Printing, photography, and design in late 1700s through mid 1800.
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As technology advanced and mass production flourished, cities in Europe and the United States grew rapidly as people sought employment in factories.

Political power shifted from the aristocracy to the capitalist manufacturers, merchants, and working class. The capitalist replaced the land owner as the most powerful force in the Western world. Investing in machines for mass manufacturing became the basis for change in industry.
As this supply-and-demand cycle became the force behind the relentless development, graphic design played an important role in marketing factory output. It was a time of optimism and wealth, but not without its social costs. Long 13-hour days, unsanitary and filthy living conditions, women and children among the workforce, overproduction, economic depressions, and the loss of jobs due to new improvements in technology took their toll.
Critics of this new industrial age declared that civilization was shifting from humanist values to a preoccupation with material goods.

But with all this new technology, public education and literacy flourished and the need for reading materials became more important and widely available.

Mass production of goods brought with it an overpowering need for mass communication.
The nature of visual information was profoundly changed.

A greater range of typographic sizes for broadsides and letterforms for books exploded. The nineteenth century was a prolific period for typeface design and brought about such new classifications as Egyptian and sans serif, as well as outrageously decorative and novelty typefaces.
In the late 1700s, Robert Thorne, Vincent Figgins, Henry Caslon, among others, began experimenting with bold, heavily slabbed-serifed fonts called antiques or Egyptians. These typefaces generally had an even stroke weight, heavy, rectangular slab serifs, and short ascenders and descenders.
In 1815, Vincent Higgins introduced type that projected the illusion of 3-D, and later these faces were given more decorative embellishments.
As typefaces became larger, the process for casting type in lead became almost impossible due to the weight and size of this new type.

Darius Wells began experimenting with hand-carved wooden letters which eventually was called **woodtype**. Woodtype manufacturers sprang up all over the world as the popularity of posters and broadsheets flourished.
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Woodtype and woodtype letters is still popular today and is used frequently in poster design.

One such design shop is noted for its use of wood type and woodcut illustrations. **Hatch Show Print**, located in Nashville, Tennessee, was founded in 1879 and still produces woodtype and letterpress posters for a broad range of uses.

video: hatch show print
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The impetus for this new display typography increased demand for posters ranging from traveling circuses and vaudeville troupes, to clothing stores and other manufacturing outlets. Poster houses, similar to Hatch Show Print, specializing in letterpress display materials, flourished. Designers had access to an infinite range of type sizes, styles, weights, as well as ornamental embellishments.
Long words or lines of text required condensed type and short words were set in expanded fonts to keep type aligned on the layout. Important words were given the largest type available.

Despite the terrible design by today’s standards, there was a practical side to using all the fonts. The print shops had a limited number of characters and could freely mix wood and metal types together.
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After Gutenberg’s printing press, the need for a high-speed, mechanized form of printing was needed. The invention of the steam engine facilitated this process.

Friedrich Koenig, a German printer, developed a steam-powered printing press in the early 1800s.

video: letterpress print shop
The popularity of Letterpress printing continues today. This process involves inking metal type and debossing it onto the surface of the paper.
New type, inks, and paper were developed to accommodate this new way of printing.

But setting type by hand remained a slow and tedious process. By the middle of the 19th century, presses could produce 25,000 copies per hour, but each letter in every word, every book, newspaper, and magazine had to be set by hand.
In 1886, Ottmar Mergenthaler invented and obtained the first patented Linotype machine that created type automatically.

This breakthrough involved a person hitting a typewriter key that in turn, created a matrix that would line up with other characters and melted lead would be poured into all the letters. The end result was a plate of raised letters that would set an entire page in one block.

The linotype machine could do the work of seven or eight compositors at the same time.
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The linotype led to a surge in the production of periodicals and illustrated weeklies, including the Saturday Evening Post.

With the technological advances in steam-powered printing presses, the global spread of words and pictures, and the age of mass communication arrived.
Along with the advancement of type production and printing, better methods for reproducing images took on importance.

One of the first devices used for making images by photomechanical processes was known as the camera obscura.

Much controversy has surrounded the use of this machine by artists as an aid to drawing for centuries.
Jan Vemeer was a Dutch Baroque painter who was most noted for his highly realistic images of domestic interior scenes depicting middle class life.

