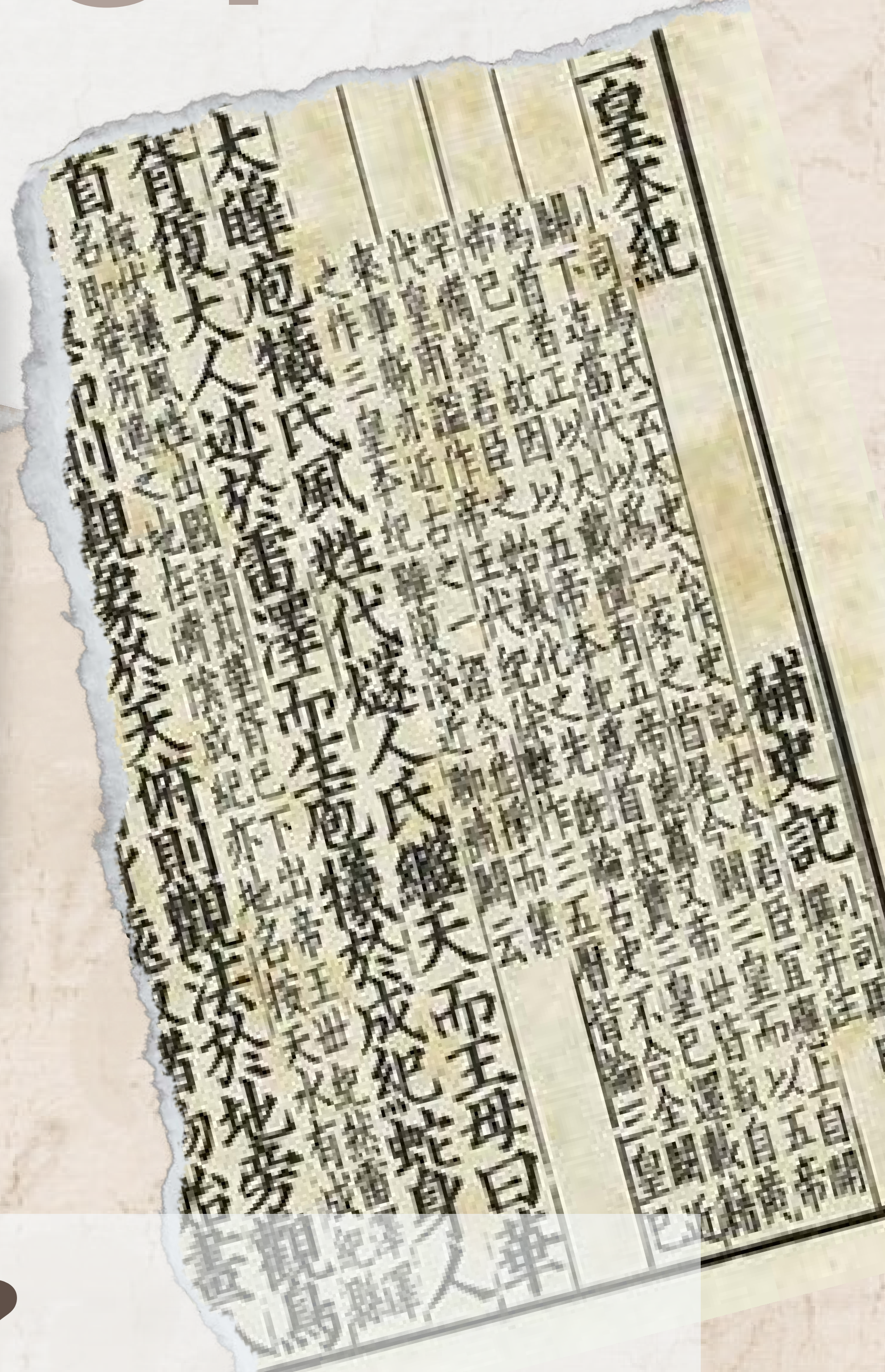


The History of Paper

The first paper?

