

Analog / digital techniques and tools

in printmaking and graphic design
(19th century until now)

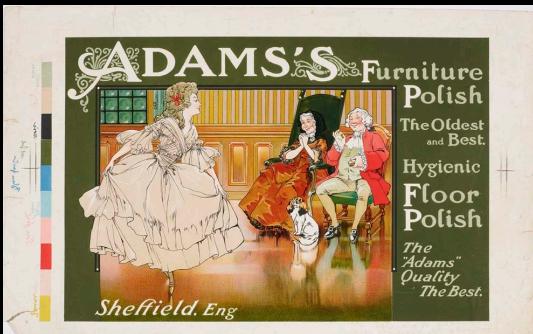
Hello! My name is Daniel Gális! This presentation outlines 4 different technologies that shaped printmaking and graphic design since the 19th century. In this timespan, we observe the move from pure analog to pure digital, with all sorts of hybrid machines and approaches in between. The point I'm making is that technology cannot be charted as a linear continuous line, but a series of steps (forwards, backwards, sideways), each one with its own set of opportunities as well as pitfalls.

Chromolithography

Analog print in the 19th century

Chromolithography

various types of lithography that are printed in colour



The original technique involved the use of multiple lithographic stones, one for each colour, and was extremely expensive when done for the best quality results. Depending on the number of colours present, a chromolithograph could take months to produce, by very skilled workers. However much cheaper prints could be produced by simplifying both the number of colours used, and the refinement of the detail in the image. Cheaper images relied heavily on an initial black print on which colours were then overprinted.

Chromolithography was the most widespread method of colour printing in the 19th century. Surprisingly, hand-colouring remained important, for example elements of the official British Ordnance Survey maps were coloured by hand by boys all the way until 1875.

How does it work



It was used in the production of trade cards, posters, calendars and Christmas cards.

Louis Prang

"the father of the American Christmas card"



Prang was a German-born entrepreneur who printed the **first American Christmas card**. He felt that chromolithographs could look just as good as real paintings, and he published well-known chromolithographs based on popular paintings.

The reason Prang decided to take on the challenge of producing chromolithographs, despite criticisms, was because he felt quality art should not be limited to the elite. Prang and others who continued to produce chromolithographs were sometimes **looked down upon because of the fear that chromolithographs could undermine human abilities**. With the Industrial Revolution already under way, this fear was not something new to Americans at the time.

Taking this technology into their own hands, some artists started producing "official" prints of their paintings in hopes of reaching more potential customers, that would later purchase the actual piece.

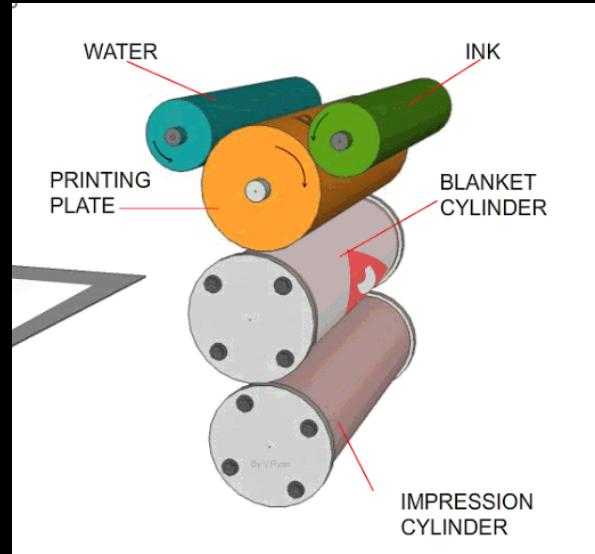


Prang was also an active supporter of women artists, both commissioning and collecting artworks by women. Many of his lithographs featured works by female artists, such as the botanical illustration of Ellen Thayer Fisher. In 1881, his company employed more than one hundred women.

The chromolithograph on the left is titled Poppies and it's from 1885, while the undated work on the right is titled Dessert No.4.

The legendary **Offset press**

How does it work



Offset printing is a widely used printing technique where the **inked** image is transferred (or "offset") from a plate to a rubber blanket, then to the printing surface.

"Zlaté české ručky"

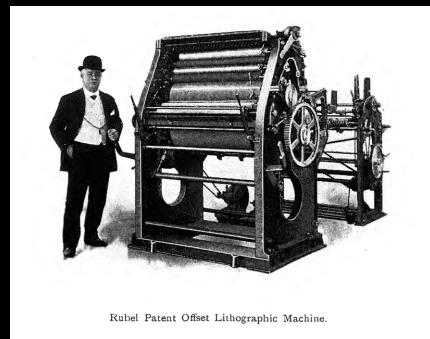
The many inventors of offset



Alois Senefelder



Kašpar Heřmann



Ira W. Rubel

Offset printing is a further development of lithography, invented by Alois Senefelder in 1796. At the time, the playwright Senefelder was looking for a cost-effective reproduction process for his sheet music. At first he made relief printing forms out of limestone for his prints by covering the printing areas with grease ink and etching the non-image areas into the soft stone. By wetting the freshly etched non-image areas with water, they were not covered by the ink and thus only the greased image areas were colored. This made etching to create the relief printing form superfluous. With this discovery he had laid the foundation for the planographic printing principle, on which today's conventional offset printing is also based.

