

Chapter 9 – Graphic Design and the Industrial Revolution

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Key Terms (in order of appearance; the first page number of their appearance is listed)

1. *Industrial Revolution*, page 144
2. *Pica*, page 145, (Fig. 9-2)

3. *Fat face*, page 145 (Fig. 9-3)
4. *Egyptian type*, page 147 (Fig. 9-6)
5. *Bracket*, page 147
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7. *Clarendon typeface*, page 147, (Figs. 9-8 and 9-9)
8. *Tuscan-style letters*, page 147, (Fig. 9-10)
9. *Sans-serif type*, page 149, (Fig. 9-17)
10. *Wood type*, page 150
11. *Compositor*, page 150
12. *Fourdrinier machine*, page 152
13. *Linotype machine*, page 152 (Figs. 9-23 and 9-24)
14. *Monotype machine*, page 153
15. *American Type Founders Company*, page 153
16. *Phototypography*, page 153
17. *Camera obscura*, page 153 (Fig. 9-25)
18. *Bitumen of Judea*, page 153
19. *Heliogravure*, page 153, (Fig. 9-26)
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21. *Photogenic drawings*, page 154, (Fig. 9-29)
22. *Photograms*, page 154, (Fig. 9-29)
23. *Negative*, page 155, (Fig. 9-30)
24. *Positive*, page 155, (Fig. 9-31)
25. *Photography*, page 155
26. *Calotype*, page 155
27. *Talbotype*, page 155
28. *The Pencil of Nature*, page 155, (Fig. 9-32; see also Fig. 9-47).
29. *Collodion*, page 157

30. *Kodak camera*, page 157, (Fig. 9-33)
31. *Gelatin emulsion*, page 157
32. *Halftone screen*, page 158, (Figs. 9-37 and 9-38)
33. *First photographic separation*, page 158
34. *First photographic interview*, page 159, (Fig. 9-42)
35. *Victorian Era*, page 161, (Fig. 9-47)
36. *Great Exhibition or Crystal Palace Exhibition*, page 162
37. *Lithography*, page 162
38. *Planographic printing*, page 163
39. *Chromolithographie*, page 163
40. *Rotary lithographic press*, page 163
41. *L. Prang and Company*, page 164
42. *Scrap*, page 164
43. *Toy books*, page 168, (Fig. 9-65)
44. *Harper and Brothers*, page 170, (Fig. 9-69)
45. *Harper's New Monthly Magazine*, page 171, (Fig. 9-69)
46. *Harper's Weekly*, page 171, (Fig. 9-70)
47. *Harper's Bazaar*, page 171
48. *Harper's Young People*, page 171
49. *MacKellar, Smiths & Jordan Foundry*, page 175, (Fig. 9-75)

Key People and Their Major Contributions (in order of appearance; the first page number of their appearance is listed)

1. *Joseph Jackson (1733–1792)*, page 145
2. *Thomas Cotterell (d. 1785)*, page 145, (Fig. 9-2)
3. *Robert Thorne (d. 1820)*, page 145, (Fig. 9-3)