'In ancient times writings and inscriptions were generally made on tablets of bamboo or on pieces of silk called chih. But silk being costly and bamboos heavy they were not convenient to use. Tshai Lun then initiated the idea of making paper from the bark of trees, remnants of hemp, rags of cloth and fishing nets.' The Twenty-four Histories [1](excerpt shown right)



What is paper?

Paper can be described as a thin tissue composed of any fibrous material, whose individual fibres are first separated by mechanical action, and then deposited and felted together on wire 'cloth' while suspended in water

Humans are not the only paper makers on the planet and it's possible that we learned how to make paper or, more accurately, learned what paper is, from wasps.

Like so many other things, paper making appears to have originated in China, where its use can be traced back to the 2nd century BCE [1]

During the Chinese Han Dynasty (202 BCE - 220CE), a court official named Cai Lun (Tshai Lun) is said to have devised the first process, or recipe, which resulted in recognisable paper. Some fragments of paper dated 179 BCE (predating Cai Lun) have been unearthed at Fangmattan in China.

[1] The Twenty-four Histories are the Chinese official dynastic histories covering 3000BCE - 17th Century



A wasp nest, made from 'paper'

Wasp 'paper'

A wasp queen starts the nest building process by choosing her site, perhaps in relation to the materials she needs, which are sources of wood fibre. She scrapes off tiny bits of wood, chews it up so it mixes well with her saliva to form a soft pulp and then, with the help of worker wasps, she forms soft hexagonal cells which dry to form a sturdy paper structure where she can lay her eggs and young wasps will develop.

Cai Lun, (portrayed here, or Tshai - Lun as he is also called) the court official, regarded as the **INVENTOR OF PAPER**, and possibly a sharp-eyed observer of wasps, mixed mulberry bark, hemp, and rags with water, mashed it to a pulp, pressed out the liquid, and dried the remaining material.



OR.....

An alternative theory is that the key to paper making was accidental, when clothes made of hemp were left soaking for too long and a residue formed in the water. It was found that the residue could be pressed into a new, useful material. In this explanation Cai Lun is also present and his job title is Director of the Imperial Workshops.

