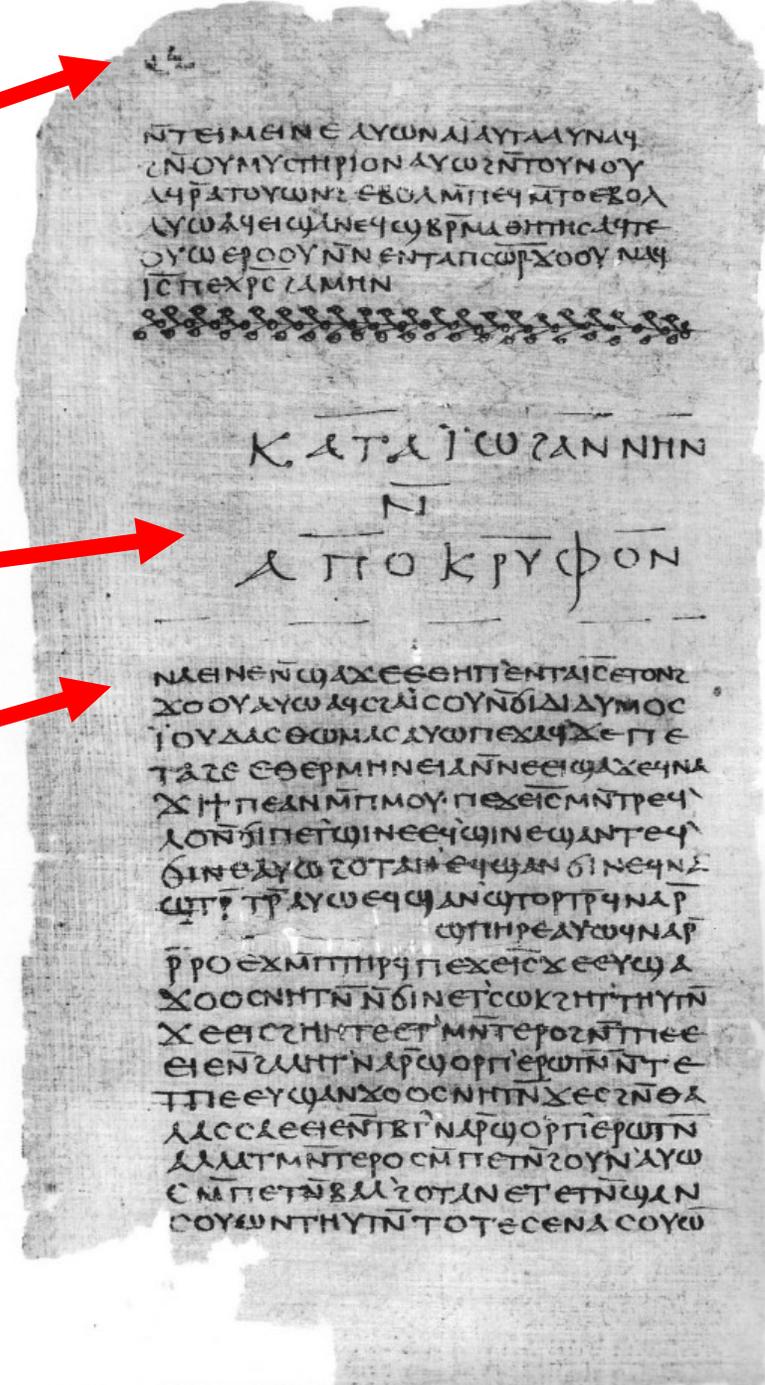
Fig. 22 The Nag Hammadi codices as they appeared when found in 1945. Coptic Museum, Cairo, Egypt. From Doresse and Mina, "Nouveaux textes gnostiques coptes découverts en Haute-Égypte."

