Basics of Design and Graphics

[BA(JMC) – 105]

Unit – 4

[DTP and Printing]

by

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History

- **Woodblock Printing**

- 6th-century China during the Tang dynasty.
- One of many inventions to emerge from this great empire was a system of printing using wooden matrices that were engraved, inked and pressed onto a sheet of paper.
- The scope of this invention was such that, in modern Chinese historiography, printing is considered one of the four great inventions of Ancient China.
- One of the first books printed with woodblocks was a copy of the Diamond Sutra (868 AD), a six-sheet scroll over five metres long. Recently, a Korean pagoda was discovered with an even older text dating to 750-751 AD.

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History

- It's credited as the earliest form of printing and was first developed in China around 200AD.
- It involves carving a design into a block of wood. Once the wood is carved, the raised part is then inked and paper (or fabric, as it was) is placed on top.
- The ink is then transferred by applying pressure to the back of the paper either manually or with a press to create the image. The remaining woodcuts are used to produce both decorative artwork and lettering. Very crafty!
- The invention of printing was revolutionary. It was the first time in history when a design could be created and then accurately and quickly replicated. Interestingly, Woodblock Printing wasn't popular in Europe until the 1400s, despite being developed in China some 1,200 years earlier.

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History

History

- **Movable Type**
- Created by Bi Sheng in Song Dynasty China, Movable Type is similar to Woodcut, although this particular technique was used specifically for printing script.
- In 1041, the printer Bi Sheng invented movable clay type. However, it had the drawback of breaking easily. In 1298, the inventor Wang Zhen began using much stronger wooden type and invented a complex system of revolving tables that improved the quality of printing.
- Before Movable Type, lettering had to be written out in full, whereas this technique allowed individual letters to be configured and placed together in any order. The tiles or tablets used to create the print were first made from clay, before wood and metal were introduced for better clarity and a more resilient finish.

History

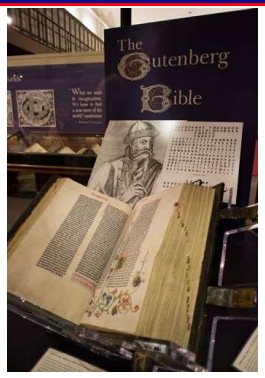
History

- **The First Ever Printing Press – 1440**
- The centerpiece of his technique was **the punch**, a steel parallelepiped whose head was engraved in relief, and back to front, with a character: a number, letter or punctuation mark. The punch created the matrix in which type was cast, then placed on a tray, inked and pressed onto paper.
- So, what were Gutenberg's three major innovations?
- He was the first to use oil-based inks, which lasted longer than the water-based inks used previously.
- His type was more robust because it was made from an alloy of lead, tin and antimony and he invented the first printing press, which was inspired by the grape press.
- **On 23 February 1455, after about a year's experimentation, the first Gutenberg Bible was published with a print run of 180 copies.**

History

- **The First Ever Printing Press – 1440**
- The effects of the first ever Printing Press were huge. It rapidly increased the speed at which printed materials could be produced, which meant that printed texts became widely available and were no longer just restricted to the wealthy. Lower class lifestyles improved drastically following its introduction to England, as people gained access to a new wealth of knowledge and could educate themselves through reading.

History



History

- **Etching**
- Etching was used in the Middle Ages to decorate metal arms and armour, and later down the line it was applied to printmaking by the German craftsman **Daniel Hopfer**.
- The process involves making prints from a metal plate, which is usually either copper or zinc. The plate is coated in an acid-resistant substance, commonly referred to as Etching Ground, before it's drawn on with a sharp tool. The plate is then placed in the acid which removes the areas not protected by the Etching Ground. This creates recessed lines which hold the ink.
- To finish off, the plate is placed on paper and sent through a press to create the print. (Video)

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History

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History

- **Lithography – 1790s**
- The next evolution of print media, Lithography, is a technique which is still commonly used today.
- It revolves around the relationship between oil and water, which repel each other. An image is drawn onto limestone with an oil-based medium such as a wax crayon. The stone is then covered in a solution of Gum Arabic, which is a natural gum made from the sap of an acacia tree. Using lithographic turpentine, the solution is then removed which allows the ink to take only where it's required. (Video)

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History

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History

- **The Rotary Press**
- We're in the United States and Richard March Hoe has just invented the first rotary press, perfected in 1846 and patented in 1847. Initially, this system was hand-fed with single sheets until, in 1863, William Bullock introduced a press that was fed by a paper roll: the images to be printed were curved around rotating cylinders. There was no longer a flat surface that exerted pressure to print: instead, the paper passed through a cylinder which exerted a far greater force. Thanks to the mechanisation of the process and the introduction of continuous paper rolls, rotary printing presses could print up to 8,000 sheets an hour. Which makes it the first press suitable for large print runs.
- In 1846, the rotary press started being used to print the Philadelphia Public Ledger.

