

What is excellent participation?

Listen attentively to what others have to say.

Make your engagement visible.

Be appreciative of other people's contributions.

Acknowledge with eye contact.

Contribute. Share your own thoughts on the topic under discussion and ask questions.

Make connections. Offer up ideas that bring new information. e.g. articles, videos, or things learned in other classes, etc.

Make the most of this class:

Reinforce your learning
(class discussions and group work)

Expand your learning
(research/readings)

Reflect on your learning
(weekly blog posts)

Apply your learning (design projects)

Survey 1 quiz



What term is used to describe the art in cave paintings?

Only terms appearing in bold will be referred to in mid-term and final quizzes.

What term is used to describe the art in cave paintings?**Pictographs/pictograms**

The Maros cave paintings on the Indonesian island of Sulawesi are some of the oldest in the world (40,000 yrs).



What term is used to describe rock carvings?

What term is used to describe rock carvings?

This is an example of a petroglyph.

They were made by scratching into the rock with stone tools.

Native petroglyph in Fulford Harbour, Salt Spring Island, British Columbia

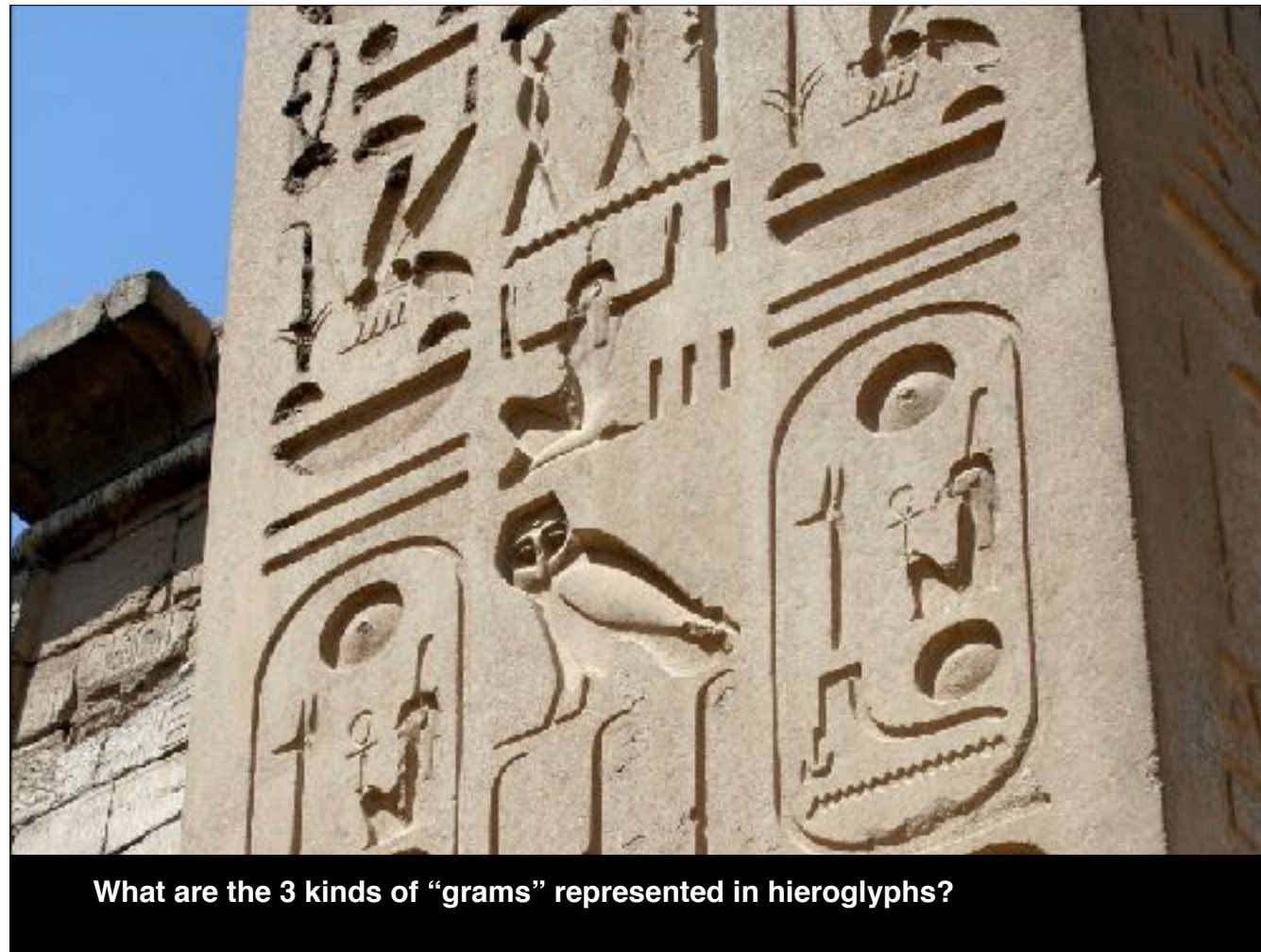
www.johnharveyphoto.com



These are 3 examples of what kind of very early writing?

Proto-writing

Cuneiform & Indus or Harrappan script and Chinese bone-and-shell script (chiaku-wen) Writing first appeared in Asia around 1800 BCE. What do we know about it?
Ts'ang Chieh, or Cangjie, is said to be the inventor of Chinese writing.



What are the 3 kinds of “grams” represented in hieroglyphs?

What are the 3 kinds of “grams” represented in hieroglyphs? Hieroglyphs used a mixture of pictograms depicting objects, ideograms representing ideas and phonograms (rebus) representing sounds.

Writing direction was optional, reading up, down, left, or right. Carved hieroglyphs could be in raised, or incised.



What does this kind of Egyptian scroll represent?

What does this kind of Egyptian scroll represent?

A book of the dead

One of the best documented uses for papyrus was funerary scrolls, or books of the dead. These illustrated manuscripts (handwritten documents), buried with the dead, were intended to help overcome the dangers of the underworld and assist ascension to the heavens.



What do you know about Chen-shu?

- China began to move towards a single script (Chen-shu) during the Qin (Ch'in) Dynasty founded by Emperor Qin Shi Huang (Shih HuangTi)
- Chen-shu has changed little in over two thousand years.
- It has 40-50,000 characters, although the average person only learns a fraction of them.
- Mandarin and Cantonese share the same characters which have little relationship to the spoken languages.
- Qin Shi Huang was responsible for the building of the Great Wall and The Terracotta Army that was built to mark his burial. (250 BCE)
- The Emperor realised that the absence of a common script was hindering economic and cultural development.
- He ordered a new single writing style to be created, which over centuries evolved into chen-shu (zhèngshū), kaishu, or “regular” style.



Where does this early writing system originate from?

- **Where does this early writing system originate from?**
- **The Mayan culture. The Mayans lived in what is now known as southern Mexico and northern Central America**
- What is it similar to and why?
- Like Chinese, the pictorial symbols, or glyphs used in the Mayan writing system also fit in a square format.
- They originated around 300 BCE,

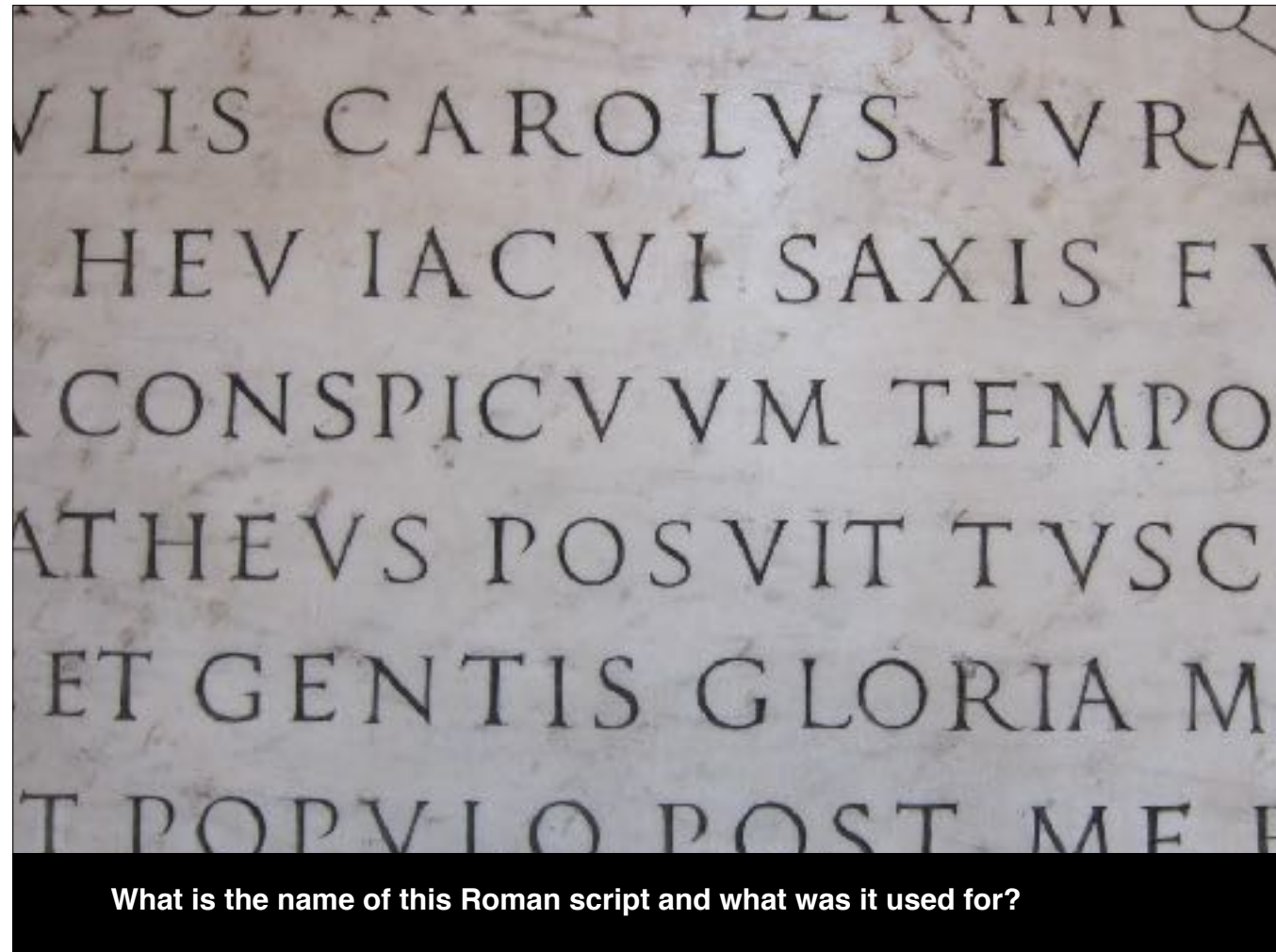


What do you know about these two scripts?

What do you know about these two scripts?

They represent the Phoenician and Greek alphabets

The Greeks created a 24 letter alphabet, which was a development of the Phoenician 22 letter alphabet



What is the name of this Roman script and what was it used for?

Capitalis Quadrata (squared capitals), or Capitalis monumentalis.

These were used to commemorate important events or people.

It's stately proportions were written carefully and slowly with a flat pen nib. There were generous spaces between lines and sometimes no space between words. These were used to commemorate important events or people.



What is the name of this Roman script and what was it used for?

What is the name of this Roman script and what was it used for?

The Romans used Capitalis rustica (rustic capitals) for less formal writing:

it was quicker to execute and more space efficient. It was mostly used for writing on papyrus and parchment (more on this next week), although engraved examples also exist.



Which ancient alphabet do eastern written languages originate from?

Which ancient alphabet do eastern written languages originate from?

Aramaic

It is the foundation for Arabic, Indian Sanskrit, modern Hebrew and Cyrillic languages (used in Slavic and Russian influenced countries).



Why is the Korean language so unique?

- **Why is the Korean language so unique?**
- **It is one of the most scientific writing systems ever invented.**
- **It is a phonetic language that is easy to learn.**
- The Koreans used Chinese characters, until they developed their own 28 letter alphabet, Hangeul in 1446 CE.
- The youngest alphabet in the world, it was introduced by royal decree of the reigning monarch Sejong in the 15th century CE.
- It is one of the most scientific writing systems ever invented. It is similar in this respect to Esperanto.
- Sejong assembled a group of young scholars to study existing languages and create a phonetic language that would be easy for ordinary citizens to learn.
- It contains 14 consonant and 10 vowels sounds

<https://www.esperanto-usa.org/node/107>



What are some early examples of branding?