A papyrus sheet from a Nag Hammadi codex

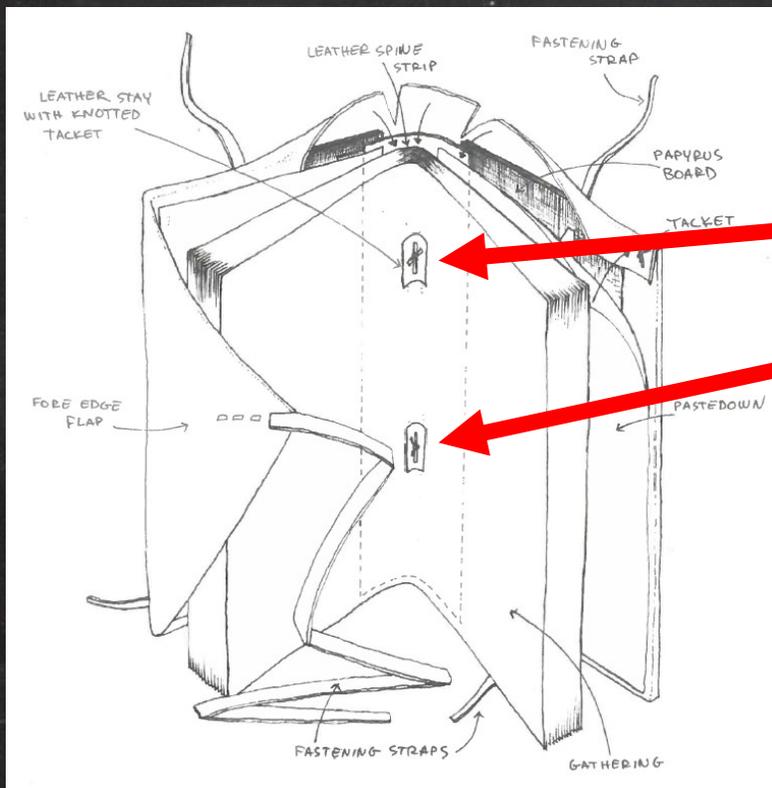
Page number

Title of the preceding composition

New composition



# Single-gathering codices



Leather tabs

from Boudalis, *The Codex and Crafts in Late Antiquity*

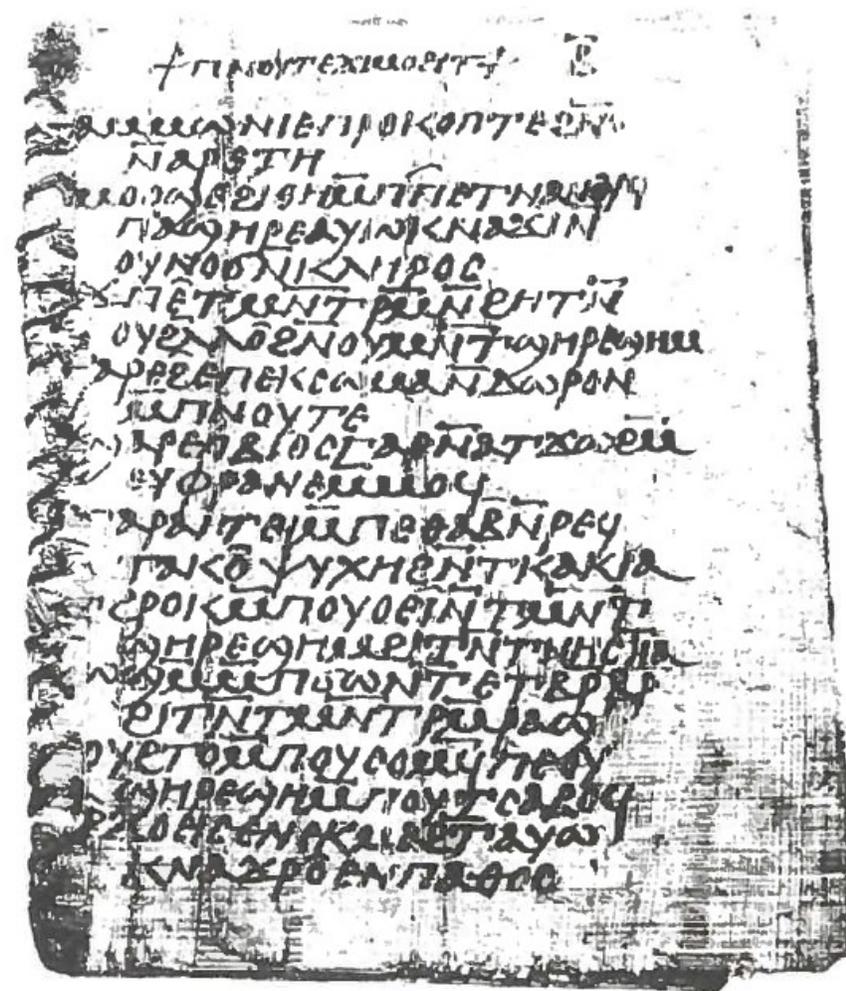