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History

- **The Rotary Press**
- The Rotary Press was the natural successor of the Printing Press. It worked by using cylinders which the images to be printed were curved around. This was a lot faster than the first ever printing press and allowed for paper to be continuously fed through the press.

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History

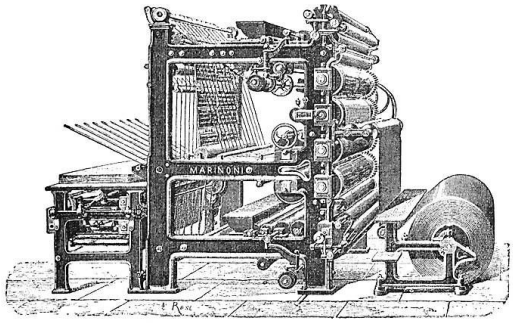
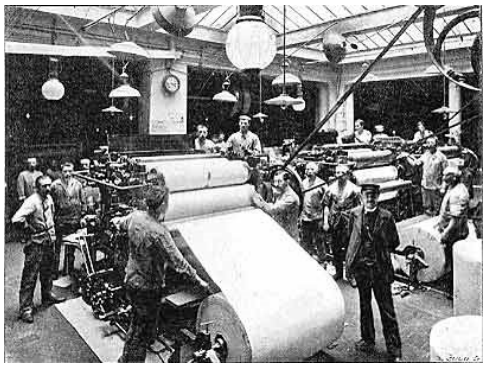


Fig. 6. Machine rotative.

oldbookillustrations.com

History



History

- **Offset Printing – 1875**
- In 1875, Robert Barclay invented the offset press for printing on metal. Then, in 1904, Ira Washington Rubel adapted the technology for paper. This indirect method of printing is based on a very simple chemical phenomenon: the repulsion between oil and water.

- The printing process is anything but simple though. An offset plate is divided into two areas: the image area, which is lipophilic and therefore attracts the ink; and the non-image area, which is hydrophilic, and repels the ink. The plate is dipped in a solution that binds to the non-image area, and then inked. In this way, the ink only adheres to the image, which is then transferred first to a rubber cylinder and then printed onto the paper.

History

- **Offset Printing – 1875**
- Offset Printing remains almost unchanged today and is the most popular way of printing large runs. It works by transferring the ink from a plate to a rubber blanket and then to the printing surface.
- It's commonly used today in combination with the Lithographic process to produce large runs of magazines, posters and other large format prints.

- **What are the advantages of offset printing?**
- It generates very sharp, clean images.
- High-quality printing on any type of paper, even if it has a surface that isn't perfectly smooth.
- **The disadvantages?** Offset presses are bulky and require lots of maintenance. Which is why this printing system is only cost-effective for large print runs.

History

History

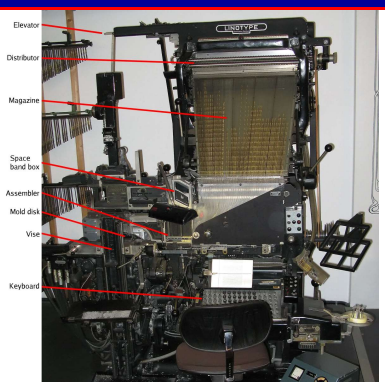
- **The linotype machine**
- In 1885, German inventor Ottmar Mergenthaler developed the linotype, a typesetting machine. The advantage of this system was that it automatically composed lines of type. It worked in much the same way as a typewriter: the operator composed lines of text by pressing keys on a keyboard. Each key would release a matrix for the corresponding character and this matrix would align with the others. The line of matrices was then filled with molten lead, cast, inked and used to press the characters onto sheets of paper.

- Although it is a seemingly elaborate process, linotype significantly sped up printing. It meant that typesetters no longer had to compose lines of print by hand, one character at a time: everything was mechanised.

History

- **The linotype machine**
- In 1886, the linotype machine was used for the first time to print the “New York Tribune”, a daily newspaper founded in 1841 in New York. In Italy, it was first used in 1897 to print the “Tribuna”, one of Rome’s leading dailies.
- Thomas Edison called the linotype machine “the eighth wonder of the world”, which underlines the importance of this machine in the history of printing.

History



History

- **Screen Printing – 1910**
- In 1886, the linotype machine was used for the first time to print the “New York Tribune”, a daily newspaper founded in 1841 in New York. In Italy, it was first used in 1897 to print the “Tribuna”, one of Rome’s leading dailies.
- Thomas Edison called the linotype machine “the eighth wonder of the world”, which underlines the importance of this machine in the history of printing.

History

History

- **Inkjet Printing – 1951**
- Thanks to Inkjet Printing, direct contact with paper is no longer required. Ink can now be applied by spraying it through jets. Fun!