- What are some early examples of branding?
- cylinder seals
- animal brands
- Chinese chop seals
- Wax seals

Survey 2

God and Gutenberg
(0-1450 CE)

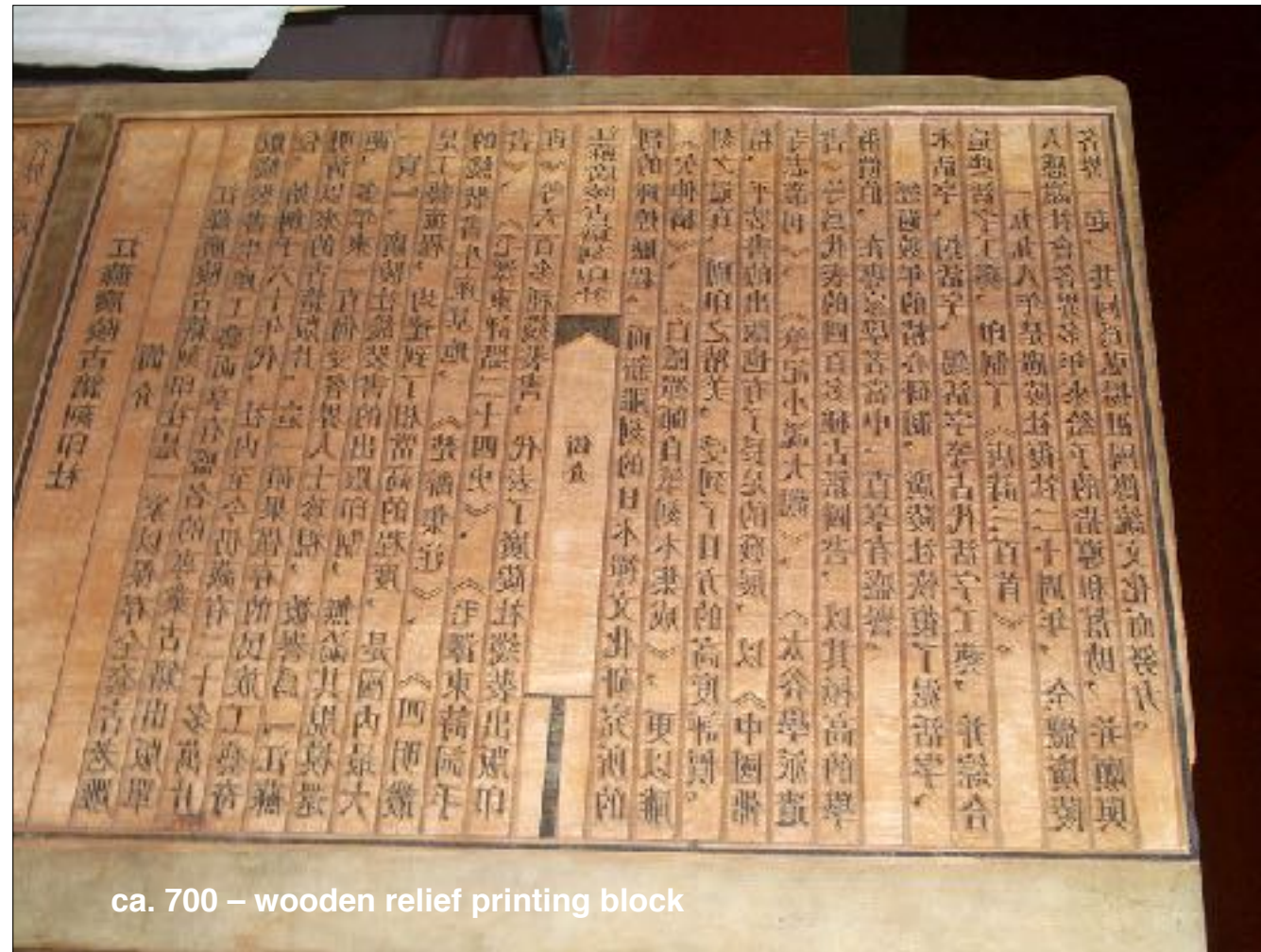


Today we are going to find out what the lazy Susan and typography have in common.

Can you guess?



- Last week we learned about the Chinese invention of paper.
- Having invented paper, the Chinese went on to invent printing, some time between the 3rd and 8th centuries. (Meggs p.39)
- Their printing techniques probably evolved from the use of stamps like these.
- ***Anyone know what they are called?***
- chop seals,
- Or printing may have evolved from rubbings that disciples made of religious tablets.
- ***Has anyone ever done a brass rubbing?***
- Printing brought a quiet revolution to China: the knowledge spread through printed material ushered in a renaissance of learning and culture.



ca. 700 – wooden relief printing block

- By 700 CE both stone and wood were being used to produce **raised and incised** relief printing blocks.
- ***We talked about raised and incised last week. What do those terms mean?***
- In modern printing we still use raised and incised techniques.
- ***Anyone know what we call them?***
- We call them embossed and debossed. These techniques also exist as filters in Photoshop.
- This relief printing technique is similar to the style of block books that appeared much later in Europe
- In both cases an entire page was printed from a single carved piece of wood. Imagine if you made a mistake!



First century – The Diamond Sutra (xylography)

The earliest surviving printed document is The Diamond Sutra. (868 CE) It is over 1 thousand years old.

it is a 16 foot long scroll printed in China

If you want to get fancy, relief printing, is also known as Xylography

The Diamond Sutra is a holy text, containing Buddha's revelations.

What are diamonds famous for?

Being very hard. The Diamond Sutra is so named because of its hard-cutting commentary.



16th century – Bombay/Punjab began to dominate fabric printing

- The Chinese set the benchmark for block printing on paper.
- Their techniques eventually made their way to India.
- Fabric printing became and still is a major economic force in south Asia.
- Bombay and the Punjab became the world hub for fabric printing from about the 16th century CE.



- As we discussed last week:
- Throughout the Egyptian, Greek and Roman civilisations, most documents were written on papyrus scrolls



Papyrus was too brittle to be folded easily.
The Chinese paper made from bamboo which was more supple.
It could be folded into an accordion book.



ca. 2nd century – Invention of parchment

- Around the second century a new writing surface emerged called parchment
- ***What is parchment?***
- A writing surface made from animal skin that has been cleaned, stretched, and scraped to remove all the hair and flesh.
- The surface would be very similar to that still used on Indigenous drums.
- This membrane, made of sheep, cow or goat-skin, was more opaque than papyrus, allowing scribes to write on both sides.
- It was also more pliable than papyrus and so could be folded, like bamboo paper
- parchment is said to have been invented in the ancient Greek city of Pergamum (modern Bergama, Turkey)
- The Domesday Book (1086, National Archives, Kew), the U.S. Constitution (1778, National Archives, Washington, DC), the Magna Carta (1215, Bodleian Library, Oxford), and many other historic documents, are written on parchment.

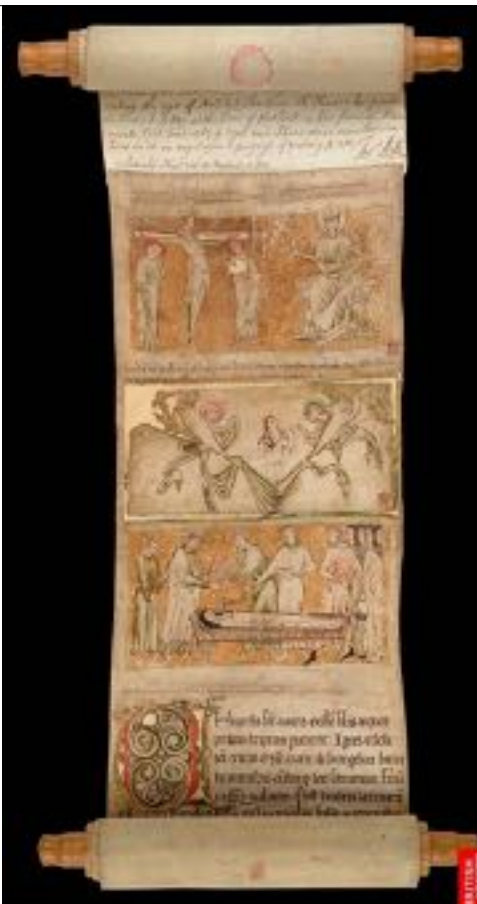
<https://www.britannica.com/topic/parchment>



This is a 'siddur' – a Jewish prayer book dated back to around 840 CE.

Found in 2013, it is about 1,173 years old.

You can clearly see the texture of the hair follicles in the parchment



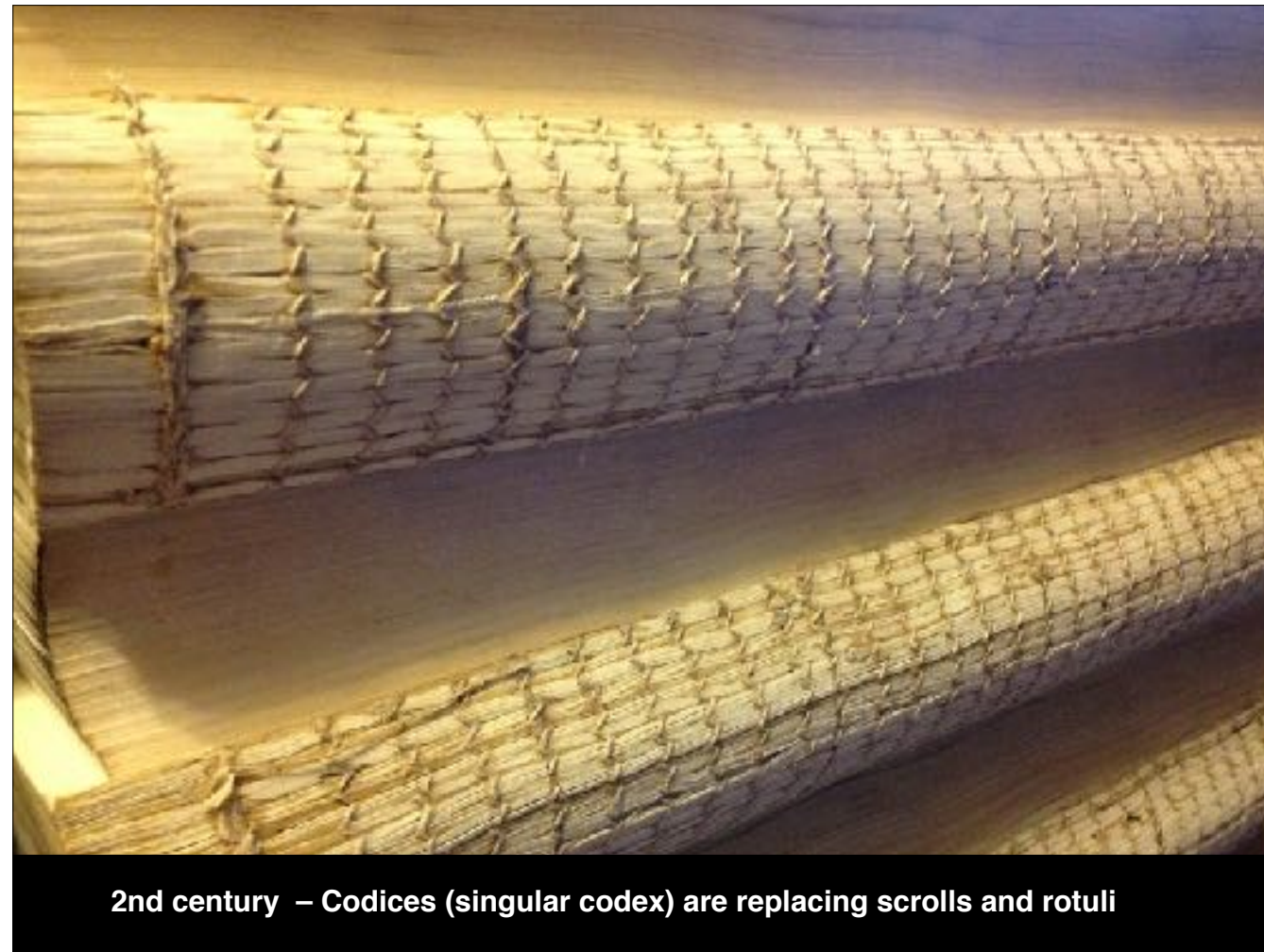
ca. 1225 – Lucy's mortuary roll (rotulus/ plural rotuli)

- This is an example of a European mortuary roll made from parchment
- Unlike a scroll, the writing runs parallel to the rod. It unrolls from top to bottom. Not side to side like a typical scroll.
- mortuary rolls consist of a letter reporting an important death, and requesting prayers for his or her soul
- In this case, of Lucy, foundress of a Benedictine nunnery
- Rolls would travel around the country to various religious houses.
- This journey was often extensive, with one late-fifteenth-century Durham roll visiting 637 houses on its circuit

We looked at a similar kind of funeral communication last week. What was it?

c. 1225 Mortuary roll of Lucy, foundress and first prioress of the Benedictine nunnery of Castle Hedingham, with tituli (responsive prayers) 1-6

<http://www.tandfonline.com/doi/abs/10.1179/007817211X13061632130449>



2nd century – Codices (singular codex) are replacing scrolls and rotuli

What are codices?