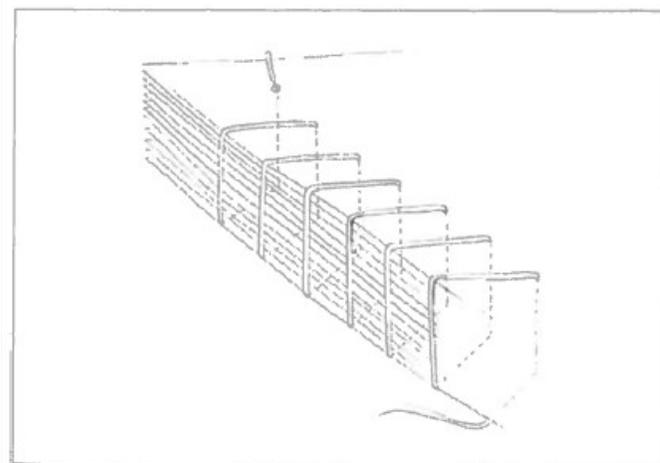
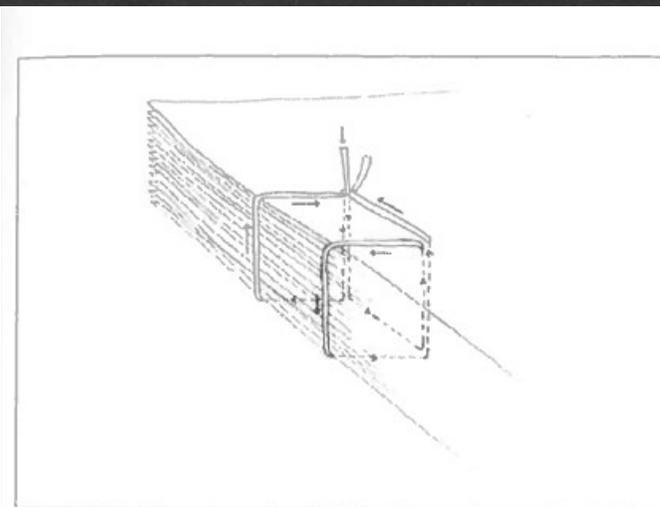


Fig. 22 The Nag Hammadi codices as they appeared when found in 1945. Coptic Museum, Cairo, Egypt. From Doresse and Mina, "Nouveaux textes gnostiques coptes découverts en Haute-Égypte."

