Design & Graphics

Tutorial

Graphic design is the process of visual communication and problem-solving using one or more of typography, photography and illustration. The field is considered a subset of visual communication and communication design, but sometimes the term "graphic design" is used synonymously. Graphic designers create and combine symbols, images and text to form visual representations of ideas and messages. They use typography, visual arts and page layout techniques to create visual compositions. Common uses of graphic design include corporate design (logos and branding), editorial design (magazines, newspapers and books), wayfinding or environmental design, advertising, web design, communication design, product packaging and signage.

History

The term graphic design was coined by William Addison Dwiggins in 1922. However, the origins of graphic design can be traced from the origins of human existence, from the caves of Lascaux, to Rome's Trajan's Column to the illuminated manuscripts of the Middle Ages, to the neon lights of Ginza, Tokyo. In "Babylon, artisans pressed cuneiform inscriptions into clay bricks or tablets which were used for construction. The bricks gave information such as the name of the reigning monarch, the builder, or some other dignitary".This was the first known road sign announcing the name of the governor of a state or mayor of the city. The Egyptians developed communication by hieroglyphics that used picture symbols dating as far back as 136 B.C. found on the Rosetta Stone. "The Rosetta stone, found by one of Napoleon's engineers was an advertisement for the Egyptian ruler, Ptolemy as the "true Son of the Sun, the Father of the Moon, and the Keeper of the Happiness of Men" The Egyptians also invented papyrus, paper made from reeds found along the Nile, on which they transcribed advertisements more common among their people at the time. During the "Dark Ages", from 500 AD to 1450 AD, monks created elaborate, illustrated manuscripts.

In both its lengthy history and in the relatively recent explosion of visual communication in the 20th and 21st centuries, the distinction between advertising, art, graphic design and fine art has disappeared. They share many elements, theories, principles, practices, languages and sometimes the same benefactor or client. In advertising, the ultimate objective is the sale of goods and services. In graphic design, "the essence is to give order to

information, form to ideas, expression, and feeling to artifacts that document human experience.

Graphic design in the United States began with Benjamin Franklin who used his newspaper *The Pennsylvania Gazette*, to master the art of publicity to promote his own books and to influence the masses. "Benjamin Franklin's ingenuity gained in strength as did his cunning and in 1737 he had replaced his counterpart in Pennsylvania, Andrew Bradford as postmaster and printer after a competition he instituted and won. He showed his prowess by running an ad in his *General Magazine and the Historical Chronicle of British Plantations in America* (the precursor to the Saturday Evening Post) that stressed the benefits offered by a stove he invented, named called the *Pennsylvania Fireplace*. His invention is still sold today and is known as *the Franklin stove*.

American advertising initially imitated British newspapers and magazines. Advertisements were printed in scrambled type and uneven lines that made it difficult to read. Franklin better organized this by adding 14-point type for the first line of the advertisement; although later shortened and centered it, making "headlines". Franklin added illustrations, something that London printers had not attempted. Franklin was the first to utilize logos, which were early symbols that announced such services as opticians by displaying golden spectacles. Franklin taught advertisers that the use of detail was important in marketing their products. Some advertisements ran for 10-20 lines, including color, names, varieties, and sizes of the goods that were offered.

The advent of printing

During the Tang Dynasty (618–907) wood blocks were cut to print on textiles and later to reproduce Buddhist texts. A Buddhist scripture printed in 868 is the earliest known printed book. Beginning in the 11th century, longer scrolls and books were produced using movable type printing, making books widely available during the Song dynasty (960–1279).

During the 17th-18th century movable type was used for handbills or trade cards which were printed from wood or copper engravings. These documents announced a business and its location. English painter William Hogarth used his skill in engraving was one of the first to design for business trade.

In Mainz Germany, in 1448, Johann Gutenberg introduced movable type using a new metal alloy for use in a printing pressand opened a new era of commerce. This made graphics more readily available since mass printing dropped the price

of printing material significantly. Previously, most advertising was word of mouth. In France and England, for example, criers announced products for sale just as ancient Romans had done.

The printing press made books more widely available. Aldus Manutius developed the book structure that became the foundation of western publication design. This era of graphic design is called Humanist or Old Style. Additionally, William Caxton, England's first printer produced religious books, but had trouble selling them. He discovered the use of leftover pages and used them to announce the books and post them on church doors. This practice was termed *"squis"* or *"pin up" posters,* in approximately 1612, becoming the first form of print advertising in Europe*.* The term *Siquis* came from the Roman era when public notices were posted stating *"if anybody*, which is Latin for *"si quis"*. These printed announcements were followed by later public registers of *wants* called *want ads* and in some areas such as the first periodical in Paris advertising was termed "advices". The "Advices" were what we know today as *want ad media* or *advice columns*.

In 1638 Harvard University received a printing press from England. More than 52 years passed before London bookseller Benjamin Harris received another printing press in Boston. Harris published a newspaper in serial form, *'Publick Occurrences Both Foreign and Domestick'*. It was four pages long and suppressed by the government after its first edition.