At the end of the 19th century, the slowly moving stone was replaced by a rotating cylinder with a metal plate clamped on top. The offset printing that developed from this is attributed to two independent inventors: the American Ira W. Rubel and the immigrant Kašpar Heřmann, who born in Lnáře by Strakonice, but also lived in the USA. Around 1904, both constructed machines that printed indirectly – that is, from the printing plate via a rubber blanket cylinder to the sheet of paper.



Modern web offset press

After Kašpar Heřmann returned to Germany in 1907, he planned numerous further developments, such as web offset presses. However, his ideas were not realised until 1910, together with Vogtländische Maschinenfabrik AG (VOMAG). The first completed web offset press was then demonstrated in Leipzig in 1912.

CMYK colour model



What does it mean really?

CMYK is a **subtractive** colour model. The abbreviation CMYK refers to the four ink plates used: **cyan, magenta, yellow, and key (black)**.

It works by **partially or entirely masking colours on a white background**. The ink reduces the light that would otherwise be reflected.

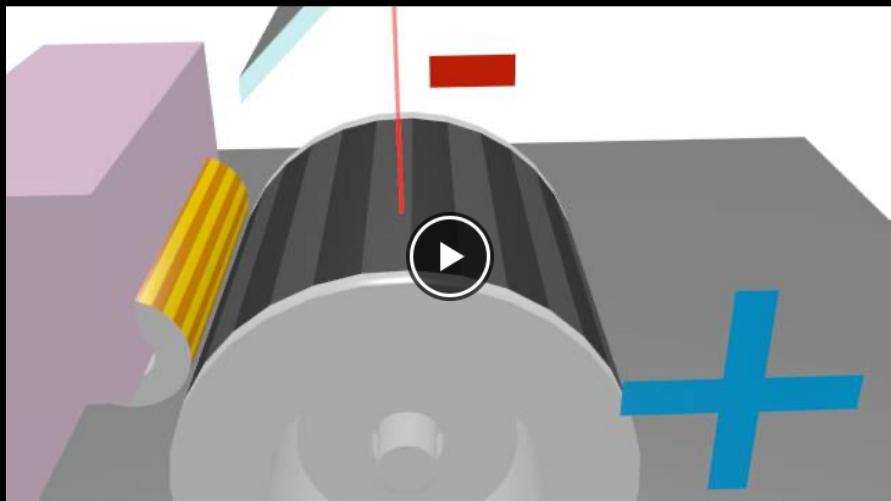
In the **additive RGB** model, white is the "additive" combination of all primary coloured lights, and black is the absence of colour.

In the **subtractive CMYK** model, it is the opposite: white is the natural colour of the background, black results from a full combination of coloured inks.

Laser printer

From Xerox PARC

How does it work?