In this well-know image of Girl With Pearl Earring, much has been written about Vermeer’s use of drawing “aids” in his work.

http://www.essentialvermeer.com/camera_obscura/co_one.html
The foreshortened figure in this painting. We are quite familiar today with foreground objects appearing very large in snapshots. But in 17th century painting this is rather unusual. The perspective is correct in a mathematical, optical sense, but the effect seems exaggerated due to the closeness of the viewpoint to the soldier. Other artists would have made human figures in a composition of this kind much more nearly equal in size. The camera obscura would clearly show this visual perspective.
Joseph Niepce of France, first produced the first photographic image by coating a pewter sheet with a light-sensitive asphalt that hardens when exposed to light. This complex invention was called heliogravure or “sun engraving,” and is represented by this print of Cardinal d’Ambroise around 1822.
At the same time, Louis Daguerre was doing similar research and after Niepse’s death in 1839, perfected his technique using a polished silver-plated copper sheet and sensitized it by placing it over a container of iodine crystals. After the iodine vapor combined with the silver to produce a light-sensitive silver iodide, the plate was placed in a “camera” and exposed to light, resulting in a latent image. The process is highly complex, the impact on photomechanical imaging was profound.
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The Victorian love of ornate and extravagant embellishments was noted in architecture, manufactured products, and elaborate borders, text, and imagery in graphic design.
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Victorian graphics utilized a printing technique called **chromolithography** that unleashed a flood of colorful printed images.
Chromalithography is an expansion of **lithography**, from the Greek word literally meaning “stone printing” was introduced in the late 1700s as a cheap way to print by drawing on a stone.

Lithography is based on the simple premise that oil and water do not mix. An illustration is drawn on a piece of flat stone with an oil-based crayon, pencil, or pen. Water is spread over the surface, then an oil-based ink is rolled over the stone, sticking only to the grease pencil lines. A piece of paper is then placed over the stone.
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Chromolithography was widely used between 1860 and 1900 and the imagery was internationally popular. Louis Prang, a German immigrant who settled in Boston in the mid-1800s, was a master printer and illustrator who built a huge chromolithography firm that eventually became known as L. Prang and Company. His meticulously drawn illustrations often depicted holiday images and were hugely popular all through the early 1880s.
Prang made a life-long contribution to art education after giving lessons to his daughter in 1856. He manufactured and distributed non-toxic watercolors and crayons, as well as art instruction books that were used for years by educators, students, and fine artists.
Labels and packages became very important uses for chromolithography. But after stones and printing on tin sheets posed significant technical difficulties, the need for putting a reverse image on thin paper and transferring the image onto sheet metal using great pressure. The paper backing was soaked off, leaving the image on the plate which was then transferred to a rubber roller and then re-printed on tin packaging.

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Offset lithography began.
The Victorian era also brought about the first illustrated children’s books, printed using offset lithography.

**Walter Crane** is noted as one of the most influential designer of children’s picture books. Crane was greatly influenced by the Japanese woodblock and which prompted numerous commissions to design tapestries, stained-glass windows, wallpaper, and fabrics. He also played a significant role in the Arts and Crafts movement and art and design education.
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Another notable illustrator at the time was Randolph Caldecott, for which the prestigious Caldecott Award is given to noteworthy illustrators and designers today. Caldecott’s illustrations showed a love of the absurd, exaggerated movement, personified objects like plates and dishes, and overall humor, which became the prototype for animated films later on.
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**Kate Greenaway** was another illustrator who created graceful page layouts using lots of white space and asymmetrical balance, which broke from the traditional Victorian clutter.
Inventive book design was not a concern for most publishing firms in America and Europe in the 19th century. However, in the 1840’s, Harper and Brothers launched an enormous project that became known as the finest achievement of graphic design and book production to date. Harper’s Illuminated and New Pictorial Bible contained 1,600 wood engravings from illustrator Joseph Adams. The format consisted of two columns of text with a central margin of notations, ornate Victorian frames, and hundreds of small illustrations. Each chapter opened with an illuminated capital letter.
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In 1850, Harpers opened an era of pictorial magazines with its first Harper’s New Monthly Magazine. Harper’s billed itself as “a journal of civilization” and developed a division for printing cartoons and graphic reporting based on drawings from artists/correspondents, including Thomas Nast.
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Nast became known as the father of American Political cartooning who popularized a number of important icons: Santa Claus, the Democratic donkey, Republican elephant, Uncle Sam, and Columbia, the symbolic female figure who became the prototype for the Statue of Liberty.
In the late 1800s, Howard Pyle, a well-known and respected illustrator, was commissioned to create the first tonal illustration where the black and gray portions of the image were converted to tiny black dots that were blended by the human eye to produce the illusion of continuous tone.
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The rising tide of literacy, plummeting production costs, and the growth of advertising revenues pushed the number of newspapers and magazines published in the United States from 800 to 5,000 between 1830 and 1860.
The Victorian era marked a time of huge technological advances in printing, and a thirst for illustrated books, magazines, newspapers, posters, and advertising.

Outlandish and elaborate lettering remained hugely popular throughout the 19th century and into the early decades of the 20th century.
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**Summary of Terms**

- Linotype
- lithography
- chromolithography
- letterpress
- offset printing
- woodtype
- fat type
- camera obscura
- Victorian era
- Walter Crane
- Louis Prang
- Thomas Nast
- Randolph Caldecott