John Campbell is credited for the first newspaper, the *'Boston News-Letter'*, which appeared in 1704. The paper was known during the revolution as *"Weeklies"*. The name came from the 13 hours required for the ink to dry on each side of the paper. *'The solution was to first, print the ads and then to print the news on the other side the day before publication. The paper was four pages long having ads on at least 20%-30% of the total paper, (pages one and four) the hot news was located on the inside.*The initial use of the *Boston News-Letter* carried Campbell's own solicitations for advertising from his readers. Campbell's first paid advertisement was in his third edition, May 7 or 8th, 1704. Two of the first ads were for stolen anvils. The third was for real estate in Oyster Bay, owned by William Bradford, a pioneer printer in New York, and the first to sell something of value. Bradford published his first newspaper in 1725, New York's first, The New York Gazette. Bradford's son preceded him in Philadelphia publishing the *American Weekly Mercury*, 1719. *The Mercury* and William Brooker's *Massachusetts Gazette*, first published a day earlier.

Design industry

In late 19th-century Europe, especially in the United Kingdom, the first official publication of a printed design was released, marking the separation of graphic design from fine art.

In 1849, Henry Cole became one of the major forces in design education in Great Britain, informing the government of the importance of design in his *Journal of Design and Manufactures*. He organized the Great Exhibition as a celebration of modern industrial technology and Victorian design.

From 1891 to 1896, William Morris' Kelmscott Press published some of the most significant of the graphic design products of the Arts and Crafts movement, and made a lucrative business of creating and selling stylish books. Morris created a market for works of graphic design in their own right and a profession for this new type of art. The Kelmscott Press is characterized by an obsession with historical styles. This historicism was the first significant reaction to the state of nineteenth-century graphic design. Morris' work, along with the rest of the Private Press movement, directly influenced Art Nouveau.

Twentieth century design

The term "graphic design" first appeared in print in the 1922 essay "New Kind of Printing Calls for New Design" by William Addison Dwiggins, an American book designer in the early 20th century. Raffe's *Graphic Design*, published in 1927, was the first book to use "Graphic Design" in its title.

The signage in the London Underground is a classic design example of the modern era and used a typeface designed by Edward Johnston in 1916.

In the 1920s, Soviet constructivism applied 'intellectual production' in different spheres of production. The movement saw individualistic art as useless in revolutionary Russia and thus moved towards creating objects for utilitarian purposes. They designed buildings, theater sets, posters, fabrics, clothing, furniture, logos, menus, etc.

Jan Tschichold codified the principles of modern typography in his 1928 book, *New Typography*. He later repudiated the philosophy he espoused in this book as fascistic, but it remained influential. Tschichold, Bauhaus typographers such as Herbert Bayer and László Moholy-Nagy and El Lissitzky greatly influenced graphic design. They pioneered production techniques and stylistic devices used throughout the twentieth century. The following years saw graphic design in the modern style gain widespread acceptance and application. The

post-World War II American economy revealed a greater need for graphic design, mainly in advertising and packaging. The spread of the German Bauhaus school of design to Chicago in 1937 brought a "mass-produced" minimalism to America; sparking "modern" architecture and design. Notable names in mid-century modern design include Adrian Frutiger, designer of the typefaces Univers and Frutiger; Paul Rand, who took the principles of the Bauhaus and applied them to popular advertising and logo design, helping to create a uniquely American approach to European minimalism while becoming one of the principal pioneers of the subset of graphic design known as corporate identity; Alex Steinweiss, credited with the invention of the album cover; and Josef Müller-Brockmann, who designed posters in a severe yet accessible manner typical of the 1950s and 1970s era.

The professional graphic design industry grew in parallel with consumerism. This raised concerns and criticisms, notably from within the graphic design community with the First Things First manifesto. First launched by Ken Garland in 1964, it was re-published as the First Things First 2000 manifesto in 1999 in the magazine *Emigre* 5 stating "We propose a reversal of priorities in favor of more useful, lasting and democratic forms of communication - a mindshift away from product marketing and toward the exploration and production of a new kind of meaning. The scope of debate is shrinking; it must expand. Consumerism is running uncontested; it must be challenged by other perspectives expressed, in part, through the visual languages and resources of design." Both editions attracted signatures from practitioners and thinkers such as Rudy VanderLans, Erik Spiekermann, Ellen Lupton and Rick Poynor. The 2000 manifesto was also published in Adbusters, known for its strong critiques of visual culture.

Applications

Graphic design is applied to everything visual, from road signs to technical schematics, from interoffice memorandums to reference manuals.

Design can aid in selling a product or idea. It is applied to products and elements of company identity such as logos, colors, packaging and text as part of branding (see also advertising). Branding has increasingly become important in the range of services offered by graphic designers. Graphic designers often form part of a branding team.

Graphic design is applied in the entertainment industry in decoration, scenery and visual story telling. Other examples of design for entertainment purposes

include novels, vinyl album covers, comic books, DVD covers, opening credits and closing credits in filmmaking, and programs and props on stage. This could also include artwork used for T-shirts and other items screen printed for sale.