4. *William Thorowgood*, page 147
5. *Vincent Figgins (1766–1844)*, page 147, (Figs. 9-4 and 9-5)
6. *William Caslon IV (1781–1869)*, page 147, (Fig. 9-17)
7. *Darius Wells (1800–1875)*, page 150
8. *William Leavenworth (1799–1860)*, page 150
9. *Lord Stanhope (1753–1816)* page 151, (Fig. 9-21)
10. *Friedrich Koenig*, page 150, (Fig. 9-22)
11. *William Cowper*, page 151
12. *Nicolas-Louis Robert*, page 152
13. *John Gamble*, page 152
14. *Ottmar Mergenthaler (1854–1899)*, page 152, (Fig. 9-23)
15. *Tolbert Lanston (1844–1913)*, page 153
16. *Joseph Niépce (1765–1833)*, page 153, (Figs. 9-26 and 9-27)
17. *Louis Jacques Daguerre (1799–1851)*, page 154, (Fig. 9-28)
18. *William Henry Fox Talbot (1800–1877)*, page 154, (Figs. 9-29 and 9-32; see also 9-47)
19. *Sir John Herschel (1792–1871)*, page 155, (Figs. 9-30 and 9-31)
20. *Frederick Archer (1813–1857)*, page 157
21. *George Eastman (1854–1932)*, page 157, (Fig. 9-33)
22. *John Calvin Moss*, page 157, (Fig. 9-34)
23. *Stephen H. Horgan*, page 158, (Figs. 9-37 and 9-38)
24. *Frederick E. Ives (1856–1937)*, page 158
25. *David Octavius Hill (1802–1870)*, page 159, (Fig. 9-39)
26. *Robert Adamson (1821–1848)*, page 159, (Fig. 9-39)
27. *Julia Margaret Cameron (1815–1879)*, page 159, (Fig. 9-40)
28. *F. T. Nadar (1820–1910)*, page 159, (Fig. 9-41)
29. *Mathew Brady (c. 1823–1896)*, page 157, (Fig. 9-43)

30. *Eadweard Muybridge (1830–1904), page 161, (Fig. 9-46)*
31. *Queen Victoria (1819–1901), page 161*
32. *W. N. Pugin (1812–1852), page 161, (Fig. 9-48)*
33. *Owen Jones (1809–1874), page 162, (Fig. 9-49)*
34. *Richard M. Hoe (1812–1886), page 163, (see Fig. 9-51)*
35. *John H. Bufford (d. 1870), page 163, (Fig. 9-52)*
36. *Louis Prang (1824–1909), page 164, (Fig. 9-54)*
37. *Walter Crane (1845–1915), page 168 (Fig. 9-65)*
38. *Randolph Caldecott (1846–1886), page 168, (Fig. 9-66)*
39. *Kate Greenaway (1846–1901), page 170, (Fig. 9-67)*
40. *James (1795–1869) and John (1797–1875) Harper, page 170*
41. *Wesley (1801–1870) and Fletcher (1807–1877) Harper, page 170*
42. *Thomas Nast (1840–1902), page 171, (Figs. 9-71a and 9-71b)*
43. *Charles Dana Gibson (1867–1944), page 171, (Fig. 9-72)*
44. *Howard Pyle (1853–1911), page 172, (Fig. 9-73)*
45. *Volney Palmer, page 172*
46. *N. W. Ayer, page 172*

Chapter 9 – Study Questions

Multiple Choice

1. During the Industrial Revolution—a radical process of social and economic change that occurred in England between 1760 and 1840—the role of graphic design and graphic communications expanded due to three the following situations. Which does **NOT** belong? _____
 - A. Factory output increased and designers were needed to help market goods.

- B. Signage was needed to guide residents through the streets of fast-growing cities.
 - C. Greater human equality sprang from the French and American Revolutions and led to increased public education and literacy.
 - D. The production of printed materials increased due to advances in technology, which lowered per-unit costs.
2. During the Industrial Revolution, the range of typographic sizes and letterform styles exploded, and type grew steadily bolder. Around 1803, Robert Thorne of England created a major category of type design called _____, roman faces whose contrast and weight were increased by expanding the thickness of the heavy strokes. The ratio of the stroke width to the capital height was 1 to 2.5 or even 1 to 2.
- A. sans-serif faces
 - B. Tuscan style faces
 - C. Egyptian faces
 - D. fat faces
3. A second major innovation of nineteenth-century type design were the antique faces, also known as _____, which convey a bold, machine-like feeling through slablike serifs, an even weight throughout the letters, and short ascenders and descenders. Vincent Figgins displayed a full range of antiques in his 1815 printing specimens.
- A. sans-serif faces
 - B. Tuscan-style faces
 - C. Egyptian faces
 - D. fat faces
4. A third major innovation of nineteenth-century type design were the _____ faces, which were introduced in an 1816 specimen book issued by William Caslon IV. The specimen looked a lot like an Egyptian face with its serifs removed, which is probably how Caslon designed it.
- A. sans-serif
 - B. Tuscan-style
 - C. Egyptian
 - D. fat