History

- **Laser Printing**
- Once jets came into play, the printing field was wide open.
- This advanced method produces high-quality images by passing a laser beam back and forth over a negatively charged cylinder within the printer. It then collects electrically charged powdered ink to transfer the image to the paper.
- In 1971, the Xerox Corporation developed laser technology. In a laser printer, the content to be printed is generated by electronic processes and printed directly onto the sheet of paper. To be more precise, the laser transfers the image to a photosensitive selenium cylinder (called a “drum”) and from there, using toner, it’s directly applied to the paper. With this system, it’s possible to print around 20,000 lines a minute. Record breaking. But more importantly, from this point on, anyone could print whatever they wanted, whenever they wanted, in their office or home.

History

- **Laser Printing**
- Bulky, complicated and very expensive, the first laser printers were quite different from those we're used to today. And we had to wait until 1982 for the first desktop laser printer to be released by Canon. However, its high cost meant few could afford one. It wasn't until the beginning of the 1990s that laser printers became widely accessible to the public, along with inkjet, dot matrix and dye-sublimation printers. Ever since, printers have become ever cheaper, more compact and efficient.

History

History

- **Digital Printing – 1991**
- In the dawn of the digital age, printing got faster and more easily accessible to everyone. Digital Printing made it possible to print straight from a digital file – and all from the comfort of your own home!

A Timeline of Printing

- **618-906**: T'ang Dynasty - The first printing is performed in China, using ink on carved wooden blocks; multiple transfers of an image to paper begins.
- **868**: "Diamond Sutra" is printed.
- **1241**: Koreans print books using movable type.
- **1300**: The first use of wooden type in China begins.
- **1309**: Europeans first make paper. However, the Chinese and Egyptians had started making paper in previous centuries.
- **1338**: The first paper mill opened in France.
- **1390**: The first paper mill opened in Germany.
- **1392**: Foundries that can produce bronze type are opened in Korea.
- **1423**: Block printing is used to print books in Europe.
- **1452**: Metal plates are first used in printing in Europe. Johannes Gutenberg begins printing the Bible, which he finishes in 1456.
- **1457**: The first color printing is produced by Fust and Schoeffer.

A Timeline of Printing

- **1465**: Drypoint engravings are invented by Germans.
- **1476**: William Caxton begins using a Gutenberg printing press in England.
- 477: Intaglio is first used for book illustration for Flemish book "Il Monte Sancto di Dio."
- : The first paper mill opened in England.
- **14951501**: Italic type is first used.
- **1550**: Wallpaper is introduced in Europe.
- **1605**: The first weekly newspaper is published in Antwerp.
- **1611**: The King James Bible is published.
- **1660**: Mezzotint--a method of engraving on copper or steel by burnishing or scraping away a uniformly roughened surface--is invented in Germany.
- **1691**: The first paper mill is opened in the American colonies.

A Timeline of Printing

- **1702**: Multicolored engraving is invented by German Jakob Le Blon. The first English-language daily newspaper--The Daily Courant--is published called.
- **1725**: Stereotyping is invented by William Ged in Scotland.
- **1800**: Iron printing presses are invented.
- **1819**: The rotary printing press is invented by David Napier.
- **1829**: Embossed printing is invented by Louis Braille.
- **1841**: The type-composing machine is invented.
- **1844**: Electrotyping is invented.
- **1846**: The cylinder press is invented by Richard Hoe; it can print 8,000 sheets per hour.
- **1863**: The rotary web-fed letterpress is invented by William Bullock.
- **1865**: The web offset press can print on both sides of the paper at once.

A Timeline of Printing

- **1886**: The linotype composing machine is invented by Ottmar Mergenthaler
- **1870**: Paper is now mass-manufactured from wood pulp.
- **1878**: Photogravure printing is invented by Karl Klic.
- **1890**: The mimeograph machine is introduced.
- **1891**: Printing presses can now print and fold 90,000 four-page papers per hour. Diazotype--in which photographs are printed on fabric--is invented.
- **1892**: The four-color rotary press is invented.
- **1904**: Offset lithography becomes common, and the first comic book is published.
- **1907**: Commercial silk screening is invented.
- **1947**: Phototypesetting is made practical.
- **59 B.C**.: "Acta Diurna," the first newspaper, is published in Rome.

A Timeline of Printing

- **1556**: The first monthly newspaper, "Notizie Scritte," is published in Venice.
- **1605**: The first printed newspaper published weekly in Antwerp is called "Relation."
- **1631**: The first French newspaper, "The Gazette," is published.
- **1645**: "Post-och Inrikes Tidningar" is published in Sweden and is still being published today, making it the world's oldest newspaper.
- **1690**: The first newspaper is published in America: "Publick Occurrences."
- **1702**: The first English-language daily newspaper is published: "The Daily Courant." The "Courant" was first published as a periodical in 1621.
- **1704**: Considered the world's first journalist, Daniel Defoe publishes "The Review."

A Timeline of Printing

- **1803**: The first newspapers to be published in Australia include "The Sydney Gazette" and "New South Wales Advertiser."
- **1830**: The number of newspapers published in the United States is 715.
- **1831**: The famous abolitionist newspaper "The Liberator" is first published by William Lloyd Garrison.
- **1833**: The "New York Sun" newspaper costs one cent and is the beginning of the penny press.
- **1844**: The first newspaper is published in Thailand.