From scientific journals to news reporting, the presentation of opinion and facts is often improved with graphics and thoughtful compositions of visual information - known as information design. Newspapers, magazines, blogs, television and film documentaries may use graphic design. With the advent of the web, information designers with experience in interactive tools are increasingly used to illustrate the background to news stories. Information design can include data visualization, which involves using programs to interpret and form data into a visually compelling presentation, and can be tied in with information graphics.

Skills

A graphic design project may involve the stylization and presentation of existing text and either preexisting imagery or images developed by the graphic designer. Elements can be incorporated in both traditional and digital form, which involves the use of visual arts, typography, and page layout techniques. Graphic designers organize pages and optionally add graphic elements. Graphic designers can commission photographers or illustrators to create original pieces. Designers use digital tools, often referred to as interactive design, or multimedia design. Designers need communication skills to convince an audience and sell their designs.

The "process school" is concerned with communication; it highlights the channels and media through which messages are transmitted and by which senders and receivers encode and decode these message. The semiotic school treats a message as a construction of signs which through interaction with receivers, produces meaning; communication as an agent.

Typography

Typography includes type design, modifying type glyphs and arranging type. Type glyphs (characters) are created and modified using illustration techniques. Type arrangement is the selection of typefaces, point size, tracking (the space between all characters used), kerning (the space between two specific characters) and leading (line spacing).

Typography is performed by typesetters, compositors, typographers, graphic artists, art directors and clerical workers. Until the digital age, typography was a specialized occupation.

Page layout

Page layout deals with the arrangement of elements (content) on a page, such as image placement, text layout and style. Page design has always been a consideration in printed material and more recently extended to displays such as web pages. Elements typically consist of type (text), images (pictures), and (with print media) occasionally place-holder graphics such as a dieline for elements that are not printed with ink such as die/laser cutting, foil stamping or blind embossing.

Printmaking

Printmaking is the process of making artworks by printing on paper and other materials or surfaces. The process is capable of producing multiples of the same work, each called a print. Each print is an original, technically known as an impression. Prints are created from a single original surface, technically a matrix. Common types of matrices include: plates of metal, usually copper or zinc for engraving or etching; stone, used for lithography; blocks of wood for woodcuts, linoleum for linocuts and fabric plates for screen-printing. Works printed from a single plate create an edition, in modern times usually each signed and numbered to form a limited edition. Prints may be published in book form, as artist's books. A single print could be the product of one or multiple techniques.

Aside from technology, graphic design requires judgment and creativity. Critical, observational, quantitative and analytic thinking are required for design layouts and rendering. If the executor is merely following a solution (e.g. sketch, script or instructions) provided by another designer (such as an art director), then the executor is not usually considered the designer.

Tools

The method of presentation (e.g. Arrangements, style, medium) is important to the design. The development and presentation tools can change how an audience perceives a project. The image or layout is produced using traditional

media and guides, or digital image editing tools on computers. Tools in computer graphics often take on traditional names such as "scissors" or "pen". Some graphic design tools such as a grid are used in both traditional and digital form.

In the mid-1980s desktop publishing and graphic art software applications introduced computer image manipulation and creation capabilities that had previously been manually executed. Computers enabled designers to instantly see the effects of layout or typographic changes, and to simulate the effects of traditional media. Traditional tools such as pencils can be useful even when computers are used for finalization; a designer or art director may sketch numerous concepts as part of the creative process. Styluses can be used with tablet computers to capture hand drawings digitally.

Computers and software

Designers disagree whether computers enhance the creative process. Some designers argue that computers allow them to explore multiple ideas quickly and in more detail than can be achieved by hand-rendering or paste-up. While other designers find the limitless choices from digital design can lead to paralysis or endless iterations with no clear outcome.

Some designers use a hybrid process that combines traditional and computer-based technologies. First, hand-rendered layouts are used to get approval to execute an idea, then the polished visual product is produced on a computer.

Graphic designers are expected to be proficient in software programs for image-making, typography and layout. Nearly all of the popular and "industry standard" software programs used by graphic designers since the early 1990s are products of Adobe Systems Incorporated. Adobe Photoshop (a raster-based program for photo editing) and Adobe Illustrator (a vector-based program for drawing) are often used in the final stage. Designers often use pre-designed raster images and vector graphics in their work from online design databases. Raster images may be edited in Adobe Photoshop, logos and illustrations in Adobe Illustrator, and the final product assembled in one of the major page layout programs, such as Adobe InDesign, Serif PagePlus and QuarkXpress. Powerful open-source programs (which are free) are also used by both professionals and casual users for graphic design. These include Inkscape (for vector graphics), GIMP (for photo-editing and image manipulation), Krita (for painting) and Scribus (for page layout).

Related Design Fields

Interface design

Since the advent of personal computers, many graphic designers have become involved in interface design, in an environment commonly referred to as a Graphical User Interface (GUI). This has included web design and software design, when end user interactivity is a design consideration of the layout or interface. Combining visual communication skills with an understanding of user interaction and online branding, graphic designers often work with software developers and web developers to create the look and feel of a web site or software application. An important aspect of interface design is icon design.