5. Vincent Figgins's 1815 printing specimens also showed the first nineteenth-century version of _____ letters whose serifs are extended and curved, sometimes with bulges, cavities, and ornaments.
- A. sans-serif
 - B. Tuscan-style
 - C. Egyptian
 - D. fat-face
6. Each designer and foundry assigned its own name to type without serifs: William Caslon called them "Doric," William Thorowgood named them "grotesque," Stephenson Blake named its version "sans-surryph," and in the United States, the Boston Type and Stereotype Foundry called them "Gothic." But _____ called them "sans serif" in his 1832 specimen in recognition of the style's most apparent feature, and the name stuck.
- A. Robert Thorne
 - B. Vincent Figgins
 - C. Woods and Sharwoods
 - D. Robert Besley
7. An American printer named _____ experimented with hand-carved wooden types and in 1827 invented a lateral router that enabled the economical mass manufacture of wood types for display printing.
- A. Friedrich Koenig
 - B. William Leavenworth
 - C. William Cowper
 - D. Darius Wells
8. In 1834, _____ combined the pantograph with the router, making it so easy to introduce new wood-type fonts that customers were invited to send a drawing of one letter, based on which the manufacturer would design and produce the entire font—without any additional charge.
- A. Friedrich Koenig
 - B. William Leavenworth
 - C. William Cowper
 - D. Darius Wells

9. In the late nineteenth century, poster houses specialized in letterpress display materials, and wood and metal types were used together freely in the design of handbills, posters, and broadsheets. Designers had access to a broad range of type sizes, styles, weights, and novel ornaments, and the design philosophy was to use it all. However, there was a practical reason for the extensive mixing of styles: the _____.
- A. desire to emphasize particular words
 - B. competition among printers for virtuoso designs
 - C. need to command the viewer's attention
 - D. limited number of characters in each font
10. Many people, including the writer Mark Twain, invested millions of dollars in the search for automatic typesetting. Ottmar Mergenthaler, a German immigrant working in a Baltimore machine shop, demonstrated his Linotype machine on July 3, 1886, in the office of the New York Tribune. The Linotype allowed the operator to compose an entire line of type by operating a keyboard that released a _____ for a particular character.
- A. metal type
 - B. brass matrix
 - C. steel punch
 - D. wood type
11. _____, the first person credited with producing a photographic image, was a lithographic printer of popular religious images who was searching for a new way to make printing plates other than by drawing.
- A. Eadweard Muybridge
 - B. Sir John Herschel
 - C. Louis-Jacques Daguerre
 - D. Joseph Niépce
12. On January 7, 1839, Louis-Jacques Daguerre presented his process to the French Academy of Sciences. The members marveled at the clarity and minute detail of Daguerre's early daguerreotype prints, one-of-a-kind images of predetermined size with polished surfaces that had a tendency to produce glare. In the daguerrotype "Paris Boulevard," the Paris street appears almost empty because Daguerre made the image _____.
- A. at daybreak when little activity took place on the streets

- B. after a Paris uprising, and many residents had fled to rural areas
 - C. with a long exposure time, so moving subjects, such as carriages and pedestrians, were not recorded
 - D. after arranging a time with local residents, who cleared the streets
13. An adventurous photographer who lived in San Francisco and photographed Yosemite National Park, Alaska, and Central America, Eadweard Muybridge helped settle a \$25,000 bet by documenting a trotting horse and demonstrating that the horse lifted all four feet off the ground simultaneously. The development of _____ was a logical extension of Muybridge's innovation.
- A. anatomical studies for surgeons
 - B. motion picture photography
 - C. train design
 - D. mechanical engineering (machines based on natural forms)
14. A _____ changes continuous tones into dots of varying sizes. Squares are formed by horizontal and vertical rules etched on pieces of glass. The amount of light that passes through each square determines the size of each dot.
- A. photogram
 - B. daguerreotype
 - C. halftone screen
 - D. photoengraving
15. Victoria became queen of the United Kingdom of Great Britain and Ireland in 1837, and her reign spanned two-thirds of the nineteenth century. Three of the following advances in graphic design occurred during the Victorian era. Which does **NOT** belong? _____
- A. An influential approach to children's graphics through the development of toy books
 - B. The beginning of the monthly pictorial magazine and the weekly periodical news magazine
 - C. The first use of sans-serif typography as a running book text
 - D. The development of advertising agencies and conventions of persuasive selling
16. Graphics from the Victorian era can be identified by their _____.