A Timeline of Printing

- **1848**: The "Brooklyn Freeman" newspaper is first published by Walt Whitman.
- **1850**: P.T. Barnum starts running newspaper ads for Jenny Lind, the "Swedish Nightingale" performances in America.
- **1851**: The United States Post Office starts offering a cheap newspaper rate.
- **1855**: The first newspaper published in Sierra Leone.
- **1856**: The first full-page newspaper ad is published in the "New York Ledger." Large type newspaper ads are made popular by photographer Mathew Brady. Machines now mechanically fold newspapers.
- **1860**: "The New York Herald" starts the first morgue--a "morgue" in newspaper terms means an archive.
- **1864**: William James Carlton of J. Walter Thompson Company begins selling advertising space in newspapers

A Timeline of Printing

- **1867**: The first double column advertising appears for the department store Lord & Taylor.
- **1869**: Newspaper circulation numbers are published by George P. Rowell in the first Rowell's American Newspaper Directory.
- **1870**: The number of newspapers published in the United States is 5,091.
- **1871**: The first newspaper published in Japan is the daily "Yokohama Mainichi Shimbun."
- **1873**: The first illustrated daily newspaper, "The Daily Graphic," is published in New York.
- **1877**: The first weather report with a map is published in Australia. "The Washington Post" newspaper first publishes, with a circulation of 10,000 and a cost of 3 cents per paper.

A Timeline of Printing

- **1879**: The benday process--a technique for producing shading, texture or tone in line drawings and photographs by overlaying a fine screen or a pattern of dots, which is named after illustrator and printer Benjamin Day--improves newspapers. The first whole-page newspaper ad is placed by American department store Wanamaker's.
- **1880**: The first halftone photograph--Shantytown--is published in a newspaper.
- **1885**: Newspapers are delivered daily by train.
- **1887**: "The San Francisco Examiner" is published.
- **1893**: The Royal Baking Powder Company becomes the biggest newspaper advertiser in the world.
- **1903**: The first tabloid-style newspaper, "The Daily Mirror," is published.

A Timeline of Printing

- **1931**: Newspaper funnies now include Plainclothes Tracy, starring Dick Tracy.
- **1933**: A battle develops between the newspaper and radio industries. American newspapers try to force the Associated Press to terminate news service to radio stations.
- **1955**: Teletype-setting is used for newspapers.
- **1967**: Newspapers use digital production processes and begin using computers for operations.
- **1971**: The use of offset presses becomes common.
- **1977**: The first public access to archives is offered by Toronto's "Globe and Mail."
- **2007**: There are now 1,456 daily newspapers in the United States alone, selling 55 million copies a day.

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A Timeline of Printing

- **2009**: This was the worst year in decades as far as advertising revenues for newspapers. Newspapers begin moving into online versions.
- **2010-present**:resent: Digital printing becomes the new norm, as commercial printing and publishing fade slightly due to technology.

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Introduction - DTP

- **Desktop publishing**
- It is the process of using the computer and specific types of software to combine text and graphics to produce documents such as newsletters, brochures, books, etc. A desktop publishing system allows you to use different typefaces, specify various margins and justifications, and insert designs and graphs directly into the text.
- Now Desktop publishing software is easier-to-use, so it became reachable to a wider range of people, including non-designers and others without graphic design experience.
- A graphic designer or other professionals like small business owners, secretaries, teachers and students can use desktop publishing software to design documents for clients..

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Desktop Publishing

- The mechanics of desktop publishing after the design stage involves using software tools to set up the document, place text and graphics, and prepare digital files that will print properly using desktop or commercial printing processes.
- Desktop publishing, also known as DTP, combines personal computer and page layout software to create publication documents on a computer for either large-scale publishing or small-scale local economical multifunction peripheral output and distribution.

- **What Do They Do?:**
- Desktop publishers use computer software produce and format material to be ready for publication. They use text, numbers and data, and charts to come up with a comprehensive publication. These publications can be anything from newspapers and newsletters, to books and magazines.

Desktop Publishing

- To become a desktop publishing professional, you will need training from an accredited vocational school or college. You can earn your certificate in desktop publishing in about a year, and you can even earn your certificate online. You will learn advanced Macintosh and PC, press skills, and be proficient in advanced design. Print technologies will also be taught in certificate programs. Every employer will have different software requirements, but having basic skills will lay a solid foundation for work in desktop publishing

Advantages of DTP

- Desktop publishing is quickly replacing the prepress work done by compositors, typesetters, and page layout workers. Its advantages include lower cost of production, in-house control for updating and editing products, and speed of production.

- We offer high-quality Desk Top Publishing (DTP) service solutions. With a background in publications of all varieties, and with the support of state-of-the-art technology, you can have them turn a manuscript document or a softcopy to finished source files, Postscript, or PDF with a professional touch on it, in time. We have an excellent team of experts in DTP designing, scanning, typesetting, and proof reading.