A term used to describe any ancient **manuscript** text in book form.

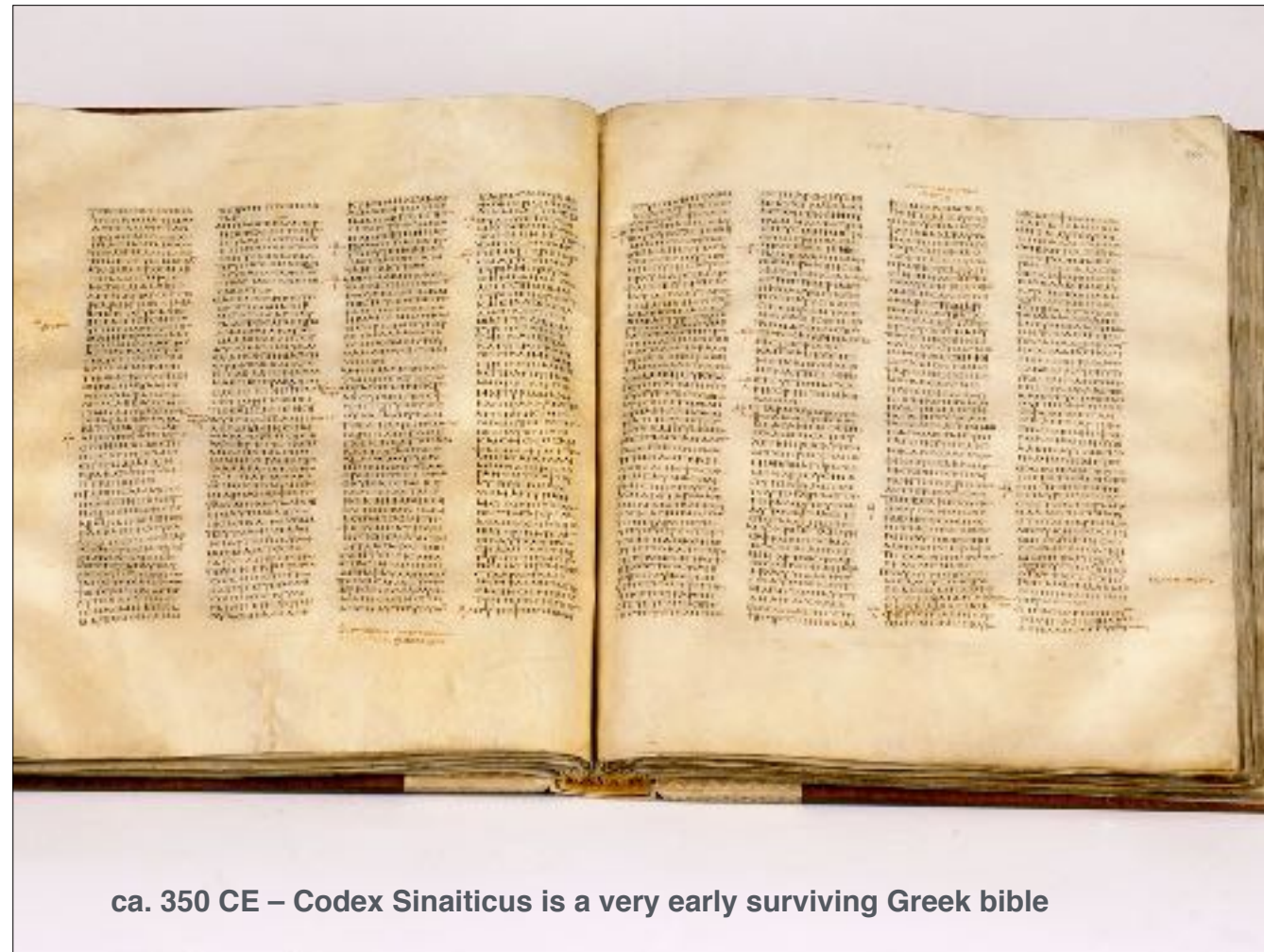
These were bound books as we know them today, with folded sheets, stitched and glued along the spine. Techniques of binding have not changed very much—except now everything is done by machine.

Parchment led to the gradual replacement of the rolled manuscript by the bound book

Why?

These early bound books are called codices/codex.

Next year you might go to Pacific Bindery Services with Vida <https://pacificbindery.com>



ca. 350 CE – Codex Sinaiticus is a very early surviving Greek bible

One of the earliest surviving Christian bibles is the Codex Sinaiticus (Sinai Bible, ca. 350, British Library, London)
With its beautifully written Greek text, it is one of the most important landmarks in the history of the book.



Uncials and marginalia

One of the earliest surviving Christian bibles is the Codex Sinaiticus (Sinai Bible, ca. 350, British Library, London)
 With its beautifully written Greek text, it is one of the most important landmarks in the history of the book.

We talked last week about the invention of the Greek and Latin alphabets.

What was the name we give to Roman text used for “monumental occasions?”

Capitalis monumentalis or capitalis quadrata

These were written in all capital letters. As is the Greek text shown here.

These more free-flowing hand-written capital letters are also known as uncials. You can see that these Greek uncials have what we call descenders.

What are descenders?

What do we call blocks of text like those you can see here?

Columns (think of Greek Columns)

What do we call the space between and around the columns?

Margins

What do we call text in the margins?

Marginalia. More on that later.



- The Vergilius Augusteus is an early codex containing the works of the Roman author Virgil, written probably around the 4th century.
- It is also written in uncials.
- Uncials were written between 2 pencil lines.
- ***Why were they called uncials?***
- The name uncial comes from the Latin word for inch: the two guide rules were traditionally one Roman inch apart.

Are you awake?



ca. 4th-8th centuries – Barbarian invasions in Europe

What is the era following the fall of the Roman Empire called?

The Middle Ages

It was a time of religious and territorial instability—generally all human experience is in cyclical flux. The rise of the Romans brought instability across the world. Once the Roman Empire was established, there was a period of relative calm. With the fall of the Romans came another period of instability as other groups tried to reassert power. Nomadic tribes including the Goths, Saxons, Huns and Vikings (known collectively as the barbarians), caused mayhem across Europe and the near east. Sometimes said to be a time of intellectual and economic darkness (the dark ages), it is also the time when Christianity began to replace pagan religions in Europe.



9th-century Rök Runestone, Rök, Östergötland, Sweden

The Scandinavian Norsemen, who invaded parts of Europe from the 8th-11th centuries, recorded their travels on runestones.

They are written in early Norse alphabets known as runic alphabets.

What do these letters remind you of?



Lingsberg Runestones, Stockholm, Sweden

The earliest runic inscriptions date from around 150 AD.

What does this carved combination of text and imagery remind you of?

The Blau Monuments (3300BC-3000BC Sumeria)

(The Scandinavian variants are also known as futhark or fupark (derived from their first six letters of the alphabet: F, U, Þ, A, R, and K); the Anglo-Saxon variant is futhorc or futhorc (due to sound changes undergone in Old English by the names of those six letters)).



Rievaulx (Cistercian) Abbey, North Yorkshire, England.

- As Christianity began to replace pagan religions in Europe, the church began to build monasteries and abbeys around the sixth century.
- Monastic life requires a life of religious obedience and humility.
- It involves routines of prayer, study, and physical work.



- One of the tasks allocated to monks was the inscription and decoration of religious texts known as illuminated manuscripts. Many of these codices, that had taken years to create, were later lost or destroyed when monasteries and abbeys were caught up in conflicts



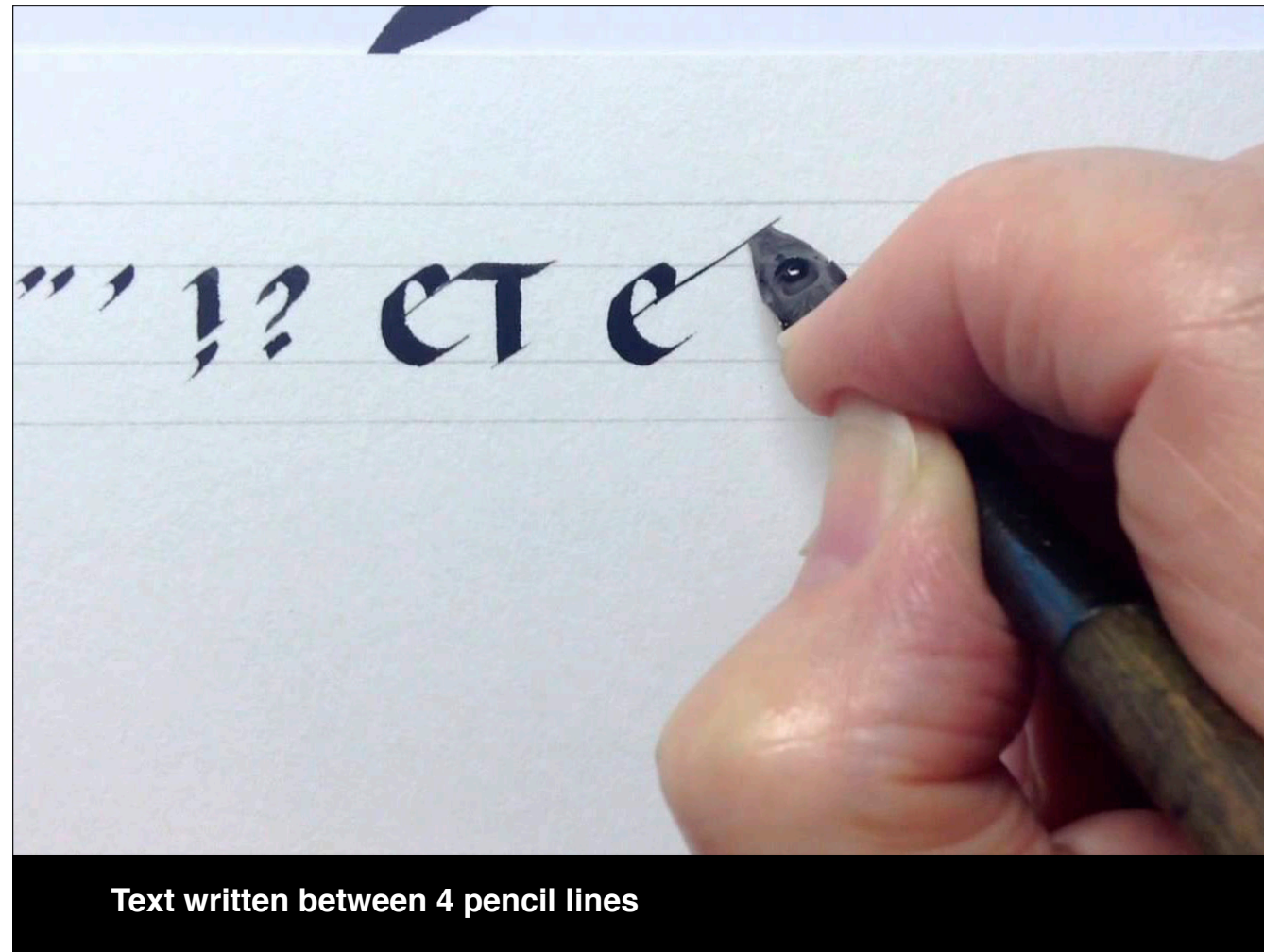
2 great traditions of illuminated manuscripts

- There were 2 great traditions of illuminated manuscripts: the European tradition (bibles, gospels, etc.) and the Islamic tradition (quoran, or koran).
- The quoran was written in the 600's CE, recording the teaching of the prophet Mohammed, the founding prophet of Islam.



Why are they called Illuminated manuscripts?

- Because they have been illustrated or decorated in some way
 - The most noticeable difference between the western and eastern traditions is that religious representations were an important part of European manuscripts, in In the Muslim religion it is considered sinful to represent the human form
- “Aniconism is the avoidance of images of sentient beings in some forms of Islamic art. Islamic aniconism stems in part from the prohibition of idolatry and in part from the belief that creation of living forms is God's prerogative.” Wikipedia
- Because they could not use representative imagery, illuminated quorans tended to have very elaborate border decorations.
 - In both cases, everything was executed by hand and production was incredibly time consuming and costly.



Text written between 4 pencil lines

What do we call capitalized text written between 2 pencil lines?

Uncials

Looking for ways to save time and save space, monks in medieval Christian monasteries came up with a new type of writing that was half the size by writing between 4 pencil lines.

So what do you think we call text that is half the size written between 4 pencil lines?

Half uncials.