User experience design

User experience design considers how a user interacts with and responds to an interface, service or product.

Experiential graphic design

Experiential graphic design is the application of communication skills to the built environment. This area of graphic design requires practitioners to understand physical installations that have to be manufactured and withstand the same environmental conditions as buildings. As such, it is a cross-disciplinary collaborative process involving designers, fabricators, city planners, architects, manufacturers and construction teams.

Experiential graphic designers try to solve problems that people encounter while interacting with buildings and space. Examples of practice areas for environmental graphic designers are wayfinding, placemaking, branded environments, exhibitions and museum displays, public installations and digital environments.

Occupations

Graphic design career paths cover all parts of the creative spectrum and often overlap. Workers perform specialized tasks, such as design services, publishing, advertising and public relations. As of 2016 median pay was $53,316 per year. The main job titles within the industry are often country specific. They can include graphic designer, art director, creative director, animator and entry

level production artist. Depending on the industry served, the responsibilities may have different titles such as "DTP Associate" or "Graphic Artist". The responsibilities may involve specialized skills such as illustration, photography, animation or interactive design.

Employment in design of online projects was expected to increase by 35% by 2026, while employment in traditional media, such as newspaper and book design, expect to go down by 22%. Graphic designers will be expected to constantly learn new techniques, programs, and methods.

Graphic designers can work within companies devoted specifically to the industry, such as design consultancies or branding agencies, others may work within publishing, marketing or other communications companies. Especially since the introduction of personal computers, many graphic designers work as in-house designers in non-design oriented organizations. Graphic designers may also work freelance, working on their own terms, prices, ideas, etc.

A graphic designer typically reports to the art director, creative director or senior media creative. As a designer becomes more senior, they spend less time designing and more time leading and directing other designers on broader creative activities, such as brand development and corporate identity development. They are often expected to interact more directly with clients, for example taking and interpreting briefs.

Crowdsourcing in graphic design

Jeff Howe of *Wired Magazine* first used the term "crowdsourcing" in his 2006 article, "The Rise of Crowd sourcing. It spans such creative domains as graphic design, architecture, apparel design, writing, illustration etc. Tasks may be assigned to individuals or a group and may be categorized as convergent or divergent. An example of a divergent task is generating alternative designs for a poster. An example of a convergent task is selecting one poster design.

Digital illustration

Computer illustration or **digital illustration** is the use of digital tools to produce images under the direct manipulation of the artist, usually through a pointing device such as a tablet or a mouse. It is distinguished from computer-*generated* art, which is produced by a computer using mathematical models created by the artist. It is also distinct from digital manipulation of photographs, in

that it is an original construction "from scratch". (Photographic elements may be incorporated into such works, but they are not necessarily the primary basis or source for them.)

Pointing devices

Mice are not very precise for drawing, so a graphics tablet is an important tool for a digital illustrator, because it allows the user to make a mark easily in any direction, in a way that reflects the natural or "lively" line made by the human hand. In addition to flexibility of movement, an industry-standard digital drawing tablet has a pressure-sensitive surface, allowing the illustrator to make marks that vary from faint to bold, and from thin to broad. These variations mimic traditional wet and dry media. Drawing on a digital drawing tablet starts to feel natural after about a week of practice. A hybrid graphics tablet/screen might be helpful, since the artist can see more accurately where to place strokes in the image, but the hardware is currently much more expensive.

Illustration software

There are two main types of tools used for digital illustration: bitmapped (also known as "raster") and vector applications. Bitmap applications are commonly called "painting" programs, while vector applications are called "drawing" programs. These terms reflect the difference in look-and-feel between the images created in each type of program. With a bitmap application, the content is stored digitally in fixed rows and columns of pixels, which can be created in separate layers for more easily isolating and manipulating different parts of the image. A bitmap image contains information about each pixel's hue (color), luminance (brightness), and saturation (intensity of color). When the pointing device moves over an area of the image, new colors and values are applied to the underlying pixels. Painting tools allow the easy creation of "fuzzy" imagery, including effects such as glows and soft shadows, and textures such as fur, velvet, stone and skin, and are heavily used in photo-retouching.

With vector-based tools, the content is stored digitally as resolution-independent mathematical formulae describing lines (open paths), shapes (closed paths), and color fills, strokes or gradients. Vector paths are constructed of anchor points and path segments by using the pointing device to click and drag. Many vector graphics are readily available for download from online databases which can then be edited and incorporated into larger projects. Drawing tools typically

create precise lines, shapes and patterns with well-defined edges and are superb for working with complex constructions such as maps and typography. Digital illustrations may include both raster and vector graphics in the same work. A bitmap image file may be saved in a format which embeds a layer of vector information, and vector image file may include imported bitmap images.

Illustration

An **illustration** is a decoration, interpretation or visual explanation of a text, concept or process, designed for integration in published media, such as posters, flyers, magazines, books, teaching materials, animations, video games and films.