DTP and Software

- The amazing world of the computers and its other related parts, both internal and external, have always remained new and interesting for men. With the passage of time the computers are also changing and developing to fulfil every need and desire of mankind and that can be seen in the day-by-day new inventions only.
- The new type of software and their varieties of options to entertain men are the most remarkable one in this respect. For example, we can name the Desktop Publishing Software.
- This software can be said as a tool that proves very helpful for the graphic designers and also the common users for designing and creating the numerous and varieties of printed materials. The desktop too through this software gets a new look to show off.

DTP and Software

- Though this Desktop Publishing Software has now been made available for the common people originally it was used only by the professionals in their official project works.
- But with the changes in the various things and in the patterns of celebrations, this software has begun to be something very essential. For preparing a greeting card for any special occasions, in the preparation of calendars, for printing in various objects, making of banners are a variety of things for which the Desktop Publishing Software is very essential.
- Thus, it has been seen that the main force behind the creation of the various colorful and creative printing is basically this genre of software. Right from the celebration of certain occasions to that of the decoration of our households everything needs a touch of this Desktop Publishing Software.

DTP and Softwares

- You can either have it in exchange of some bucks or can have it absolutely for free by doing all these just in your home. For this of course you will need to have a computer, internet connection and a printer. This Desktop Publishing Software is being offered in free downloads from the internet. Now that makes the printing of the colorful images much more easy and cheap.
- These software are being designed and manufactured by various renowned companies for which reason the name of the company in itself is enough for a person to go for these software. Even this software has often been proved to be the best desktop software for starting a new and small business.

Introduction – Paper

- You've created the perfect marketing postcard (brochure, flyer, or whatever). Your copy text is compelling, your graphics are amazing (you know, the type that say a thousand words), and everything comes together. Your project may seem complete, but it's not finished.
- It's a common mistake to "gloss"-over the finishing touches and just print on the cheapest paper, but how your document looks, and feels is a "matte" of huge importance. The finishing touches on your project will speak measures about the overall quality and importance of your document and may very well be the difference between your efforts ending up as customer sale or in the trash can.

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What does GSM paper mean in printing?

- GSM stands for 'grams per square metre' and refers to the weight of the paper. The heavier the paper, the higher the number of grams per square metre – and, generally, the higher the perceived quality of the stock.
- This is sometimes referred to as the paper's 'grammage'.
- For example, a 150gsm flyer is thin and easy to fold or bend, whereas a 250gsm flyer is a lot thicker and takes more effort to fold.
- To find out this measurement, a square metre of the paper is cut to size and weighed. When it's cut down to the correct size (e.g. A5 for an A5 flyer), it will obviously weigh less, but it would still be the same GSM because GSM is measured per square metre.

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GSM paper guide: why do different GSMs exist?

- Simply put, different products suit different GSMs. For example, a greetings card needs to be a heavier stock than a poster because greetings cards need to be free-standing when displayed, whereas a poster is usually stuck to a wall or framed.
- Another great example is letterheads. Letterhead paper needs to be heavy enough to feel premium when received by a client, but thin enough to run through a standard office printer to print out the letter.
- Bulk flyers for posting through letterboxes or takeaway menus are generally printed on thinner stocks because it's more cost effective, whereas restaurant menus are printed on thicker stocks because they're more likely to be reused.
- Thinner stocks generally connote a lower quality, whereas thicker tends to feel more impressive. That's why our premium business card range is available on 450gsm – a lot thicker than the standard 350gsm cards most printers offer.

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Guide to paper weight: what are the different GSM paper weights?

- Here's a list and description of all the different paper weights available

- **70-90gsm** – This is a thin paper that's typically used for the lined inside pages of a notebook.
- **90-100gsm** – This paper weight is most commonly used in household and office printers.
- **120-150gsm** – Most thin flyers and takeaway menus are printed on this weight of paper as well as movie posters.
- **200-300gsm** – This weight is stiffer but will still bend. It's used a lot for magazine covers as well as higher-quality flyers and menus.
- **350-450gsm** – This is a thick card-like stock that's harder to bend. It's used for a range of different print materials such as business cards, greetings cards, postcards and table talkers.

Common GSM Paper Sizes and Measurements

- Along with paper weight, you also need to make sure you order the correct size for your project or product.
- For instance, most business cards come in a standard size, as do brochures, books, and business letters.

- **ISO A Paper Sizes and Measurements**

- An international standard for paper sizing is ISO A, which is measured in meters and millimeters.
- In this system, the largest format, A0, is one square meter in size.