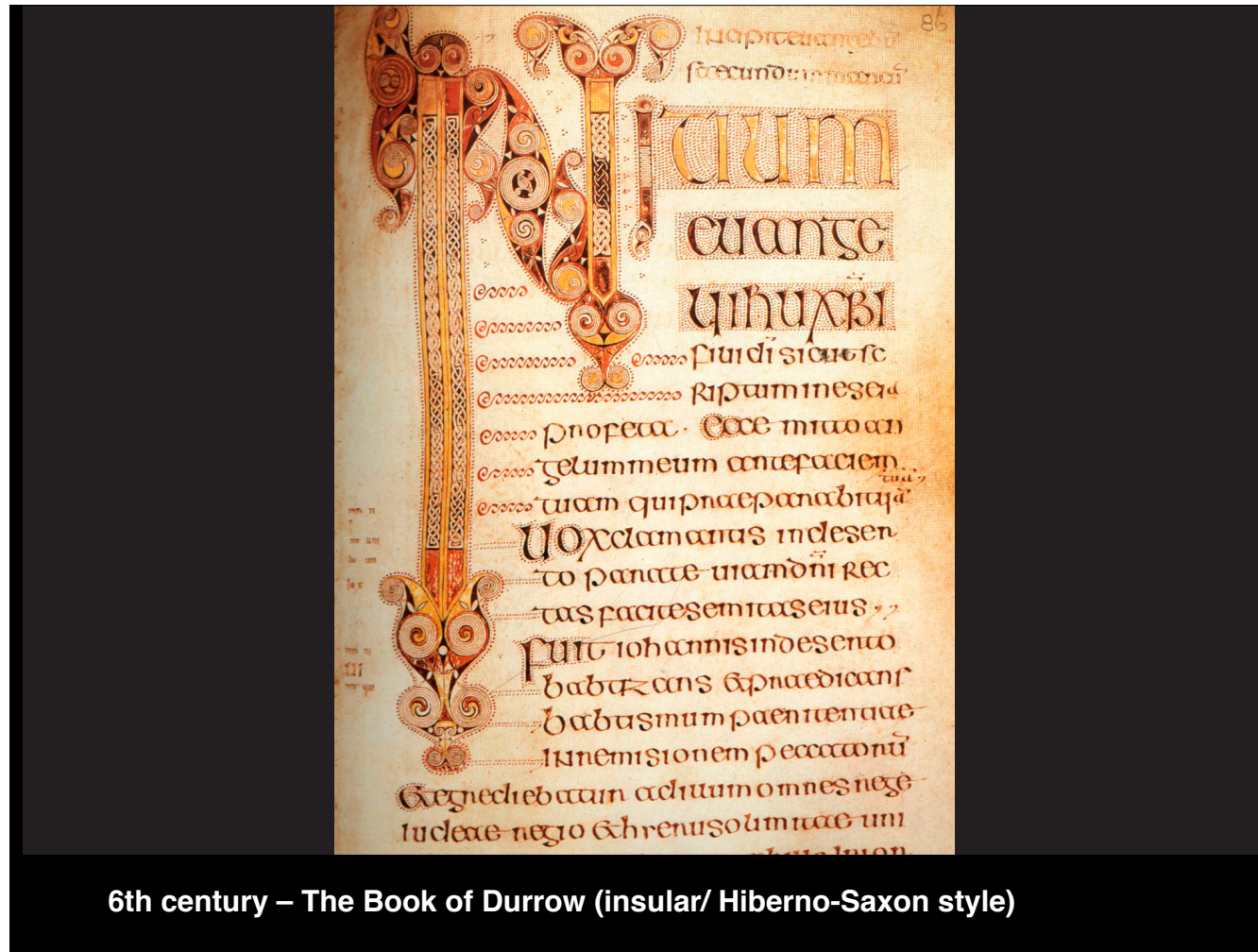
They were faster to write, as they required less precision. They were also easier to read.

We call this lower case in modern terminology. (Explain U&lc, Sentence case, Title Case)

What do you think ascenders are?

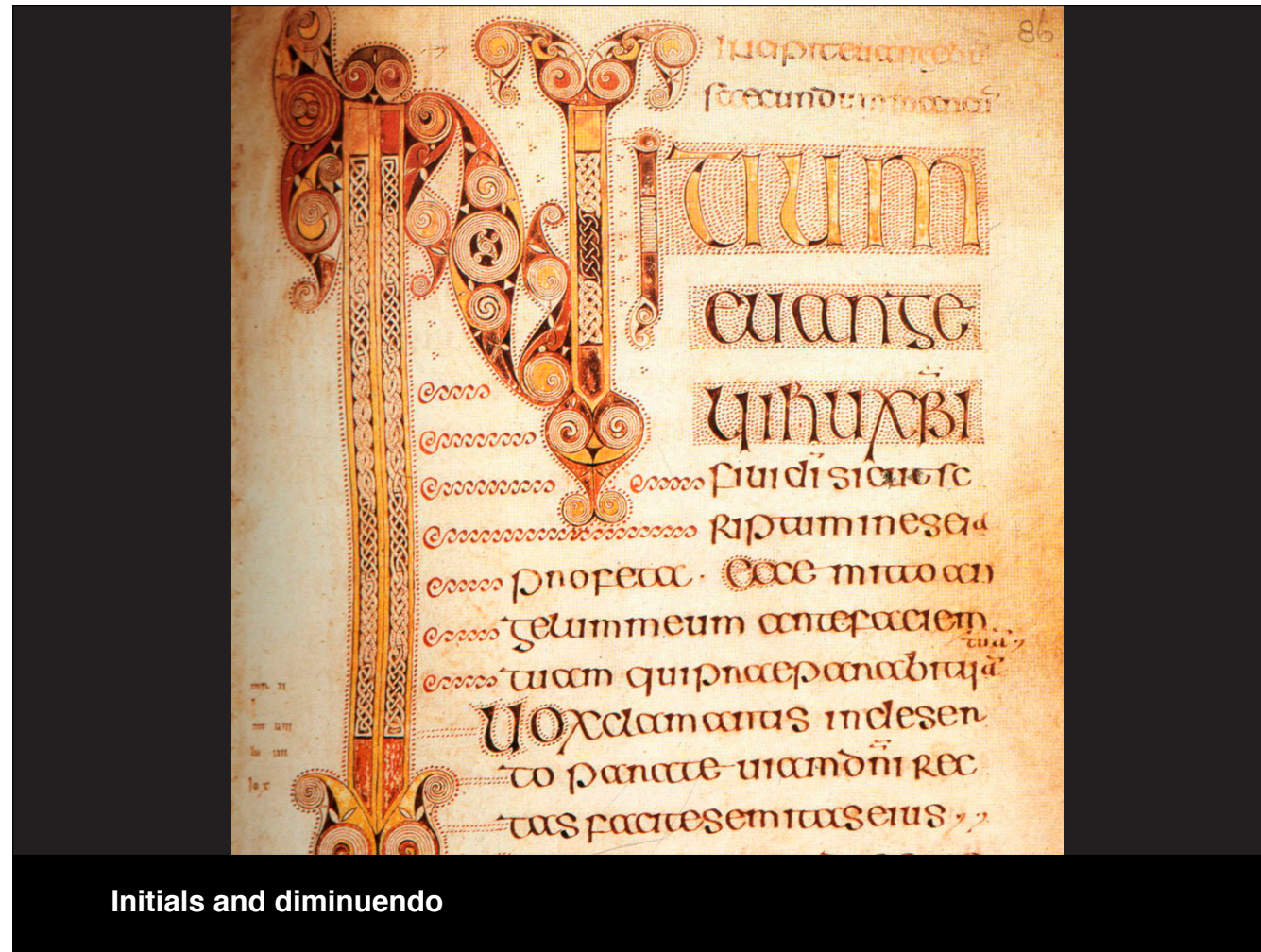
Half uncials had ascenders and descenders

These were quicker forms of writing were also easier to read.



6th century – The Book of Durrow (insular/ Hiberno-Saxon style)

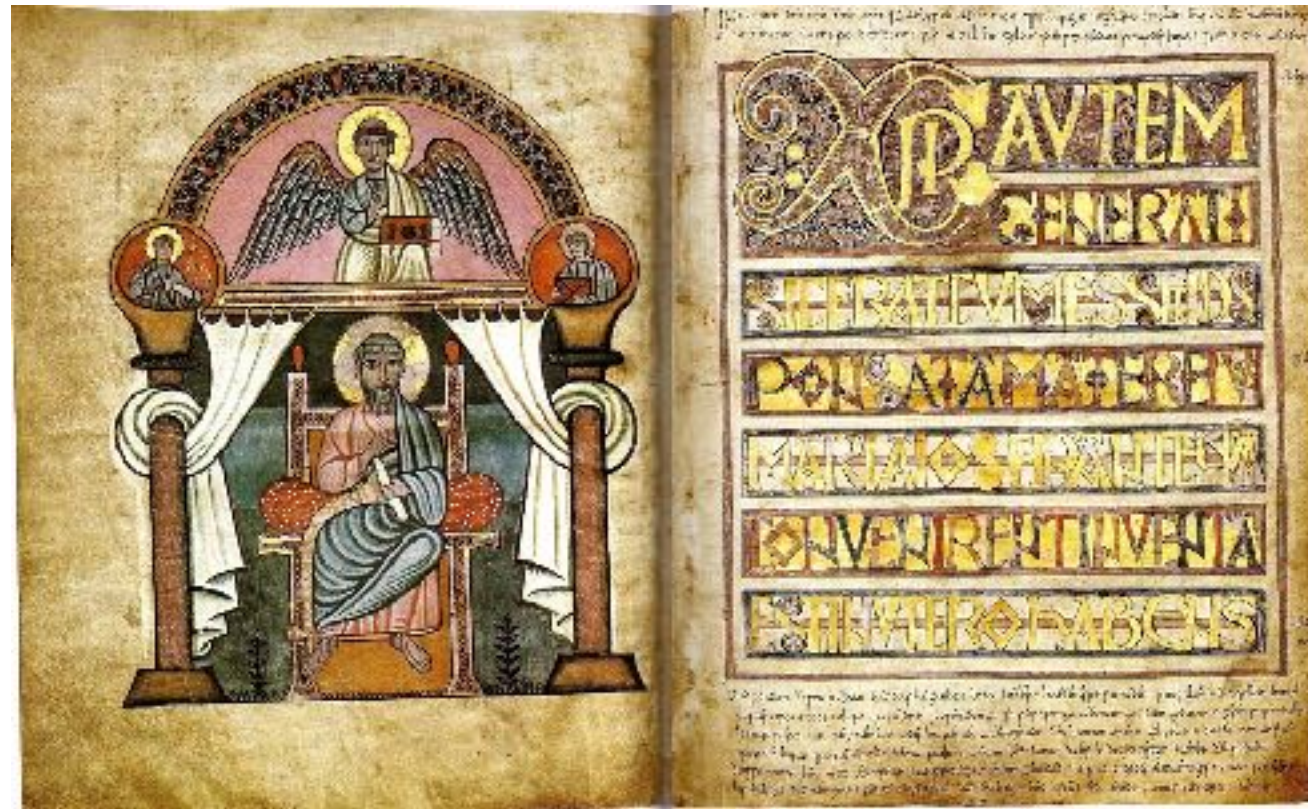
- The Book of Durrow is almost 1400 years old.
- It is an early example of the written and decorative style of Celtic influenced manuscripts
- After the fall of the Roman Empire, monks in the British Isles began to reintroduce shapes and patterns from their Celtic origins.
- They developed a style, unique to the British Isles, known as **insular, or Hiberno-Saxon** art.
- The half-uncials here are very rounded letterforms.
- Codices or early books are named after the places they were found or kept, not necessarily where they were made.
- Durrow is in Ireland, but The Book of Durrow could originate from N. England, Scotland, or Ireland.