The origin of the word “illustration” is late Middle English (in the sense ‘illumination; spiritual or intellectual enlightenment’): via Old French from Latin *illustration*, from the verb *illustrate*

Contemporary illustration

The White Rabbit from Alice in Wonderland, illustrated by John Tenniel (1820–1914)

Contemporary illustration uses a wide range of styles and techniques, including drawing, painting, printmaking, collage, montage, digital design, multimedia, 3D modelling. Most illustrators work on a freelance basis. Contemporary illustration subject matter has broadened and accesses platforms in other artistic forms. Often these illustrations are based on currents events; such as movies, tv shows and video games.

Depending on the purpose, illustration may be expressive, stylised, realistic or highly technical

Specialist areas include:

- Architectural illustration
- Archaeological illustration
- Botanical illustration
- Concept art
- Fashion illustration
- Information graphics
- Technical illustration
- Medical illustration
- Narrative illustration
- Picture books
- Scientific illustration

Technical and scientific illustration

Technical and scientific illustration communicates information of a technical or scientific nature. This may include exploded views, cutaways, fly-throughs, reconstructions, instructional images, component designs, diagrams. The aim is "to generate expressive images that effectively convey certain information via the visual channel to the human observer.

Technical and scientific illustration is generally designed to describe or explain subjects to a nontechnical audience, so must provide "an overall impression of what an object is or does, to enhance the viewer's interest and understanding"

In contemporary illustration practice, 2D and 3D software is often used to create accurate representations that can be updated easily, and reused in a variety of contexts.

Illustration as fine art

In the art world, illustration has at times been considered of less importance than graphic design and fine art.

Today, however, due in part to the growth of graphic novel and video game industries, as well as increased use of illustration in magazines and other publications, illustration is now becoming a valued art form, capable of engaging a global market.

Original illustration art has been known to attract high prices at auction. The US artist Norman Rockwell's painting "Breaking Home Ties" sold in a 2006 Sotheby' sauction for USD15.4 million. Many other illustration genres are equally valued, with pinup artists such as Gil Elvgren and Alberto Vargas, for example, also attracting high prices.

History

Historically, the art of illustration is closely linked to the industrial processes of printing and publishing.

Early history

The illustrations of medieval codices were known as illuminations, and were individually hand drawn and painted. With the invention of the printing press during the 15th century, books became more widely distributed, often illustrated with woodcuts.

1600s Japan saw the origination of Ukiyo-e, an influential illustration style characterised by expressive line, vivid colour and subtle tones, resulting from the ink-brushed wood block printing technique. Subjects included traditional folk tales, popular figures and every day life. Hokusai’s *The Great Wave of Kanazawa* is a famous image of the time.

During the 16th and 17th centuries in Europe, the main reproduction processes for illustration were engraving and etching. In 18th Century England, a notable illustrator was William Blake (1757–827), who used relief etching. By the early 19th century, the introduction of lithography substantially improved reproduction quality.

19th Century

In Europe, notable figures of the early 19th Century were John Leech, George Cruikshank, Dickens illustrator Hablot Knight Browne, and, in France, Honoré Daumier. All contributed to both satirical and “serious” publications. At this time, there was a great demand for caricature drawings encapsulating social mores, types and classes.

The British humorous magazine Punch (1841–2002) built on the success of Cruikshank's Comic Almanac (1827–1840) and employed many well-regarded illustrators, including Sir John Tenniel, the Dalziel Brothers, and Georges du Maurier. Although all fine art trained, their reputations were gained primarily as illustrators.

Historically, Punch was most influential in the 1840s and 1850s. The magazine was the first to use the term "cartoon" to describe a humorous illustration and its widespread use led to John Leech being known as the world's first "cartoonist". In common with similar magazines such as the Parisian Le Voleur, Punch realised good illustration sold as well as good text. With publication continuing into the 21st Century, Punch chronicles a gradual shift in popular illustration, from reliance on caricature to sophisticated topical observation.

The “Golden Age”

From the early 1800s newspapers, mass market magazines, and illustrated books had become the dominant consumer media in Europe and the New World. By the 19th century, improvements in printing technology freed illustrators to experiment with color and rendering techniques. These developments in printing effected all areas of literature from cookbooks, photography and traveling guides, as well as children's books. Also, due to advances in printing, it became more affordable to produce color photographs within books and other materials.

In America, this led to a "golden age of illustration" from before the 1880s until the early 20th century. A small group of illustrators became highly successful, with the imagery they created considered a portrait of American aspirations of the time.[10] Among the best known illustrators of that period were N.C. Wyeth and Howard Pyleof the Brandywine School, J. C. Leyendecker, Maxfield Parrish, and James Montgomery Flagg.

Industrial design

Industrial design is a process of design applied to products that are to be manufactured through techniques of mass production. Its key characteristic is that design is separated from manufacture: the creative act of determining and defining a product's form and features takes place in advance of the physical act of making a product, which consists purely of repeated, often automated, replication. This distinguishes industrial design from craft-based design, where the form of the product is determined by the product's creator at the time of its creation.