Common GSM Paper Sizes and Measurements

- Each step down in size is accomplished by taking the previous size and cutting it in half along the widest dimension.
- For example, the next size down from A0 is A1. The size of A1 is determined by cutting A0 in half.
- This table of paper sizes breaks down this system from A0, the largest, to A10, the smallest. Here are a few of the most recognizable standard sizes:

- **A6 – 105 x 148 mm, or 4.13 x 5.83 in – A standard size for postcards and a common print size for photos.**
- **A4 – 210 x 297 mm, or 8.27 x 11.69 in – Used for letters, catalogs, magazines, and documents.**
- **A2 – 420 x 594 mm, or 16.54 x 23.39 in – Used for smaller posters, maps, or diagrams.**

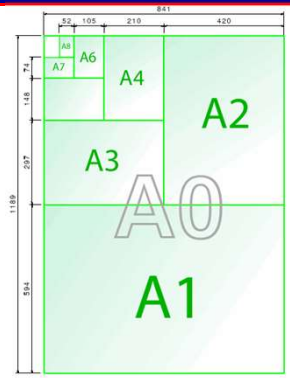
Common GSM Paper Sizes and Measurements

- **ISO B Paper Sizes and Measurements**
- Another common global standard for paper dimensions is ISO B. This standard is used mainly for poster sizing.
- Here are a few examples of sizes and measurements, starting with B0, the largest:
- **B0 – 1000 x 1414 mm, or 39.37 x 55.67 in**
- **B2 – 500 x 707 mm, or 19.69 x 27.83 in**
- **B4 – 250 x 353 mm, or 9.84 x 13.90 in**
- **Just like the ISO A sizes, ISO B runs from B0 to B10.**

Common GSM Paper Sizes and Measurements

- **ISO C Paper Sizes and Measurements**
- ISO C is another global standard, but it applies to the size of envelopes that correspond to and fit the various A sizes of paper.
- Here are a few common ISO C sizes:
- **C2 – 648 x 458 mm, or 25.51 x 18.03 in**
- **C4 – 324 x 229 mm, or 12.76 x 9.02 in**
- **C6 – 162 x 114 mm, or 6.38 x 4.49 in**

Common GSM Paper Sizes and Measurements



How to Choose Paper Finishes for Commercial Print Jobs

- Did you know that 72% of people judge your company based on the look and feel of your business cards? In fact, a whopping 39% of them won't even consider doing business with you if they feel your card looks cheap.
- And that's just business cards. think about all the other printed material you distribute to clients and prospective customers!
- Paper finishes have a big impact on the way your customers perceive a print project

Coated or Uncoated Paper?

- **Coated**
- A coated paper stock is made through a process that steams, presses and polishes the paper. The end product is a paper stock that remains sharp over time.
- Coated paper can't absorb new ink. So don't use this for your commercial print jobs that people will need to write on.
- Business cards are often printed on coated paper. That gives it a slick, smooth look and feel. You may have tried to write on a coated business card only to find the ink smear all over your fingers.
- Coated paper can be glossy or matte. Either way, coated paper is a durable paper that gives your final product a crisp, clean look. Coated paper is typically used in magazine and catalog printing as well as for print jobs that require high-resolution images.

Coated or Uncoated Paper?

- **Uncoated**
- Uncoated paper stock feels more natural in your hand. The finish can be linen, ribbed, smooth, laid or felt. We'll discuss finish later on in this post.
- The main difference is that uncoated paper is porous and allows for ink absorption. The final product will be slightly softer. The ink color may look a bit different depending on the type of uncoated paper you select due to the way the paper absorbs ink.
- You may want to do a test print to see how the color looks on various types of uncoated paper before you make your choice.
- The good thing about this paper is that your customers will be able to take notes and write down information on this type of paper. And, it doesn't reflect light and cause a glare.
- Uncoated paper is often used for letterheads or anything that people will read closely.

Paper Finish

- **Silk/Dull**
- Silk or dull finish is a coated finish with a dull finish. Leaves the printed image with more of a matte look.
- **Gloss**
- Glossy paper is shiny and smooth on one or both sides of the sheet. Usually, coated paper has a high gloss finish.
- **Laid**
- A laid finish occurs when a special roller passes over wet paper to create tiny lines that run up and across the paper.
- The effect is discrete and gives a slight texture without being distracting.

Paper Finish

- **Linen**
- Linen finish looks similar to a linen fabric. This texture is achieved by an embossing process at the end of the papermaking process.
- **Matte**
- Matte finishes are smooth and have no shine or sheen to them. Choose a matte finish is for your commercial print jobs that have a lot of text or need to be high-quality.
- **Satin**
- Satin is not as glossy as gloss finish but has more of a sheen than you'd find on matte paper.
- **Smooth**
- This finish (sometimes called the calendaring technique) results in a smooth, flat feel when the paper is passed through a set of rollers during paper-making.

Paper Finish

- **Woven**
- The final finish for your paper is woven. This finish has a bit of texture caused by a woven wire circling a roller being passed across the pages. The result is a woven, basket-weave type finish.