- **What do you think initials are? What are they used for?**
 - An enlarged decorated first letter in a text. They identify each new chapter or section (drop caps).
 - **What is the modern term?**
 - drop caps or drop capitals
 - **What do you think diminuendo is?**
 - The Book of Durrow features diminuendo (decreasing type size)
 - **What does the diminuendo do?**
 - Introduces hierarchy and makes the page introduction more engaging. (Hierarchy absent up until now)
-
- As in Egyptian times, the tasks of writing, illustrating and decorating were shared between several people.
 - Scribes would write, while illuminators would add initials, imagery and marginalia.
 - Marginalia can refer to the notes made by scribes in the text for illuminators, to indicate what decoration was required.
 - Marginalia also describes the decorative elements in the margins created by the illuminator.
 - Illuminators used colour and gold leaf for initials and marginalia



- **Where do you think the gold came from?**
- An enlarged decorated first letter in a text. They identify each new chapter or section (drop caps).
- **A key figure in the story of sub-Saharan trade is Mansa Musa, the 14th-century king of the Empire of Mali. Musa's kingdom controlled access to one of the most productive gold regions in the world, making him one of the wealthiest people in history. The exhibition conjures Musa's pilgrimage to the Islamic holy city of Mecca through luxury objects that relate to descriptions of his stay with the sultan of Cairo, Egypt.**



8th century – Codex Aureus of Canterbury (golden book)

- If a design included gold leaf, this had to be applied before other colours.
- The Codex Aureus of Canterbury (golden book), also called the Stockholm Codex Aureus, (8 CE, National Library of Sweden),
- It's decoration combines Insular and Italian-style elements

“The opening page of the Gospel of Matthew has more to offer than just its gold and decorated letters: a ninth-century note added in the upper and lower margin of the page relates the exciting history of this book. As it turns out, the Codex Aureus had once been stolen by Vikings and, as the note states, an Anglo-Saxon ealdorman and his wife had ransomed it from the heathen army

<https://boaringmedievalist.com/2017/02/13/ransomed-from-vikings/>

It has an interesting caption in the margin that reads:

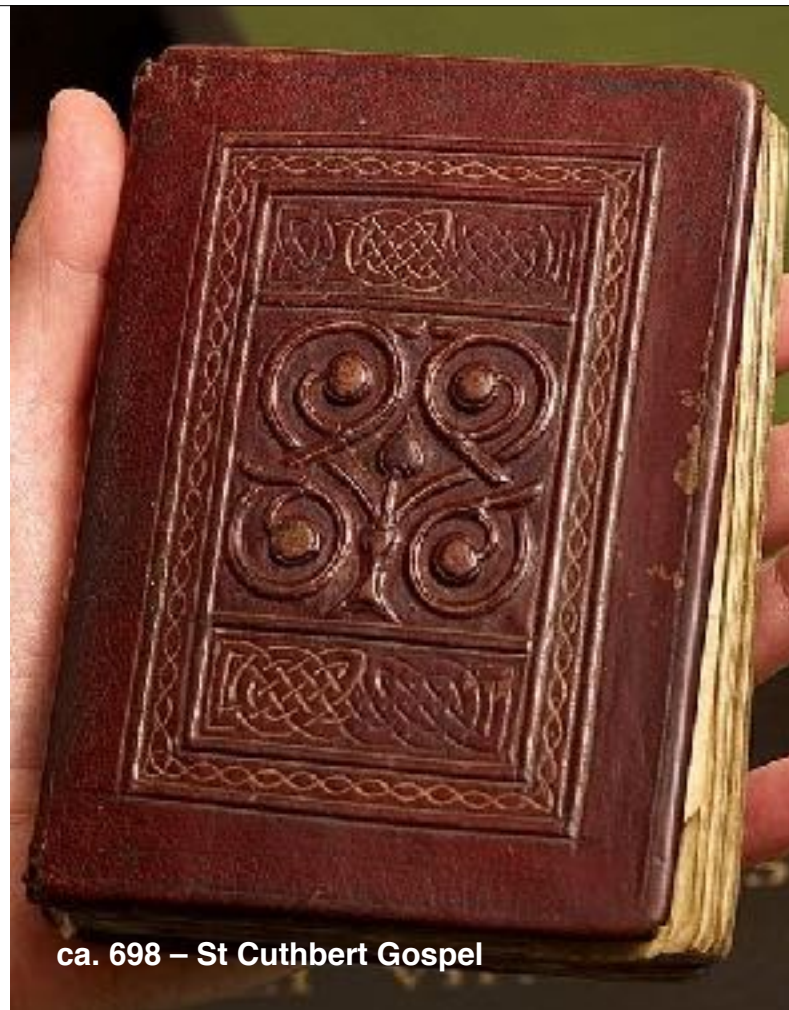
“In the name of our Lord Jesus Christ. I, Earl Alfred, and my wife Werburg procured these books from the heathen invading army with our own money; the purchase was made with pure gold. And we did that for the love of God and for the benefit of our souls, and because neither of us wanted these holy works to remain any longer in heathen hands. And now we wish to present them to Christ Church to God's praise and glory and honour, ... I, Earl Alfred, and Werburg beg and entreat in the name of Almighty God and of all his saints that no man should be so presumptuous as to give away or remove these holy works from Christ Church as long as Christianity survives there.”

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Still awake?

Shake it out. Shrug your shoulders. Take a deep breath.

In your group discuss how this impacts your topic. Take a look at your timeline.



ca. 698 – St Cuthbert Gospel

- This is Europe's oldest known surviving complete book. It is over 1300 years old.
- Its original tooled goatskin cover is still in tact. Most ancient books have lost pages, or their covers.
- It is a Latin copy of the Gospel of St. John
- It is also an example of a very small codex. It is a 5.4 × 3.6 inch pocket book.
- The size of a manuscript was dependent on the budget of its patron and its intended use.
- Its size makes it ideal for a pilgrim
- It was bought by the British Library in 2012 for £9 million pounds.
- The book was lucky to survive the Viking conquests in Britain.
- You can view a digitised version on the book on the British Library website.
- http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=add_ms_89000

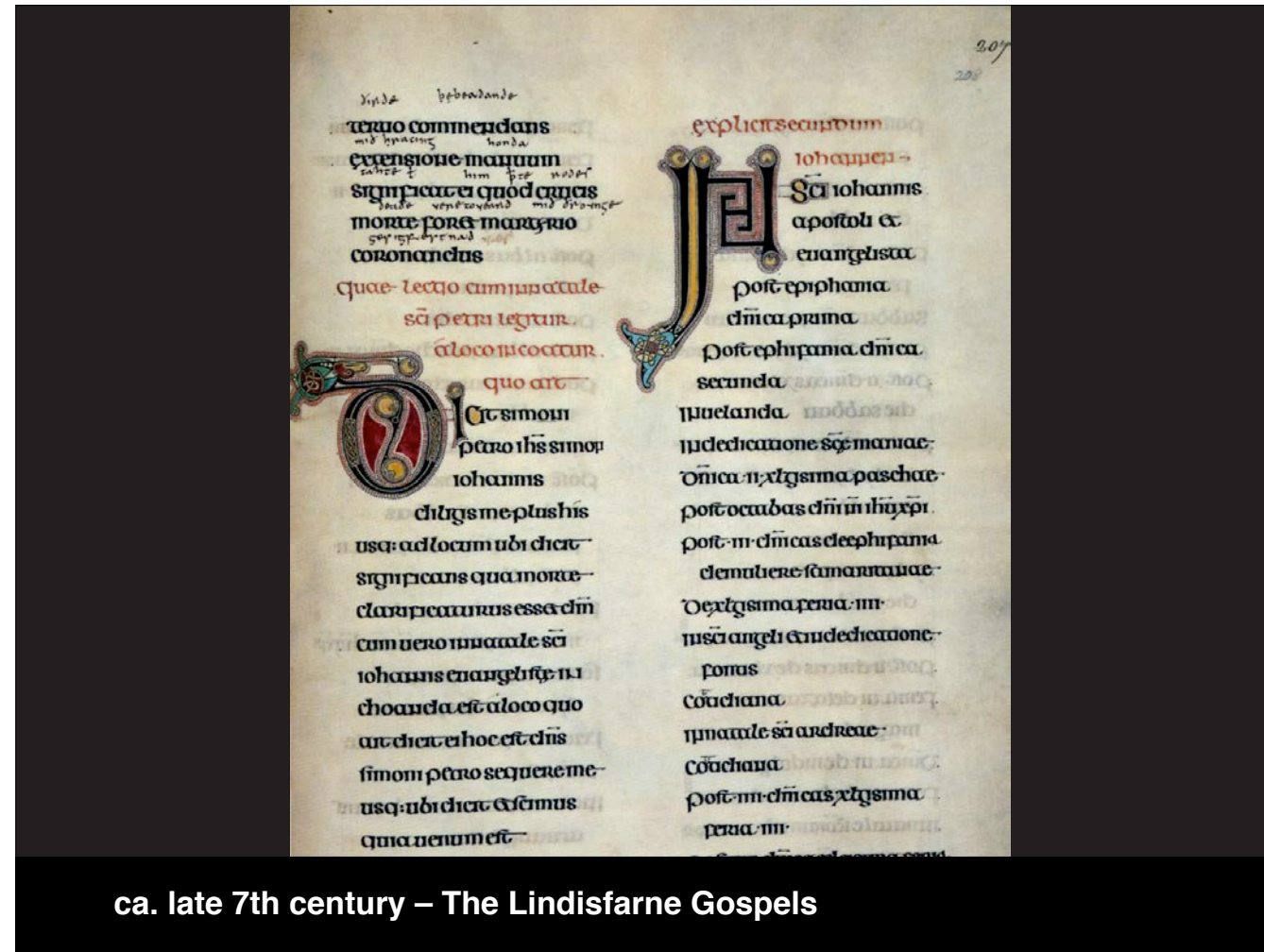


- This book also has edge-painting. This is seldom seen on mediaeval books



Early 12th century – Codex Gigas (Giant Book)

- This giant book measures approximately 3 feet in length, it takes at least two people to lift it.
- Created in the early 12th century, in what is now the Czech Republic, the Codex Gigas (Giant Book) is the largest surviving medieval manuscript in the world.
- It is thought that 160 animal skins were used to make it.
- (Now located in the National Library of Sweden, Stockholm).



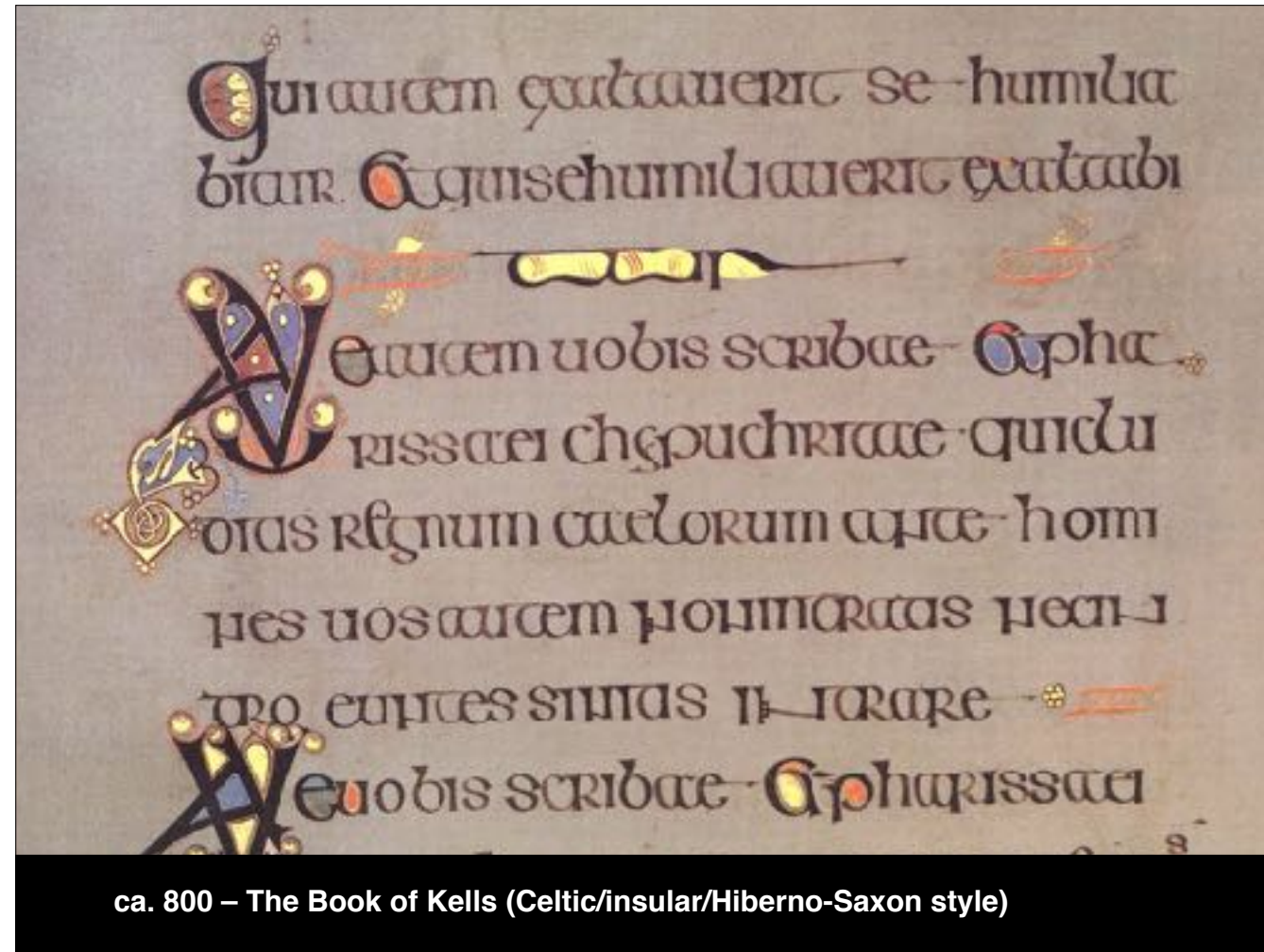
ca. late 7th century – The Lindisfarne Gospels

- Are these uncials or half uncials?
- What are the big letters called?
- It is the same style of manuscript as the Book of Durrow. What is it called?
- Almost 1400 years old, The Lindisfarne Gospels, is another example of the Celtic/insular/Hiberno-Saxon style of manuscript.