All manufactured products are the result of a design process, but the nature of this process can take many forms: it can be conducted by an individual or a large team; it can emphasize intuitive creativity or calculated scientific decision-making, and often emphasizes both at the same time; and it can be influenced by factors as varied as materials, production processes, business strategy and prevailing social, commercial or aesthetic attitudes.The role of an industrial designer is to create and execute design solutions for problems of form, function, usability, physical ergonomics, marketing, brand development, sustainability, and sales.

Instructional design

Instructional design (**ID**), or **instructional systems design** (**ISD**), is the practice of creating "instructional experiences which make the acquisition of knowledge and skill more efficient, effective, and appealing. The process consists broadly of determining the state and needs of the learner, defining the end goal of instruction, and creating some "intervention" to assist in the transition. The outcome of this instruction may be directly observable and scientifically measured or completely hidden and assumed.There are many instructional design models but many are based on the ADDIE model with the five phases: analysis, design, development, implementation, and evaluation. As a field, instructional design is historically and traditionally rooted in cognitive and behavioral psychology, though recently constructivism has influenced thinking in the field.

Motion graphic design

Motion graphic design is a subset of graphic design in that it uses graphic design principles in a filmmaking or video production context (or other temporally evolving visual medium) through the use of animation or filmic techniques. Examples include the kinetic typography and graphics used in film and television opening sequences, and the spinning, three-dimensional station identification logos of some television channels. The art form has been around for decades, and has advanced in technical sophistication over time.

A motion graphic designer may be a person trained in traditional graphic design who has learned to integrate additional elements into their existing skill set of design knowledge, though motion designers can also come from filmmaking or animation backgrounds, and may use tools or training from those fields as well.

Popular use of motion graphic design is used in the film industry. Openings to movies, television shows, and news programs can use photography, typography, and motion graphics to make the introduction more entertaining. The graphics used in television show introductions will usually represent the tone of the program. For example, high action television shows will contain fast-paced and bold graphics in the openings.

Technology

Technological advancements during the 20th and 21st centuries have greatly impacted the field; chief among these are improvements in modern computing technology, as computer programs for the film and video industries became more powerful and more widely available during this period. Modern motion graphic design typically involves any of several computerized tools and processes.

One of the leading computer programs used by modern motion graphic designers has been Adobe After Effects, which allows the user to create and modify graphics over time. Another relatively recent product used in the market is Apple Inc.Motion, now a part of Final Cut Studio. Software such as Maxon Cinema4D has integrated tools to create motion graphics, such as the native MoGraph plugin, or ICE of Softimage, which can also be used for similar purposes.

Adobe Fls used in web design, but also in some animation products, such as animated web television productions like Homestar Runner.

Animation

Animation is a dynamic medium in which images or objects are manipulated to appear as moving images. In traditional animation the images were drawn (or painted) by hand on cels to be photographed and exhibited on film. Nowadays most animations are made with computer-generated imagery (CGI). Computer animation can be very detailed 3D animation, while 2D computer animation can be used for stylistic reasons, low bandwidth or faster real-time renderings. Other common animation methods apply a stop motion technique to two and three-dimensional objects like paper cutouts, puppets or clay figures. The stop motion technique where live actors are used as a frame-by-frame subject is known as pixilation.

Commonly the effect of animation is achieved by a rapid succession of sequential images that minimally differ from each other. The illusion—as in motion pictures in general—is thought to rely on the phi phenomenon and beta movement, but the exact causes are still uncertain. Analog mechanical animation media that rely on the rapid display of sequential images include

the phénakisticope, zoetrope, flip book, praxinoscope and film. Television and video are popular electronic animation media that originally were analog and now operate digitally. For display on the computer, techniques like animated GIF and Flash animation were developed.

Apart from short films, feature films, animated gifs and other media dedicated to the display moving images, animation is also heavily used for video games, motion graphics and special effects.

The physical movement of image parts through simple mechanics in for instance the moving images in magic lantern shows can also be considered animation. Mechanical animation of actual robotic devices is known as animatronics.

Animators are artists who specialize in creating animation.

Film title design

Film title design is a term describing the craft and design of motion picture title sequences. Since the beginning of the film form, it has been an essential part of any motion picture. Originally a motionless piece of artwork called *title art*, it slowly evolved into an artform of its own.

In the beginning, main title design consisted of the movie studio's name and/or logo and the presentation of the main characters along with the actor’s names, generally using that same artwork presented on title cards. Most independent or major studio had their own title art logo used as the background for their screen credits and they used it almost exclusively on every movie that they produced.

Then, early in the 1930s, the more progressive motion picture studios started to change their approach in presenting their screen credits. The major studios took on the challenge of improving the way they introduced their movies. They made the decision to present a more complete list of credits to go with a higher quality of artwork to be used in their screen credits.

A **main title designer** is the designer of the movie title. The manner in which title of a movie is displayed on screen is widely considered an art form. It's often been classified as motion graphics, title design, title sequences and animated credits. The title sequence is often presented through animated visuals and kinetic type while the credits are introduced on screen.