Print Process Workflow

- There are three main processes to occur to get the idea to print to the customer:
- 1. **Pre-press** - From design to production of the image carrier
- 2. **Press** - The process for transferring image to substrate. electronic or conventional
- 3. **Post Press** - fi nal manufacturing processes; folding, conversion, binding, die-cutting, etc.
- As printing is changing today, the following diagrams depict the fl ow of a job from various plants; conventional, digital and a combination.

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Printing Methods

- **Letterpress**
- The oldest printing method, directly derived from Gutenberg's press, is called letterpress. The image (usually a metal block) is raised above the holding area, much like a rubber stamp.
- Ink is applied to the image area and then it is pressed against the paper to print. Flexography is derived from letterpress and uses flexible, rubber plates to print, again much like a rubber stamp.
- Flexography is ideal for medium to large runs and can be used in a variety of substrates, including plastic and metal foils, paper, tissue, vinyl, and cardboard.
- **How it looks:**
- Your type or image will be indented into the paper. Using a raised surface printing plate or type, the depth of the resulting "bite" will vary depending upon the type of paper. Thicker, softer papers will carry a deeper impression than hard or thin papers.

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Printing Methods

- **Differences in quality:**
- Ask to see the printer's work. Be suspicious if the printer says anything can be done letterpress. This is almost true but pushing the medium to its limits can get expensive and still lead to some unhappy results. A good printer will guide you in your choices of type and paper.
- For instance, extremely small type will not look great on thick, soft paper where you wish to see a deep impression. The pressure required to achieve such an impression squeezes some ink out between the paper and the printing surface, causing type and art to thicken slightly. Sometimes this will cause the "e" of a small piece of type to "close."

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Printing Methods

- **Warnings**:
- Usually, you don't want to print a photograph or fine dot screen by letterpress. Most papers you want to print on will cause images to look a bit muddy. Metalic inks, such as silver or gold, do not print "shiny" on most papers. If metalic is a priority, check out foil stamping.

- **How it is done:**
- The world standard method for hundreds of years, letterpress gave way to offset during the 1930's.
- Letterpress is now relegated to the specialty category of art prints and invitations. The raised surface of the plate can be achieved by a number of means, such as wood carving or engraving, linoleum cutting, or, most commonly, photoengraving.

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Printing Methods

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Printing Methods

- **OFFSET PRINTING (Lithography)**:
- This method is used almost exclusively to print on porous materials like paper and cardboard. It is one of the most popular printing methods, and the most likely to be used in scrapbooking projects. An image is produced on a thin metal plate; the image areas are receptive to ink. The plate receives ink and transfers it to a rubber blanket, and the blanket presses the ink (or offsets it) onto the substrate. Offset printing can be economical for small or long runs.

- **How it looks:**
- Ink sits flat on the surface of the paper. Nearly all modern printing is offset. Most short-run jobs are now being done digitally instead of offset as personal and trade machines become better and cheaper.

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Printing Methods

- **Differences in quality:**
- Make sure that the printer you want to use can deliver the quality you expect. Like any service or craftsman, printers come with many different standards of refinement. Any printer can show you previous work. If you think the price is a bit low, or you think the printing looks a little fuzzy, the printer is most likely using paper printing plates. If you want high-quality offset, you will want a printer with a good reputation who uses aluminum plates. There can be quite a difference in price between high and low qualities printing. A printer who gives you good, clean lines and sharp type and stands behind his work can make a difference of a couple of hundred dollars for an invitation job.

Printing Methods

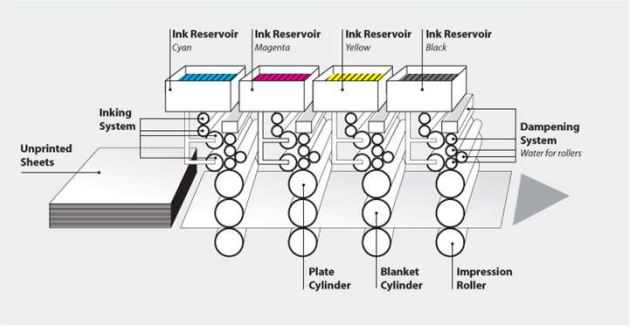
- The basic principle of offset printing, the dominant printing process, is this simple: ink and water don't mix. Early lithographers etched images onto a flat stone. These images would accept ink, while the porous stone accepted water.
- When ink was applied, it stayed on the greasy image area and avoided the rest of the stone. Modern lithography uses the same concept but adds one important element. In modern presses, the image is transferred from the printing plate to a rubber blanket and then to the paper. Hence the name "offset." Although there are many different kinds, sizes and qualities of offset presses, the basic configuration remains the same.