ca. 800 – The Book of Kells (Celtic/insular/Hiberno-Saxon style)

- The Book of Kells is Over 1200 years old, and is another example of a Celtic influenced manuscript.
- It may have been created or resided at the Abbey of Kells, north of Dublin, in Ireland
- This codex was created around the time the oldest surviving printed document was made in China.
- ***What is that scroll called? How long is it?***
- Diamond Sutra was a 16 foot long scroll



- The Book of Kells contains some unusual examples of illuminated letters.
-



ca. 790 – The Sacramentaire de Gellone (Carolingian/Caroline minuscule)

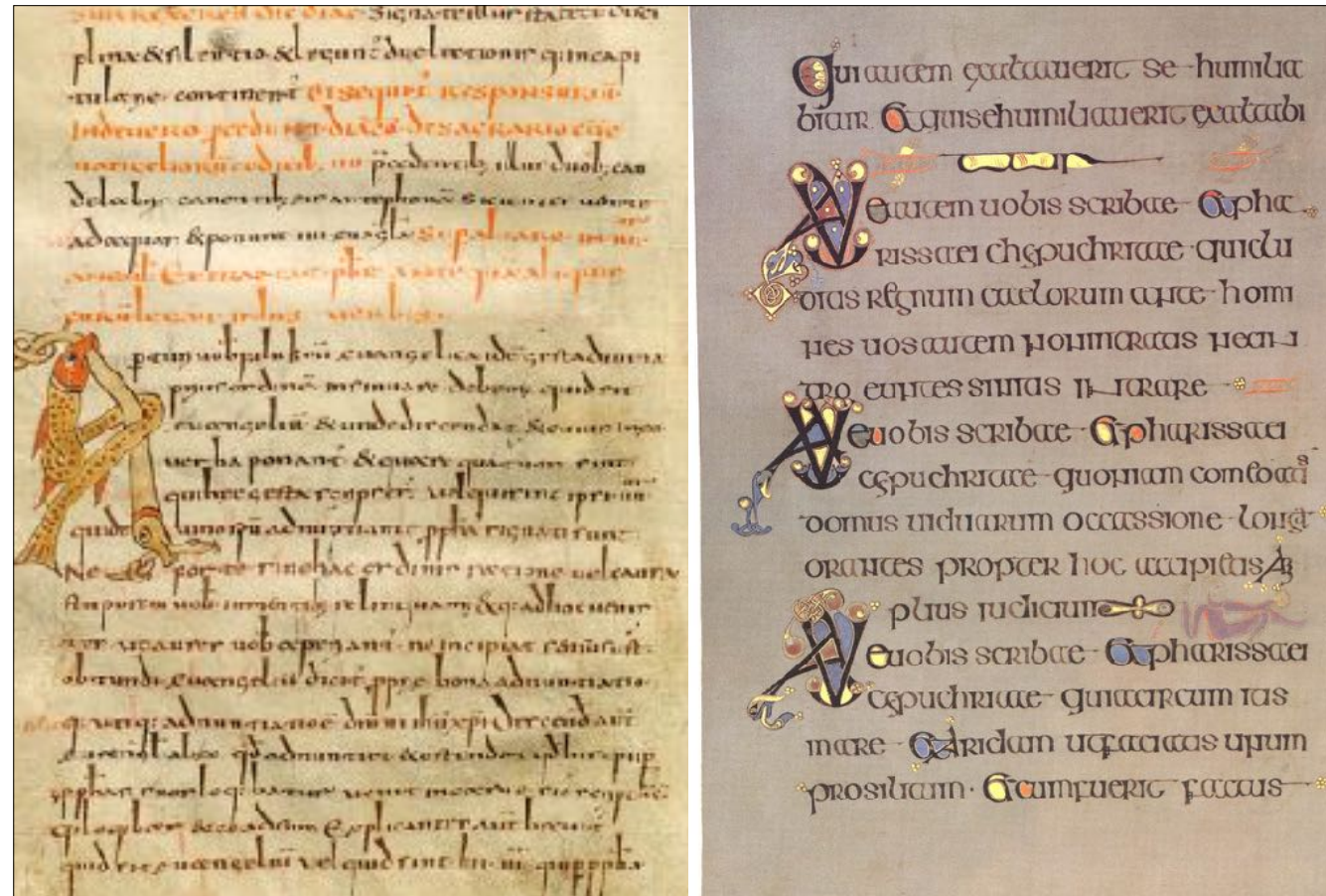
- This is the Sacramentaire or Sacrementary de Gellone. It was written in an abbey in the south of France near Montpellier.
- A beautiful example of Carolingian, or Caroline minuscule script

What did we say that great rulers like King Menes of Egypt and Emperor Qin Shi Huang (Shih HuangTi) of China have in common?

Which European ruler did I mention last week that had a similar impact?

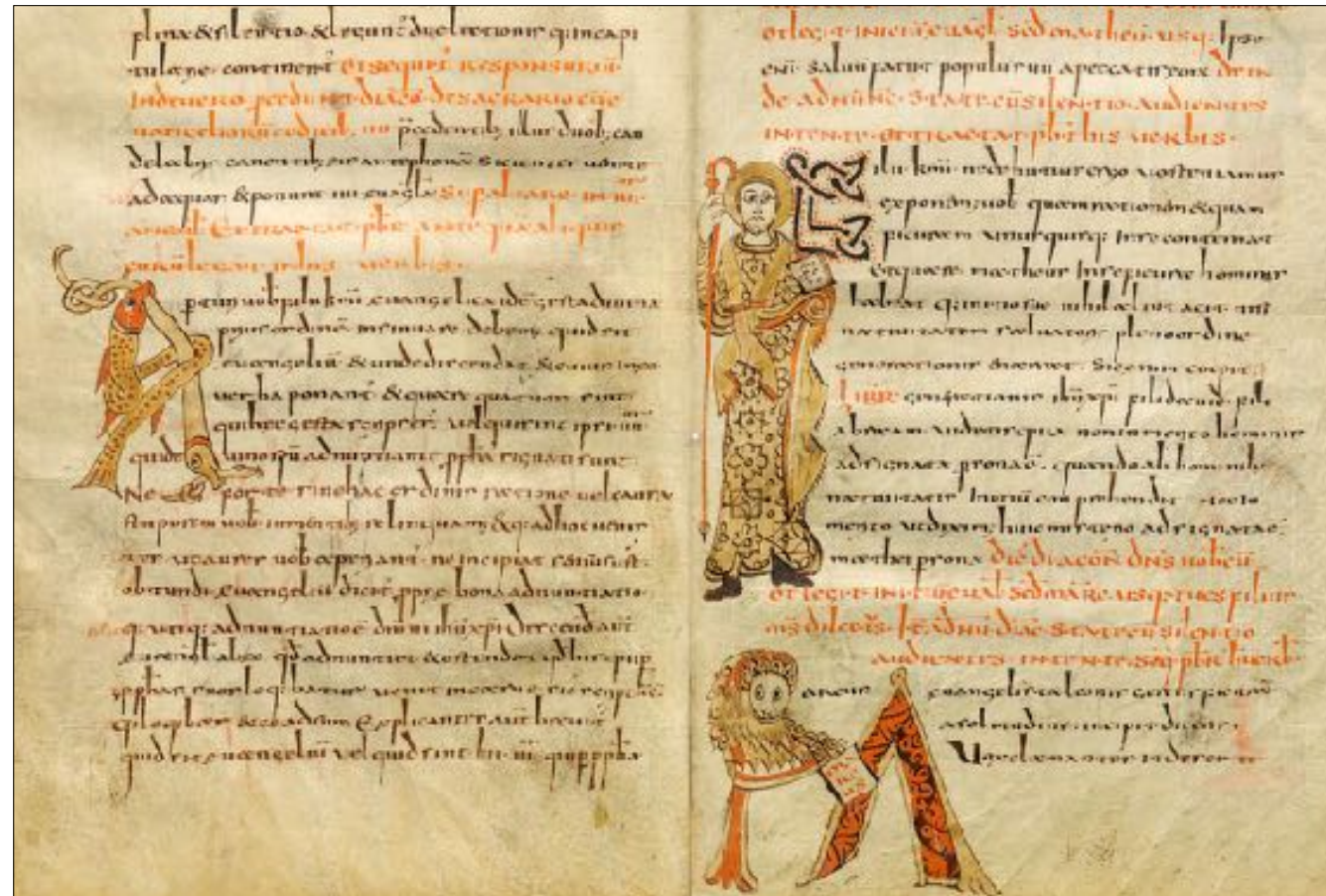
- From 768-814, most of Western Europe was united under the Christian emperor Charlemagne (Charles the Great).
- His empire became known as the Carolingian empire.
- Charlemagne was almost illiterate. He was also a great social and economic reformer.
- In about the 9th century, Charlemagne insisted that a more legible, style of writing was needed
- Carolingian script, or Caroline minuscule script was created.

(Sacrementary: In the Latin Catholic Church, a sacramentary was a book used for liturgical services and Mass by a priest, containing all and only the words spoken or sung by him.)



ca. 790 – The Sacramentaire de Gellone (historiated initials)

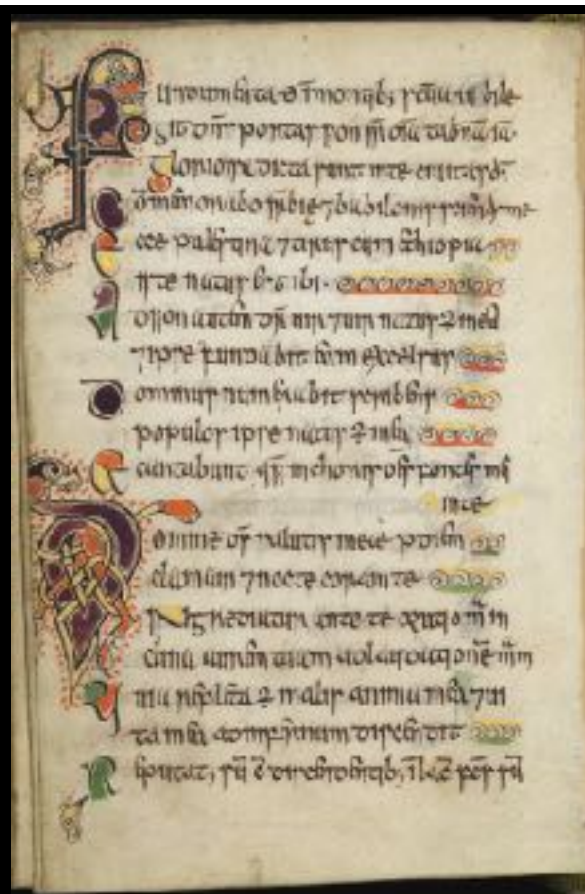
- What do you notice about this script compared to half uncials?



ca. 790 – The Sacramentaire de Gellone (historiated initials)

- Also notice how the illustrations integrate beautifully with text.
- **These are not just illustrations. What else are they?**
- They are also initials
- This book's initials are **historiated** (decorated with designs representing elements from the text).
- I wonder how the scribe and illuminator collaborated on this? Unless it was all one person?