The spread of papermaking

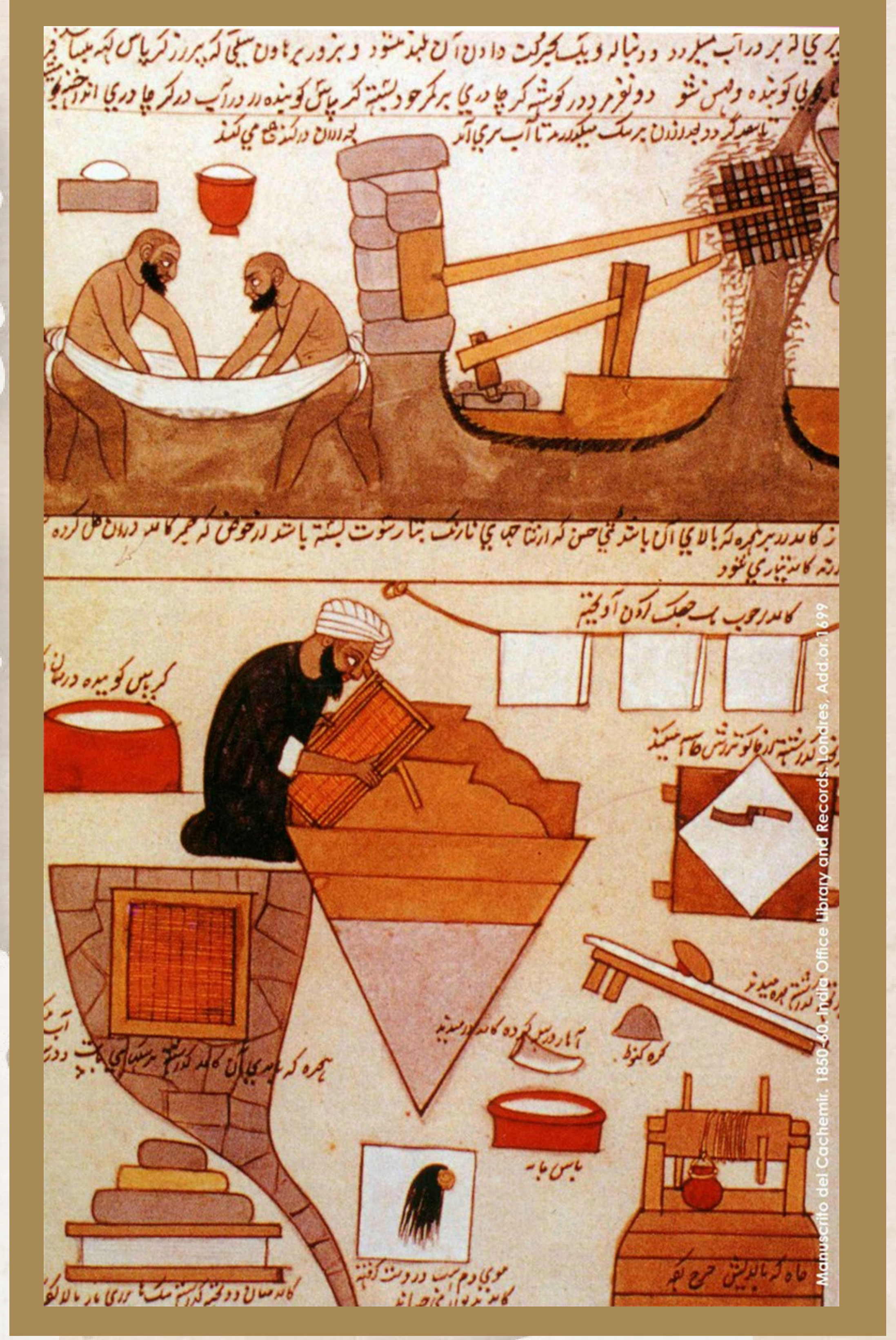
Papermaking spread from China through that most typical activity of humans, war. In the middle of the eighth century, Samarkand, in present day Uzbekistan, was occupied by Arabs. The Tang fighters attacked but lost and some were either captured, or defected, and among these were skilled paper makers who, pragmatically, were able to resume their trade. From then on paper making skills spread relatively quickly through the Arab world and the Arabs improved the process by incorporating water-powered mills for pulp production. Paper was quickly adopted for literary purposes and a considerable amount of preserved early Arabic paper manuscripts, dating from the 9th century, still exist.

13th Century

Here, right, a manuscript from the 13th century illustrates the process of paper making and shows how paper makers were undertaking multiple steps to produce high-quality paper. The bark of fig trees, as the main source of paper making in this recipe, went through frequent cycles of soaking, beating and drying. The process took 12 days to produce 100 sheets of high-quality paper.

A water powered mill mixes linen wastes and rags, as the primary materials of paper making, with water. They are well beaten in stone pits. In the next step, the watery pulp is poured into a piece of fabric, tied around two workers' waists, to strain and purify.

Old European words for paper include charta bombycina, gossypina, xylyna, damascene and serica and, for a while, it was assumed that Oriental paper was made from cotton and European paper from rags. In fact, early Arabic paper was mostly linen, as flax was an abundant crop. Rags were used as well when demand grew.



Paper comes to Europe

Spain was making paper by the middle of the 12th century and in Italy, in Fabriano, paper mills were set up by the middle of the 13th century. To begin with England bought paper from France and Burgundy but by the middle of the 14th century paper was well established in western Europe where it gradually superseded vellum, a paper-like product made from animal skin. However, no paper was made in Britain before the time of the Tudors.