- A. unified harmony
 - B. angry aggression
 - C. aesthetic confusion
 - D. playful classicism
17. The English designer, author, and authority on color _____ became a major design influence in the mid-nineteenth century. During his mid-twenties, he traveled to Spain and the Near East and made systematic studies of Islamic design. He introduced Moorish ornament to Western design in his 1842–1845 book *Plans, Elevations, Sections, and Details of the Alhambra*, but his main influence was through his widely studied 1856 book of large color plates, *The Grammar of Ornament*. This catalog of design possibilities from Eastern and Western cultures, “savage” tribes, and natural forms became the nineteenth-century designer’s bible of ornament.
- A. A. W. N. Pugin
 - B. Louis Prang
 - C. Owen Jones
 - D. William Sharp
18. Based on the simple chemical principle that oil and water do not mix, _____ is the process of printing color pictures and lettering from a series of stone or zinc printing plates. Each color requires a separate stone or plate and a separate run through the press.
- A. Letterpress
 - B. Chromolithography
 - C. Electrotyping
 - D. Wood engraving
19. The Victorians developed a more tender attitude toward children, and this was expressed through the development of colorful picture books for preschool children called _____.
- A. toy books
 - B. abecedarians
 - C. illuminated Bibles
 - D. nursery rhymes

20. As a teenager, _____ apprenticed as a wood engraver and was twenty years old when *Railroad Alphabet*, a children's picture book, was published in 1865. Breaking with the tradition of earlier children's books, this illustrator sought to entertain rather than teach or preach to the young. His inspiration came from the flat color and flowing contours of Japanese woodblock prints.
- A. Randolph Caldecott
 - B. Kate Greenaway
 - C. Howard Pyle
 - D. Walter Crane
21. _____ developed a passion for drawing, possessed a unique sense of the absurd, and had an ability to exaggerate movement and facial expressions of both people and animals: dishes and plates are personified, cats make music, children are at the center of society, and adults become servants. This illustrator's humorous drawing style became a prototype for children's books and later, animated films.
- A. Randolph Caldecott
 - B. Kate Greenaway
 - C. Howard Pyle
 - D. Walter Crane
22. James and John Harper launched a New York printing firm in 1817 and by mid-century, Harper and Brothers had become the largest printing and publishing firm in the world. With the rapid expansion of the reading public and the economies resulting from new technologies, publishers focused on large press runs and modest prices. In 1859, the firm opened the era of the pictorial magazine. Which of the following does **NOT** fall into this category? _____
- A. *Harper's New Monthly Magazine*
 - B. *Harper's Illuminated and New Pictorial Bible*
 - C. *Harper's Weekly*
 - D. *Harper's Young People*
23. Dissatisfied with the thin modern typefaces used in one of the magazines that his firm printed, Theodore Low De Vinne commissioned Linn Boyd Benton to design a blacker, more readable typeface that was slightly extended, with thicker thin strokes and short slab serifs. This typeface is called _____.
- A. Columbus

- B. Century
 - C. Jenson Old Style
 - D. Houghton
24. The development of advertising agencies such as N. W. Ayer and Son not only placed advertisements in periodicals but also provided additional services. Which services below did advertising agencies during the Victorian period **NOT** offer?
- _____
- A. market research
 - B. art direction
 - C. media selection
 - D. copywriting