<http://www.codex99.com/typography/50.html>



ca. 11th century – The Celtic Psalter (insular minuscule)

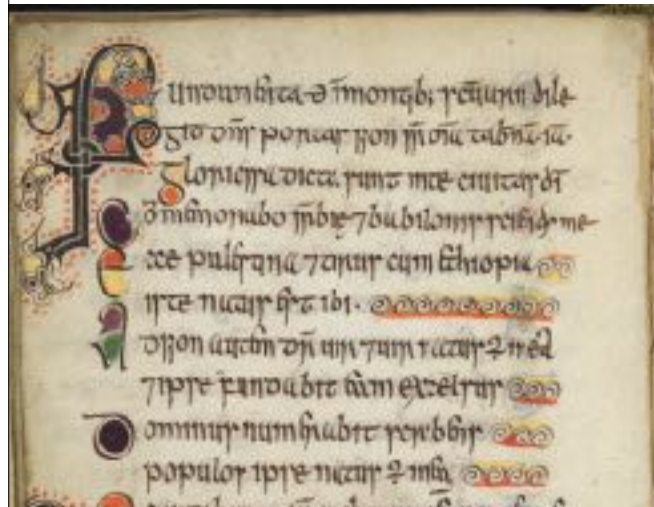
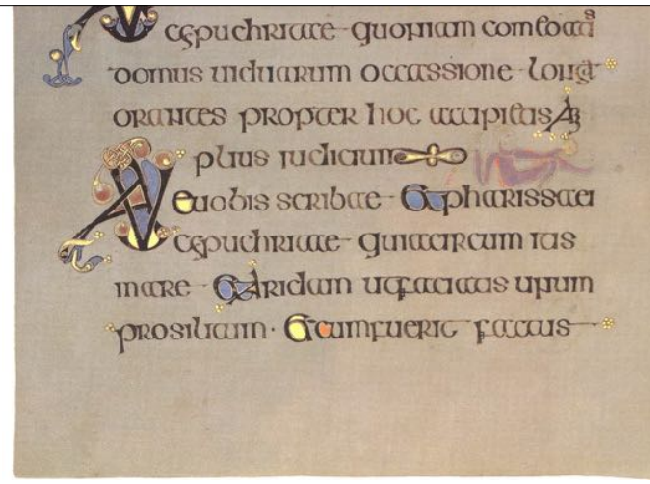
- The Celtic Psalter is 938 years old. It is the oldest Scottish book still in Scotland
- ***Are these uncials or half uncials?***
- ***Do they look like the other half uncial texts we looked at?***
- These half uncials look almost more like Aramaic script. They are insular minuscule script originating in the early medieval period in Ireland
- ***What is Aramaic script?***
- Copies of koran made their way to Europe during Christian crusades 800-1200s, perhaps this influenced both the script and the illuminations. (pure speculation)
- Certainly a very different style of script from The Book of Durrow and The Lindisfarne Gospels
- The book is thought to be have been created in the 11th century.
- The pocket-sized book of Psalms is housed at the University of Edinburgh.
- You can view pages of the Celtic Psalter on the University of Edinburgh website
- Copies of quorans made their way to Europe during Christian crusades 800-1200s

<http://medievalwriting.50megs.com/glossary.htm#insularminuscule>



ca. 1300 – The Ormesby Psalter

- **What kind of an initial is this?**
- Another example of **historiated** initials is the Ormesby Psalter (book of psalms, or hymnbook)
- **What is very different about the text in this hymnbook?**
- This is an example of the Gothic-style script, which lasted until the European Renaissance in 14th century Italy.
- By 11th or 12th century, universities were being founded and demand grew for books on all kinds of topics.
- Scribes couldn't keep up with demand and sought faster ways to write and more economical forms of script.
- They created a much more condensed style that was also much easier to pen.
- It reduced both the time involved and the number of pages required to complete a book.
- This new, more angular style gradually spread across Europe.
- Called Gothic, blackletter, Fraktur, or Old English, it was written with the pen at a 45° angle.
- While more practical, this evolution was far more difficult to read.
- The psalter could be another example of how the influence of Islam touched European manuscripts. The decorative borders have an eastern flavour, very different from the Celtic style borders of the Book of Kells.
- **ca. 1300 CE, Bodleian Library, Oxford)**



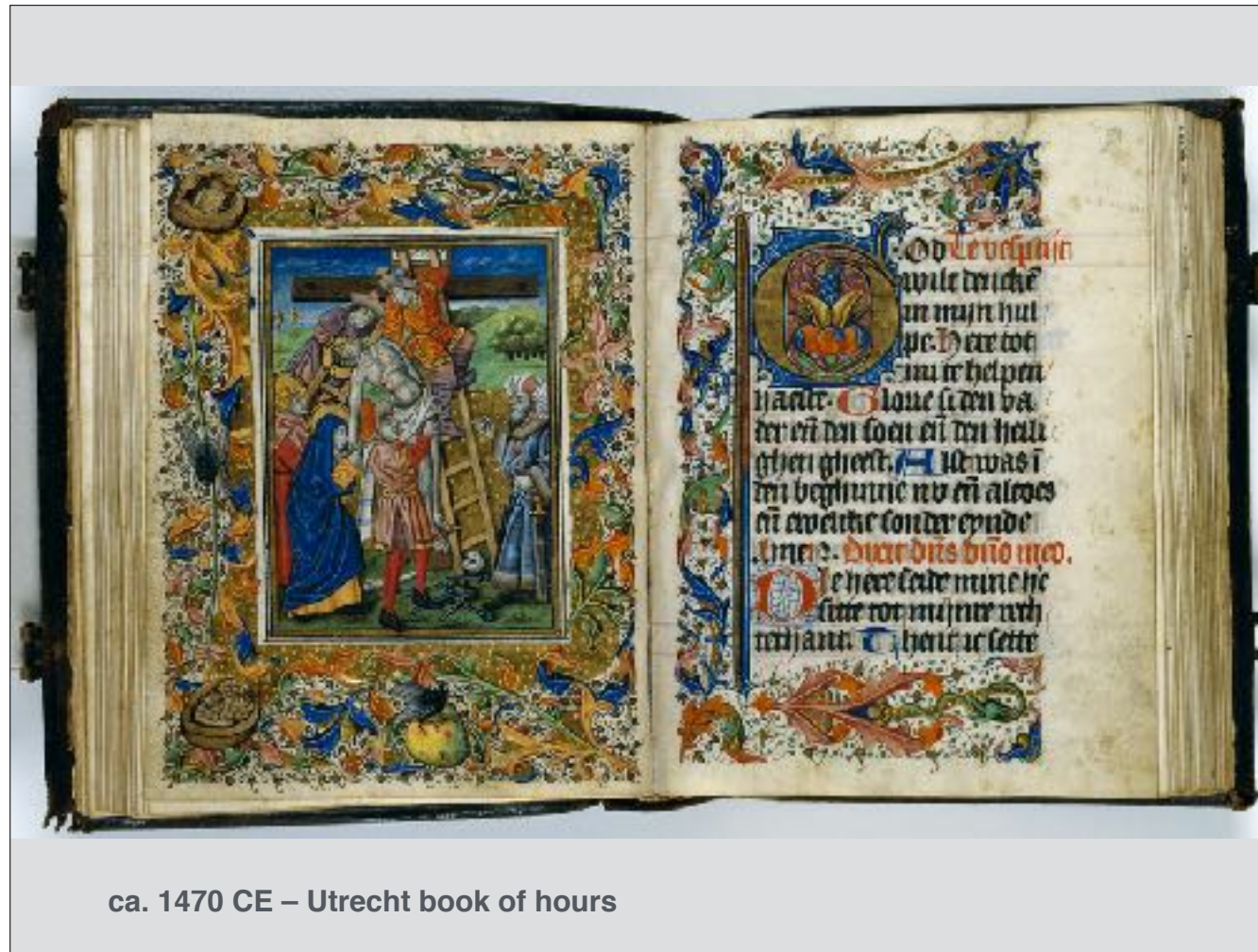
- **What are these 4 styles called?**
- Carolingian
- Insular/Celtic/Hiberno-Saxon Half Uncials
- Insular minuscule
- Gothic, blackletter, Fraktur, or Old English



ca. 1415 – Book of hours, Très Riches Heures du Duc de Berry

What is a book of hours?

- A book of hours is a Christian devotional text, full of prayers and psalms, or hymns for every time of day.
- It was popular with wealthy people in the Middle Ages. First appeared ca. 1250
- A manuscript Book of Hours was a hugely costly object.
- This example: Très Riches Heures du Duc de Berry contains over 200 pages, of which about half have full page illustrations.
- It was painted sometime between 1412 and 1416 by the Limbourg brothers for their patron Jean, Duc de Berry
- (The Limbourg brothers (Dutch: Gebroeders van Limburg; fl. 1385 – 1416) were famous Dutch miniature painters
- (Herman, Paul, and Johan) from the city of Nijmegen. They were active in the early 15th century in France and Burgundy, working in the style known as International Gothic.)



- In the 1400's a book like this would have cost as much as a farm.
- Even a modest version of these books, made for the lesser aristocracy cost the medieval equivalent of several years' pay for a craftsman.
- Utrecht book of hours Vellum, 265 leaves, about 7" high (170 x 135 mm.)
- The illustrations (illuminations) were copied from engravings, or woodblock prints. As printing emerged, this was a common practice until printed books superseded manuscripts. All these books were made from parchment or vellum.

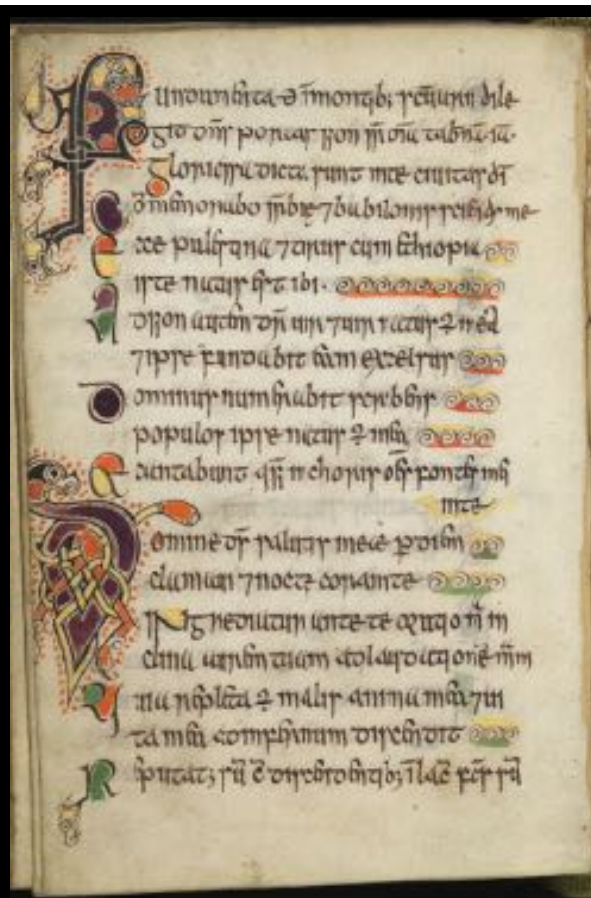
What kind of script is this codex written in?

- Called Gothic, blackletter, Fraktur, or Old English
- What is the pen angle?

Still with me?

Shake it out. Shrug your shoulders. Take a deep breath.

In your group discuss how this impacts your topic. Take a look at your timeline.



ca. 11th century – The Celtic Psalter Chinese alchemist Bi (Pi) Sheng

Around the time the Celtic Psalter was penned, there was a very important development in China.

Around 1045, Chinese alchemist Bi (Pi) Sheng made individual letters called blocks, or “types” from clay and glue

He baked them together until they hardened and attached them to a metal plate with wax.

With this he was able to create text that could then be relief printed. After use, the wax could be melted and the text reset.

This was the first moveable type.



With over 40,000 Chinese characters, the system was almost as challenging to use as the woodblocks were to carve. Sorting and retrieving the characters was difficult.

What do you think Bi Sheng invented to help him find letters more easily?



He invented the lazy Susan table



- We learned last week that the Chinese invented paper made from bamboo pulp.
- Between the 12-14th centuries their paper-making secrets were gradually stolen by invading armies and carried west.
- Chinese paper makers were forced to divulge their paper-making techniques to invading armies from the Ottoman Empire (now Turkey).
- The Turks built their own paper industry, which was in turn discovered by Moorish muslim crusaders
- They carried the precious secret to North Africa, Egypt and Spain.
- By the 1200's paper-making had arrived in Fabriano, Italy. The town became a famous paper manufacturing centre and still has some specialised factories today.
- At this time the paper was being used solely for manuscripts

1200's Paper making starts in Fabriano Italy.



ca. 1300 – Block-printed playing card

By the 1300's woodblock printing techniques also made their way from Asia to Europe. Europeans began producing their own printed fabrics. They also began making woodblock-printed playing cards



ca. 1423 – Broadside relief print of Saint Christopher

- They also began making printed posters or postcards as keepsakes.
- One of the earliest surviving dated woodblock prints (1423), is a broadside relief print of Saint Christopher, patron saint of travellers and children.

What is the fancy name for this kind of printing?

relief printing, is also known as Xylography

What is a broadside?