From the mid-1930s through the late-1940s the major film studios led the way in Film Title Art by employing artists like Al Hirschfeld, George Petty, Ted Ireland (Vencentini), William Galraith Crawford, Symeon Shimin, Alvan "Hap" Hadley, and Jacques Kapralik.

Quality artists met this challenge by designing their artwork to "set a mood" and "capture the audience" before the movie started. An overall 10% jump in box-office receipts was proof that this was a profitable improvement to the introduction of their motion pictures.

One famous example of the form is the work of Saul Bass in the 1950s and 1960s. His modish title sequences for the films of Alfred Hitchcock were key in setting the style and mood of the movie even before the action began, and contributed to Hitchcock's "house style" that was a key element in his approach to marketing. Another well known designer is Maurice Binder, who designed the often erotic titles for many of the James Bond films from the 1960s to the 1980s. After his death,Daniel Kleinman has done several of the titles.

However, the leader in the industry in the 1990s - 2000 was Cinema Research Corporation, with over 400 movie titles to its credit in that time period alone, and almost 700 titles in total from the 1950s to 2000.

Modern technology has enabled a much more fantastical way of presenting them through use of programs such as Adobe After Effects and Maxon Cinema4D. Although a form of editing, it's considered a different role and art form rather than of a traditional film editor.

Motion graphics

Motion graphics are pieces of digital footage or animation which create the illusion of motion or rotation, and are usually combined with audio for use in multimedia projects. Motion graphics are usually displayed via electronic media technology, but may also be displayed via manual powered technology (e.g. thaumatrope, phenakistoscope, stroboscope, zoetrope, praxinoscope, flip book). The term distinguishes still graphics from those with a transforming appearance over time, without over-specifying the form. While any form of experimental or abstract animation can be called motion graphics, the term typically more explicitly refers to the commercial application of animation and effects to video, film, TV, and interactive applications.

Scope of the term

Motion graphics extend beyond the most commonly used methods of frame-by-frame footage and animation. Motion graphics can be distinguished from typical animation in that they are not strictly character driven or story based and often represent animated abstract shapes and forms such as logos or logo elements.

History of the term

Since there is no universally accepted definition of motion graphics, the official beginning of the art form is disputed. There have been presentations that could be classified as motion graphics as early as the 1800s. Michael Betancourt wrote the first in depth historical survey of the field, arguing for its foundations in visual music and the historical abstract films of the 1920s by Walther Ruttmann, Hans Richter, Viking Eggeling and Oskar Fischinger

The history of motion graphics is closely related to the history of Computer Graphics as the new developments of computer generated graphics led to a wider use of motion design not based on optical film animation. The term motion graphics originated with digital video editing in computing, perhaps to keep pace with newer technology. Graphics for television were originally referred to as Broadcast Design.

One of the first uses of the term "motion graphics" was by animator John Whitney, who in 1960 founded a company called Motion Graphics Inc.

Saul Bass is a major pioneer in the development of feature film title sequences. His work included title sequences for popular films such as *The Man With The Golden Arm* (1955), *Vertigo* (1958), *Anatomy of a Murder* (1959), *North by Northwest*(1959), *Psycho* (1960), and *Advise & Consent* (1962). His designs were simple, but effectively communicated the mood of the film.

Computer-generated motion graphics

Before computers were widely available, motion graphics were costly and time-consuming, limiting their use to high-budget filmmaking and television production. Computers began to be used as early as the late 1960s as super computers were capable of rendering crude graphics. John Whitney and Charles Csuri can be considered early pioneers of computer aided animation.

In the late 1980s to mid-1990s, expensive proprietary graphics systems such as those from British-based Quantel were quite commonplace in many television stations. Quantel workstations such as the Hal, Henry, Harry, Mirage and Paintbox were the broadcast graphics standard of the time. Many other real time graphics systems were used such as Ampex ADO, Abekas and K-Scope for live Digital video effects. Early proprietary 3D computer systems were also developed specifically for broadcast design such as the Bosch FGS-4000 which was used in the music video for Dire Straits Money for Nothing (song). The advent of more powerful desktop computers running Photoshop in the mid-90s drastically lowered the costs for producing digital graphics. With the reduced cost of producing motion graphics on a computer, the discipline has seen more widespread use. With the availability of desktop programs such as Adobe After Effects, Discreet Combustion, and Apple Motion, motion graphics have become increasingly accessible. Modern character generators (CG) from Aston Broadcast Systems and Chyron Corporation's incorporate motion graphics.

The term "motion graphics" was popularized by Trish and Chris Meyer's book about the use of Adobe After Effects, titled *Creating Motion Graphics*. This was the beginning of desktop applications which specialized in video production, but were not editing or 3D programs. These new programs collected together special effects, compositing, and color correction toolsets, and primarily came between edit and 3D in the production process. This "in-between" notion of motion graphics and the resulting style of animation is why sometimes it is referred to as 2.5D.