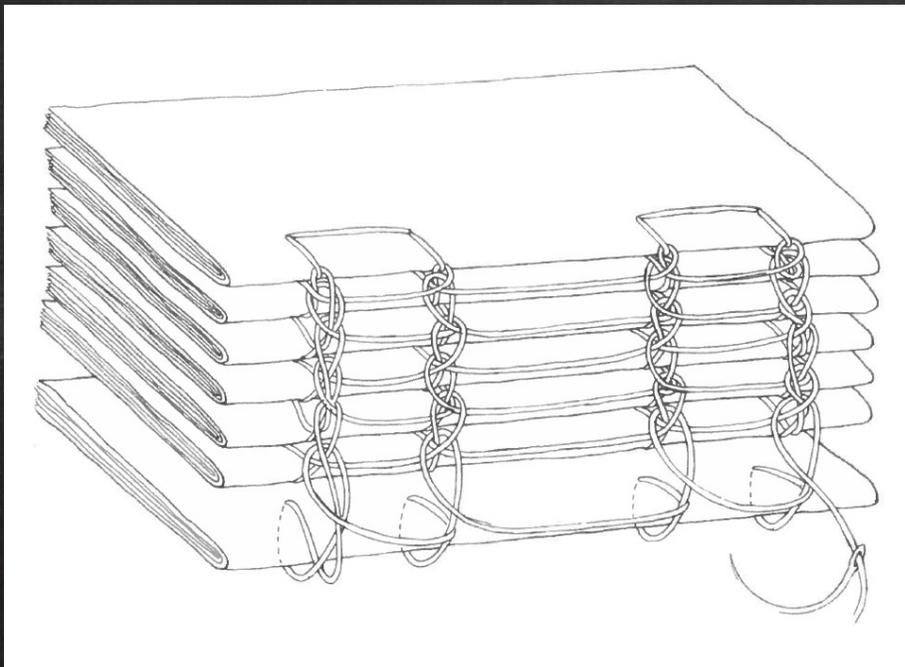
# Spiral-sewn single-gathering codex

6<sup>th</sup>-7<sup>th</sup> century CE,  
Egypt

(from Boudalis, *The  
Codex and Crafts in  
Late Antiquity*)

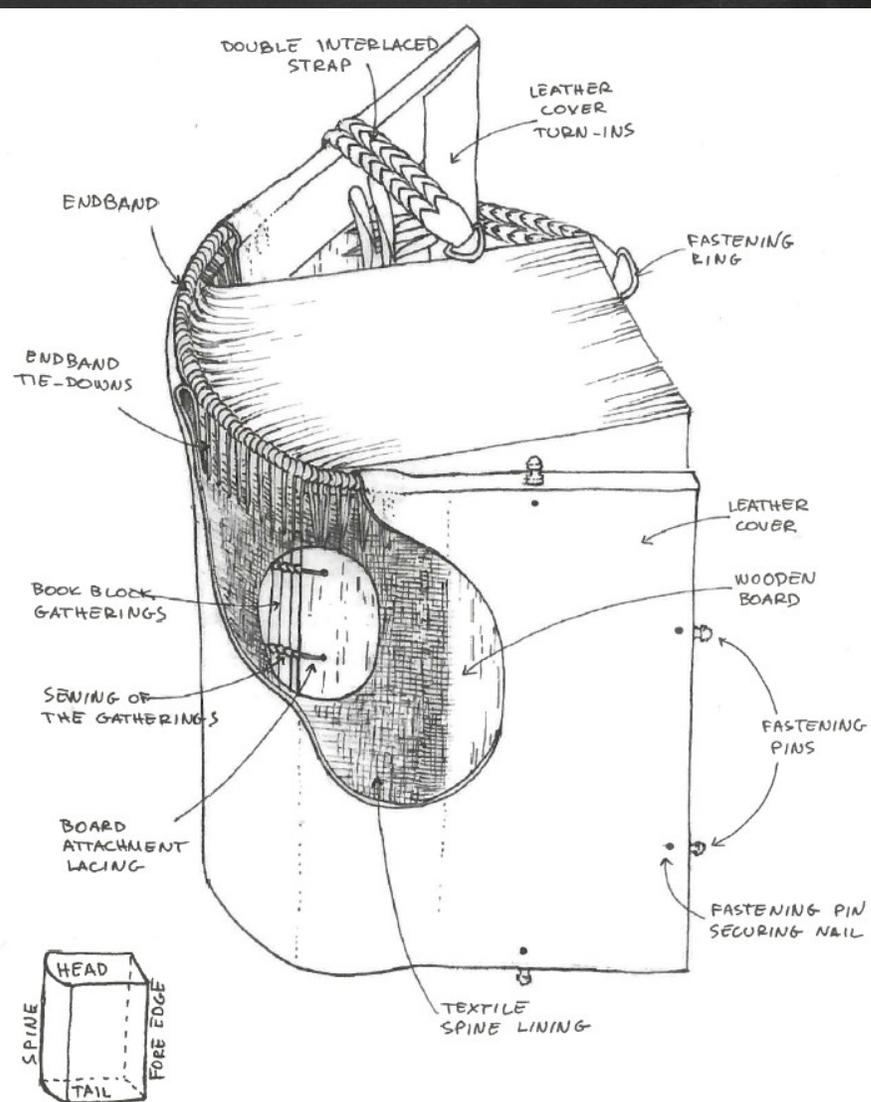


# The multi-gathering codex



Groups of pages called *quires*

From Boudalis, *The Codex and Crafts in Late Antiquity* (2018)