True/False

1. During the Industrial Revolution, the unity that had existed between design and production ended, and the specialization of the factory system fractured graphic communications into separate design and production components. _____
2. During the Industrial Revolution, type foundries modified letterforms and proportions and applied all manner of decoration to their alphabets because the mechanization of manufacturing processes made the application of decoration more economical and efficient. _____
3. The basic organizing principle of the wood-type poster was horizontal and vertical emphasis, which resulted from the need to lock all elements tightly on the press. _____
4. During the Industrial Revolution, inventors applied mechanical theory to the design of printing presses, and new presses with cast-iron parts eventually replaced the wooden hand presses, increasing efficiency and the size of the impression. _____
5. The Fourdrinier machine, from which an unending sheet of paper can be manufactured, is still in use today. It is a mechanized papermaking process that pours a suspension of fiber and water in a thin stream upon a vibrating wire-mesh conveyer belt. _____
6. The Linotype led to a surge in the production of periodicals and illustrated weeklies, including the *Saturday Evening Post* and *Collier's*. _____

7. The typographic poster houses that produced letterpress posters began to decline after 1870, in part because of the increased use of colorful lithographic posters and the decline of traveling entertainment shows. _____
8. Before early experiments with photography, the camera obscura was used by artists to capture images without the use of a drawing utensil. _____
9. William Henry Fox Talbot's calotypes were sharp and clear, in contrast to daguerreotypes. _____
10. In 1844, William Henry Fox Talbot began publishing *The Pencil of Nature*, which included twenty-four photographs in each issue. _____
11. In 1888, George Eastman, an American dry-plate manufacturer, introduced the Minolta camera, which allowed ordinary citizens to create images and preserve a graphic record of their lives and experiences. _____
12. Victorian type and hand-drawn lettering were characterized by simplicity with few embellishments. _____
13. In the four decades from 1860 to 1900, lithography was the dominant printing medium for advertising posters. _____
14. Scrap refers to printer's proofs that lithographers discard after the plates of colors have been approved for the final printing. _____
15. During the nineteenth century, product packaging was printed in reverse on thin paper, then transferred to tin under great pressure. The paper backing was soaked off, leaving printed images on the tin plate. _____
16. Charles Dana Gibson's images of young women, called Gibson Girls, were featured in *Scribner's* magazine posters and established a canon of physical beauty in the mass media. Gibson was as meticulous in his selection of type as he was in his renderings of idealized beauty. _____

Matching

Match the key people with their major contributions.

1. William Henry Fox Talbot _____
2. Sir John Herschel _____
3. Stephen H. Horgan _____
4. Julia Margaret Cameron _____
5. Mathew Brady _____

- A. Sent a score of his photographic assistants to document the American Civil War, which had a profound impact upon the public's romantic ideas about war. His 1862 photograph "Dunker Church and the Dead" was shot in the aftermath of the Battle of Antietam, the bloodiest battle of the Civil War.
- B. An eminent astronomer and chemist, was the first to use sodium thiosulfate to fix the photographic image on paper, thereby halting the action of light. He also named the process of photography (from the Greek *photos graphos*, meaning "light drawing").
- C. Invented the halftone screen.
- D. Pioneered a process of making images without the use of a camera by holding objects over paper treated with silver compounds and exposing it to light. He called these images photogenic drawings, and they formed the basis for both photography and photographic printing plates.
- E. Received a camera and the equipment for processing collodion wet plates as a forty-ninth birthday present and extended the artistic potential of photography through portraiture that recorded "faithfully the greatness of the inner man as well as the features of the outer man."

Image Identification

- I. Identify the designer, title, and date of the following images.
 - 1. Fig. 9-3 _____
 - 2. Fig. 9-24 _____
 - 3. Fig. 9-28 _____
 - 4. Fig. 9-32 _____
 - 5. Figs. 9-37 and 9-38 _____
 - 6. Fig. 9-40 _____
 - 7. Fig. 9-43 _____
 - 8. Fig. 9-52 _____
 - 9. Fig. 9-67 _____

II. Match each of the images shown with the name of its designer.

1. Fig. 9-27 _____

2. Fig. 9-46 _____

3. Fig. 9-72 _____

A. Joseph Niépce

B. Charles Dana Gibson

C. Eadweard Muybridge