The invention of the printing press by Johannes Gutenberg in the mid-15th century revolutionized the production of books and of course led to a huge increase in demand for paper.

Later improvements to the paper making process came in 19th century Europe with the introduction of wood-based papers.

In this picture below, you can see Stomer's paper mill, the building complex at the far right bottom, in the Nuremberg Chronicle of 1493. Due to their noise and smell, papermills were required by medieval law to be erected some distance from the city walls. [Image from Wikipedia]



Getting up to speed!

The industrial age - the 18th and 19th centuries - brought new developments in paper making, mainly speeding it all up with steam-powered continuous paper making machines, and the use of wood pulp became widespread. Moving on to the 20th century, new types of papers developed. Coated papers, speciality papers and recycled paper appeared and efforts to make the industry more sustainable began to grow. However, despite these efforts and the arrival of the digital age, paper consumption continues to rise.

And now...

The world produces 300 million tons of paper every year. Worldwide consumption of paper has risen by 400% in the last 40 years with 35% of all harvested trees being used for paper manufacturing. The worldwide paper and cardboard market was predicted to reach a worth of \$5,893.9M by 2022. [2]

[2] www.formstack.com/blog/paper-statistics

Is paper sustainable?

The paper industry has had an enormous impact on global forests where unsustainable pulp and paper operations have had devastating impacts on some of the world's most ecologically important places and species. Unsustainable pulp and paper operations have contributed to the degradation of high conservation value forests, illegal harvesting, human rights and social conflicts, and irresponsible plantation development. However, responsible pulp and paper operations can bring many benefits to forests, local economies and people, particularly in rural areas. And paper is, after all an infinitely recyclable product. Many pulp and paper companies now are demonstrating leadership in responsible forestry and plantation management as well as in clean manufacturing processes and recycled content. [3]

[3] World Wildlife Fund



Paper for recycling, image from G F Smith

Paper as art/paper is art!

So what about the relationship between art and paper? A tiny fraction of the world paper output is used for art and many artists use recycled, reworked and/or handmade papers in their practice. There is a fairly long list of techniques used in paper art, or art made with paper as a main material, and this exhibition incorporates many of them.

Kirigami: a version of Origami which involves intricate folding in combination with precise cutting.

Origami: the traditional Japanese art of paper folding where a flat sheet of paper is transformed into a 3D sculpture through folding without using glue or cutting.

Quilling: Also known as paper filigree, quilling involves rolling and shaping thin strips of paper and then arranging them to form intricate designs and patterns.

Collage: Works created by assembling various materials onto a surface.

Decoupage: The use of paper cut outs to decorate/embellish a hard surface.

Paper mache: Layering paper strips or pulp with some sort of adhesive to make 3D forms.

Paper Collé: Collaging paper onto a surface with other materials

Paper embroidery: Stitching through paper to create patterns and imagery

Handmade paper: Making your own paper using various fibres and materials to make a unique surface

Collagraphy: A printmaking technique where a collage is created on a printing plate and then used to make a print

Paper sculpture: 3d forms made entirely of paper (these can range from tiny to large installations)

Hand cutting and **Laser cutting:** Using laser cutters which can create very precise and intricate designs

There are many other ways that artists use paper and this exhibition gives us an extraordinary variety of works made with all sorts of paper. It shows us that paper has endless possibilities and, in the right hands, can be used to make works of wonder, mystery, beauty, fragility, strength and magic.

Questions:

Which of these techniques above can you find in this show? Which would you like to have a go at?

How do you think these pieces from the exhibition were made?



Layla May Arthur, Netherlands



Samantha Quinn, UK



Kate Kato, UK



Jeremy May, UK



Pipa Dyrлага, UK



Loes Scheppens, Netherlands



Helen Ward, UK



Clare Burnett, UK



Edward Richardson, Austria