# *Codex versus scroll for storing info*

- Codex: complete accessibility of all text inside
  - Aided by page numbers, table of contents, indices
- Scroll: have to “scroll” through the entirety
  - Rarely use column numbers

# **Codex versus scroll for storing info**

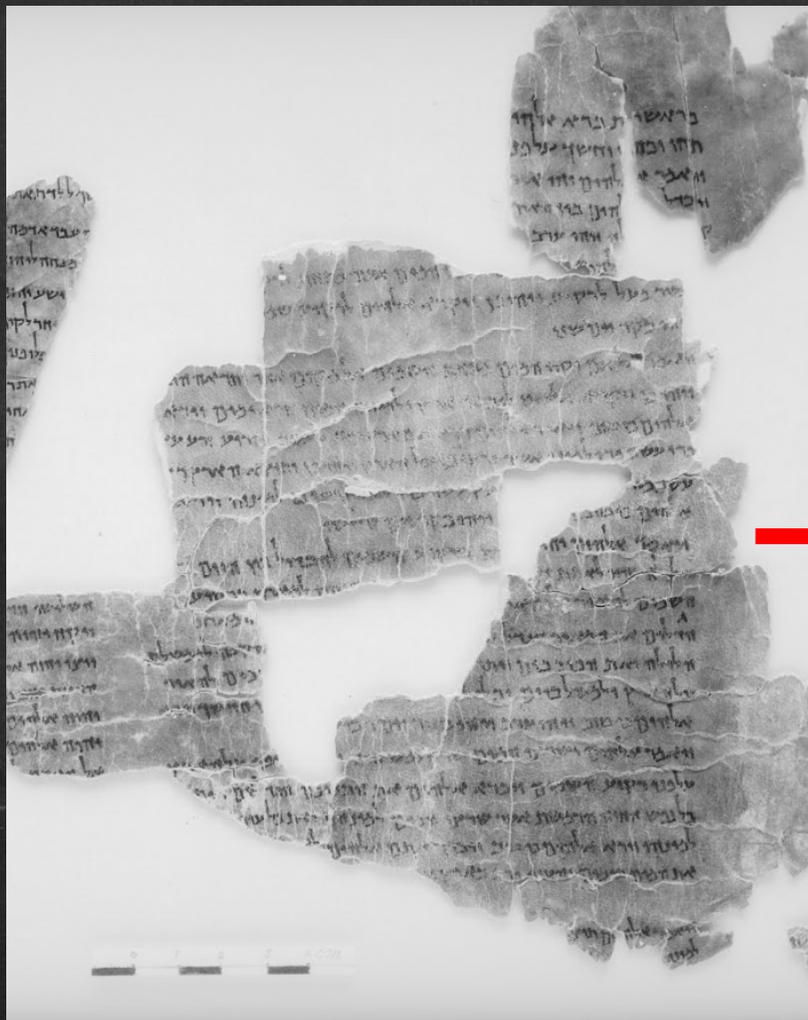
- Codex: could combine many texts into one and create very long documents ***in the same physical object***
  - Could even have multi-volume texts
- Scroll: difficult to have a document longer than a single scroll

# *Influence of scrolls on codices*

- Authors dividing long works into shorter “books” (or chapters)
- Maintaining traditional divisions between scrolls (e.g. the five books of the Torah)

# Influence of scrolls on codices

- Maintaining layout of ceremonial biblical scrolls in elaborate codices



Scroll of Genesis (1<sup>st</sup> century BCE)



Codex of entire Bible (10th century CE)

# *The codex in the imagination*

- **Bibliomancy**: predicting the future by opening up to a random passage in a codex
- Famous examples:
  - *Sortes Virgilianae* (using a book of Virgil for bibliomancy)
  - St. Augustine's conversion after hearing a voice say "tolle, lege!" ("pick up and read!"), and opening a Bible to Romans

**Thank you!**