A single sided printed page



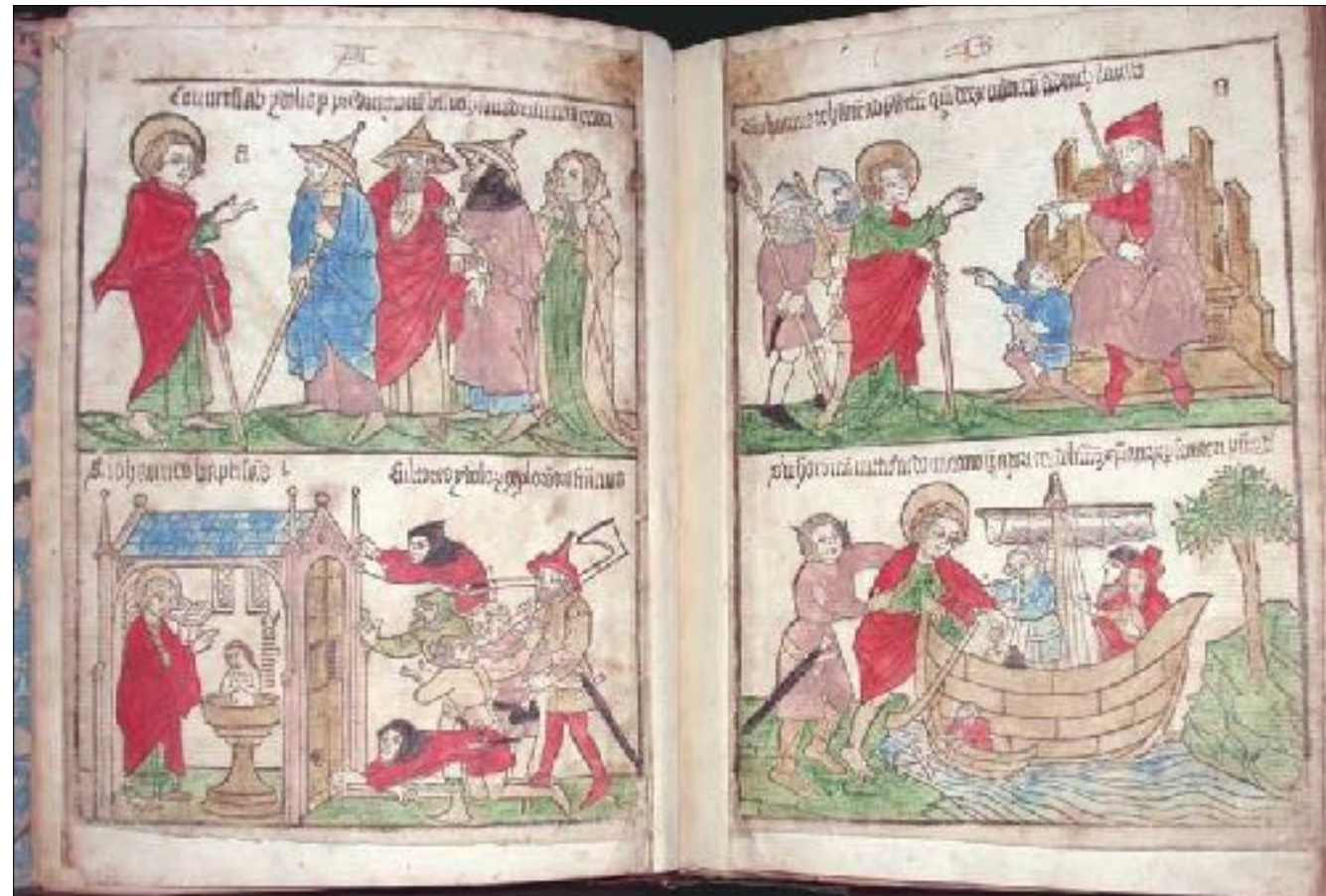
ca. 1460's – Fabric and card printing evolved to block books

- ca. 1460's – Fabric and card printing evolved to block books (xylographica)
- ***Does this look like a printed book? Why? Why not?***
- Block books are short books of up to 50 leaves, block printed in Europe in the second half of the 15th century.
- Blocks were carved to include both text and illustrations as a single unit.
- Colour was added by hand using watercolours.



The first “graphic novels”

- In some of these books speech appeared on scrolls coming out of characters’ mouths: the medieval version of speech bubbles in a comic novel.



ca. 1460's CE – Biblia Pauperum

- This block book is a Biblia Pauperum, or a Paupers' Bible
- It is a condensed version of the Bible, usually written in local dialect. They were used as teaching tools for the less literate.
- Wood block printing was good for block books, but it was not a practical way to reproduce large amounts of text like the bible, or text books
-



1455 – Johann(es) Gutenberg, forty-two line bible (incunabula/incunabulum)

With the demand for literature increasing dramatically, the race to find a way to print bibles and text books more efficiently was fierce. Like Bi Sheng 400 years earlier, Europeans realised the importance of developing a more efficient way of printing.

- The solution was found by Johann(es) Gutenberg. It is said that Gutenberg invented moveable type in 1440, although his first printed book didn't appear until 1455

Gutenberg used typography to print his 42-line Bible. It probably took him about 5 years to produce it.

Why is it called 42 line?

What do you notice about it?

All books, printed in Europe before 1500, are referred to as incunabula, a single book is called an incunabulum.

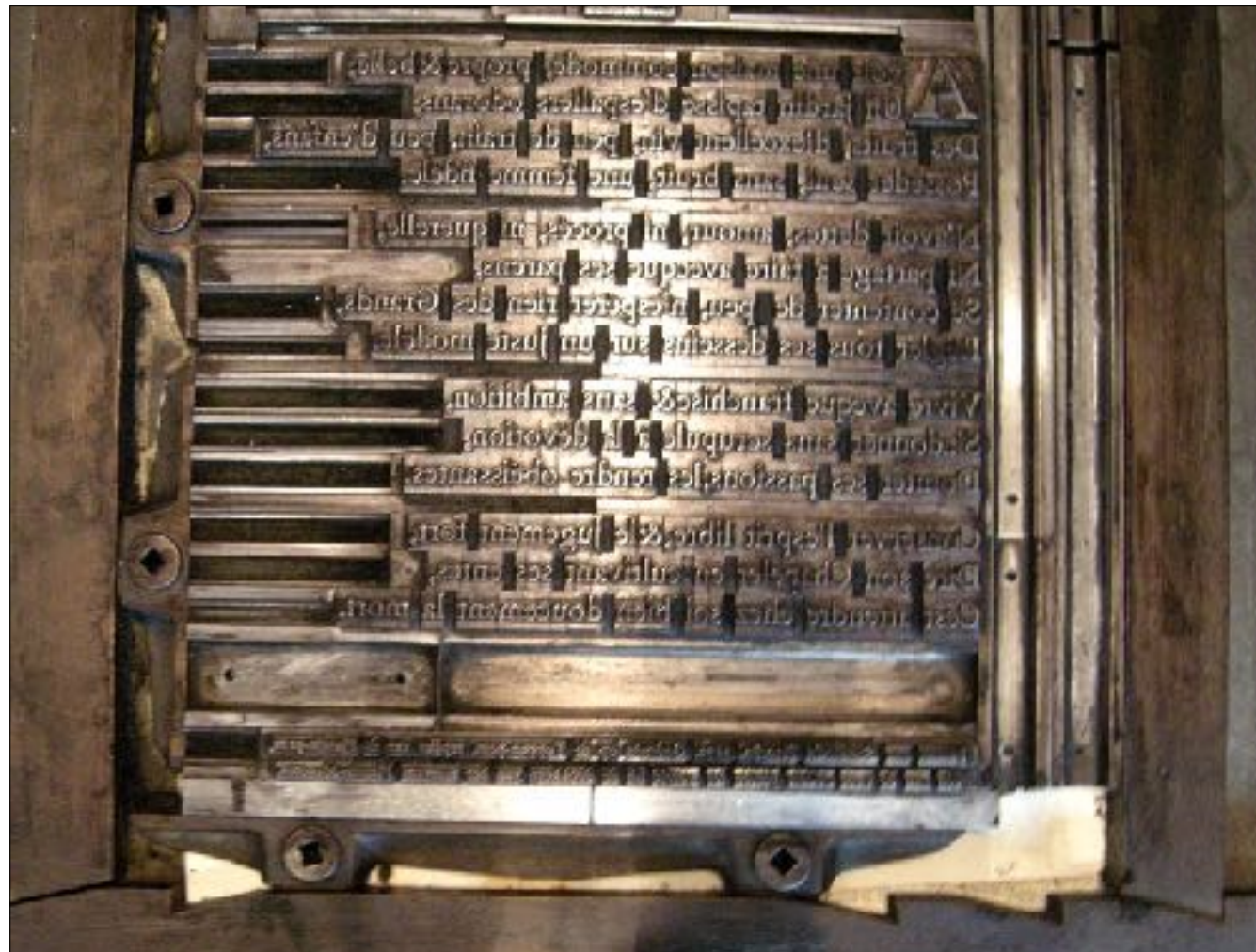
The book is listed by the Guinness Book of World records as the world's oldest mechanically printed book – the first copies of which were printed in 1454-1455 AD. There are 48 original copies in known existence, of which 21 are complete. The above image is of the New York Public Library's copy, the first to come to the USA.

Source: 1. Image: 1.

Estimated age: 559 years old.



- Gutenberg had no idea that the solution had been found 400 years earlier in China by Bi Sheng
- Printers in France and Holland came close to figuring it out around the same time, but history gives credit to Johann Gutenberg.
- Originally the art of working with moveable type was known as “typography”
- Each word was assembled using individual cast metal letters.
- This is what moveable type looks like in it’s case or type tray.



- This is what the letters look like once they are put together for printing.
- What do you notice?

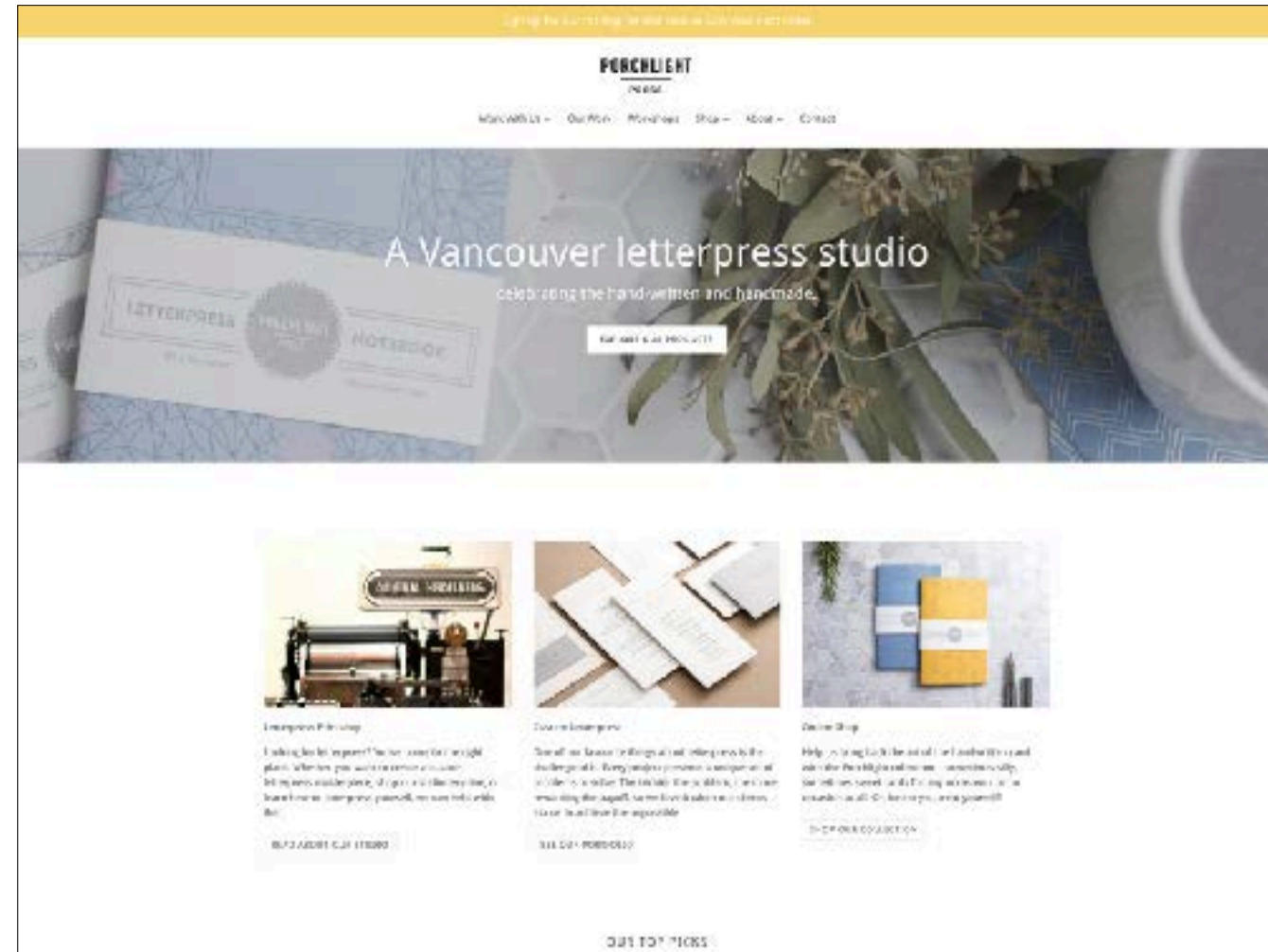


ca. 1440 CE – Johann(es) Gutenberg

Gutenberg also successfully designed a printing press capable of producing pages of text at great speed.



A replica of Gutenberg's printing press in Mainz, Germany



This technique is still used today.
Porchlight field trip



A “modern day” letterpress printing press of the kind you can still use in Vancouver.
Many of the presses were produced in Germany.



A modern day 4 colour printing press



Web offset printing

<https://www.youtube.com/watch?v=0gEEaFT5z84>

<https://www.youtube.com/watch?v=RW1HJdW5XLs>









Next week we'll find out what happened to Gutenberg.
Do you think he got rich off his bible?

Done talkin' :)

**Survey 2 quiz next week.
Be ready!**

Over lunch break fill out your section on the white board.