Xerox PARC

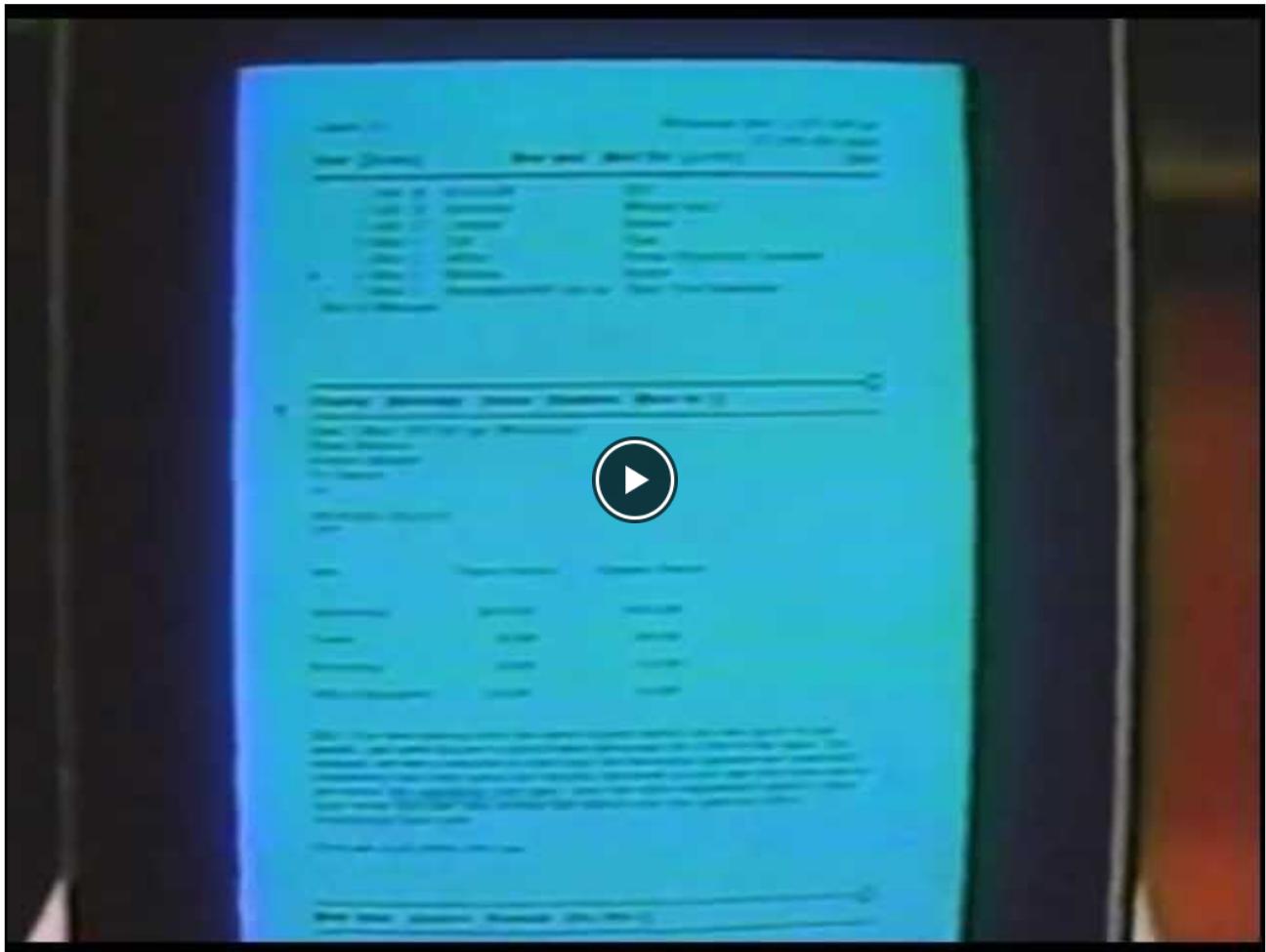
GUI, computer mouse,
Ethernet and...



In the 1960s, the Xerox Corporation held a dominant position in the photocopier market. In 1969, Gary Starkweather, who worked in Xerox's product development department, had the idea of using a laser beam to "draw" an image of what was to be copied directly onto the copier drum.

After transferring to the recently formed Palo Alto Research Center (Xerox PARC) in 1971, Starkweather adapted a Xerox 7000 copier to make SLOT (Scanned Laser Output Terminal).

In 1972, Starkweather worked with Butler Lampson and Ronald Rider to add a control system and character generator, resulting in a printer called EARS (Ethernet, Alto Research character generator, Scanned laser output terminal)—which later became the Xerox 9700 laser printer.



Xerox PARC is to this day highly regarded as the birthplace of modern computers. The interdisciplinary **Palo Alto Research Center** allowed its engineers, scientists and designers to explore this new field by providing ample funding and freedom.

This video commercial from 1979 introduces the **Alto computer system**, the predecessor of today's personal operating systems such as MacOS and Windows.

It even featured a basic **vector graphic editor** as well as a **bitmap raster editor**. These early prototypes would lay the groundwork for the digital graphic design tools we use today.

Evil Adobe

Creative Suite Cloud

Adobe functionally has a monopoly on software meant for the creation of content. We all know and love to hate Illustrator, Photoshop and InDesign, the most vital tools for today's graphic designer.

Adobe was founded in 1982 by ex-Xerox PARC members John Warlock and Charles Geschke. Since then the corporation has become much more predatory in its pricing and business model.

The apps that used to be distributed as Creative Suite - a software package that you could buy on physical media, install and keep using forever - are now distributed as a software as a service (SaaS) subscription called Creative Cloud.

As creatives, we usually don't own (and literally cannot own) our essential work tools.

How does it work?



Alternatives

Ps Honorable Mentions Paint Tool Sai • MyPaint • Paint.NET • • Affinity Photo • Clip Studio • Krita • GIMP • Fire Alpaca • MediBang Paint • Photopea	Ai Honorable Mentions Clip Studio • • Affinity Designer • Inkscape • BoxySVG • Vectr • Figma		
Id Honorable Mentions Canva • SpringPublisher • • Affinity Publisher • Viva Designer • Scribus	An Honorable Mentions Krita • Pencil 2D • Fire Alpaca • • Cacani • TVPaint Animation • ToonBoom Harmony • Clip Studio (EX version) • Open Toonz		
Lr • RawTherapee • Darktable	Dw • WebStorm • Aptana Studio	Ae • DaVinci Resolve • Blender	Au • Fairlight • Audacity

I know it seems impossible to move away from Adobe completely, and it may well be at this point, but I encourage everyone to at least try. This company is renting out 15 year old software that still randomly crashes, we deserve better.

From my own experience, **Figma** and **Affinity** are better pieces of software for intuitive thinking and creating with the tool. The same I can say about **Blender** and **DaVinci Resolve**.

**That's it. No AI.
Thank you for
your time!**