Motion graphics continue to evolve as an art form with the incorporation of sweeping camera paths and 3D elements. Maxon's CINEMA 4D, plugins such as MoGraph and Adobe After Effects. Despite their relative complexity, Autodesk's Maya and 3D Studio Max are widely used for the animation and design of motion graphics, as is Maya and 3D Studio which uses anode-based particle system generator similar to Cinema 4D's Thinking Particles plugin. There are also some other packages in Open Source panorama, which are gaining more features and adepts in order to use in a motion graphics workflow, while Blender integrates several of the functions of its commercial counterparts.

Many motion graphics animators learn several 3D graphics packages for use according to each program's strengths. Although many trends in motion graphics tend to be based on a specific software's capabilities, the software is only a tool the broadcast designer uses while bringing the vision to life.

Leaning heavily from techniques such as the collage or the pastiche, motion graphics has begun to integrate many traditional animation techniques as well, including stop-motion animation, cel animation or a combination of both.

Particle system

One of the most popular motion graphics tools is a particle system: a motion graphics technology that is used for generating multiple animated elements. This type of animation is commonly referred to as procedural animation. A particle system is available as a plug-in, as a stand-alone application, or is included as an integrated part of a motion graphics package. Particles are points in 3-D or 2-D space that can be represented by a wide variety of station and animated objects such as a ball of light, a video clip, or a selection of text, to name a few. The particles are generated by a particle emitter and can be emitted in small numbers or in the thousands, depending on the project. Among other things, a

particle emitter can be in the form of a single point, a line, a grid, a plane or an object such as a box or sphere, although it can also make use a custom object to serve an emitter, such as a logo, which for example, can be exploded, melted, or transformed into blowing sand. A popular particle system for motion graphics is Particular by Trapcode.

Other examples of individual particles include a blurred sphere that can be used in large numbers to create smoke or fog and a video clip of a person who can be duplicated to create a crowd scene. Particles can be emitted as a single item, although it is typically used in large numbers, such as when creating smoke or rain. They are controlled by directional forces, simulated wind and gravity, objects designed to attract or repel them. Other controllable attributes can include such things as changes in color, size, or transparency. Depending on the system, one can also combine multiple simultaneous emitters, such as when simulating an explosion that combines fire, smoke and flying debris. In an advanced 3-D system the particle can be used to control an animated articulated character, a recognizable example being the warriors in the battle sequences of the film Lord of the Rings.

Animation

Elements of a motion graphics project can be animated by various means, depending on the capabilities of the software. These elements may be in the form of art, text, photos, and video clips, to name a few. The most popular form of animation is keyframing, in which properties of an object can be specified at certain points in time by setting a series of keyframes so that the properties of the object can be automatically altered (or tweened) in the frames between key frames. Another method involves a behavior system such as is found in Apple Motion that controls these changes by simulating natural forces without requiring the more rigid but precise keyframing method. Yet another method involves the use of formulas or scripts, such as the expressions function in Adobe After Effects or the creation of ActionScripts within Adobe Flash. Computers are capable of calculating and randomizing changes in imagery to create the illusion of motion and transformation. Computer animations can use less information space (computer memory) by automatically tweening, a process of rendering the key changes of an image at a specified or calculated time. These key poses or frames are commonly referred to as keyframes or low CP. Adobe Flash uses computer animation tweening as well as **frame-by-frame** animation and

video. Stop motion graphics is the oldest type of motion graphics which has given birth to cinemas, it provides unique effect to the videos.

Web television

Web television (also **web series**) is original television content produced for broadcast via the World Wide Web. (The phrase "web television" is also sometimes used to refer to Internet television in general, which includes Internet-transmission of programs produced for both online and traditional terrestrial, cable, or satellite broadcast.)

Web television content includes web series such as *Red vs. Blue* (2003–present), *Husbands* (2011–present), *The Lizzie Bennet Diaries* (2012–2013), *Video Game High School* (2012–2014), *Carmilla* (2014–2016), and *Teenagers* (2014–present), The Grand Tour (2016-present), among hundreds of others; original miniseries such as *Dr. Horrible's Sing-Along Blog* (2008); animated shorts such as those of *Homestar Runner*; and exclusive video content that supplements conventional television broadcasts. The current major distributors of web television are Amazon Prime, Blip.tv, Crackle, Hulu,Netflix, Newgrounds, Roku, and YouTube. Examples of web television production companies include: Generate LA-NY, Next New Networks, Revision3, and Vuguru.

In 2008, the International Academy of Web Television (an organization headquartered in Los Angeles) formed with the mission to organize and support web television authors, actors, producers, and executives. The organization also administers the selection of winners for the Streamy Awards. In 2009, the Los Angeles Web Series Festival was founded. Several other festivals and award shows exist dedicated solely to web content, including the Indie Series Awards and theVancouver Web Series Festival.

In 2013, in response to the move of the soap opera *All My Children* from broadcast to web television, a new category for fantastic only series in the Daytime Emmy Awards was created. Later that year, Netflix made history for earning the first Primetime Emmy Award nominations for web television web series, for *Arrested Development*, *Hemlock Grove*, and *House of Cards*, at the 65th Primetime Emmy Awards.But in the meantime, Hulu is the first Primetime Emmy Award win for web series, for *The Handmaid's Tale* at the 69th Primetime Emmy Awards.