Printing Methods

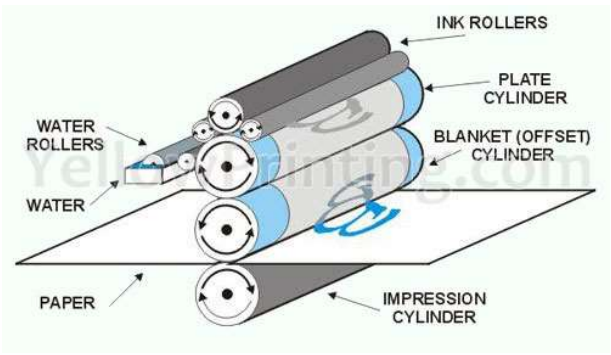
- When the printing plate is exposed, an ink receptive coating is activated at the image area. On the press, the plate is dampened, first by water rollers, then by ink rollers. Ink adheres to the image area and water to the non-image area. As the cylinders rotate, the image is transferred to the blanket. Paper passes between the blanket cylinder and the image is transferred to the paper.

Printing Methods

Sheet-fed Offset Printing



Printing Methods



Printing Methods

- **GRAVURE**
- This method is used for various product types, from aluminum cans to high-quality magazines and catalogs. The preparatory and printing processes are expensive, so gravure printing is limited to long runs. U.S. currency is printed with a modified intaglio process.
- Gravure produces extremely high quality images that have very vivid colors. Also known as roto gravure.

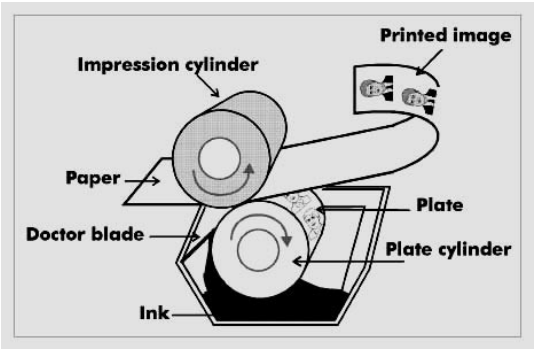
- **How it looks:**
- Almost like offset, but extremely high quality. The cost is prohibitive, and it is rare if ever that anyone would consider this method for an invitation job. Harder to fid in the United States.

Printing Methods

- **How it is done:**
- Basically, gravure turns everything in the image into halftone dots. The plate cylinder consists of tiny cells, varying in depth and width, that hold the ink. As the press runs, a doctor blade scrapes excess ink off the surface of the plate, leaving ink only in cells. As the paper contacts the plate, the ink is transferred, reproducing type, rules, graphics, and photographs as composites of very fine dots. Gravure is used only in very long runs, usually for publications and packaging printing.

Printing Methods

Printing Methods



Printing Methods

- **SCREEN PRINTING**
- Used for textiles (like t-shirts), large graphics (like on trucks and billboards), decals and bumper stickers, and many other products. A stencil material is placed on a screen (mesh) and the image area is washed off leaving the mesh area open. Ink is pushed through these open areas onto the substrate. Screen printing is usually economical for small runs.

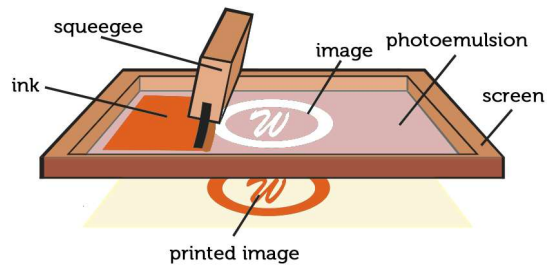
- **How it looks:**
- Ink sits on the surface of the paper. It is often thick and so opaque that the color of the surface does not affect the ink color. Can be used for semi-fine lines and type.

- **Quality**.
- Screen printers can show you, their work.

Printing Methods

- Although once thought of as being oriented to short production runs, modern high-speed technology allows for volume production where brilliant, accurate colors, and close tolerance are necessary. Ink is expressed through a stretched fabric mesh by a squeegee blade to reproduce the original image onto the substrate below. Screen printing is not limited to press size or the same of any substrate. A variety of materials such as paper, plastic, metal, fabric and glass can be screen printed

Printing Methods



Printing Methods

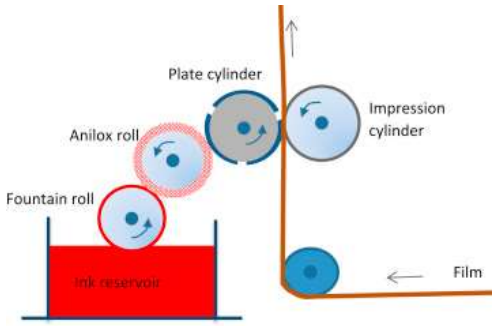
Printing Methods

- **Flexography**
- Flexography is a printing technique that uses a printing plate with raised letterforms to transfer ink to paper. It is one of the most common types of printing, used for everything from newspapers to books.
- Flexography can be used for both text and images. The process begins with an artist drawing the design on a metal plate or stone using a greasy ink called "type-metal" or "type-stone." The inked surface is then covered with a thin layer of wax, which protects the design from damage during handling and makes it easy to print multiple copies without damaging the typeface.

Printing Methods

- When all of the types have been added, excess wax is scraped off and then melted away by heating it until it becomes liquid again, leaving only the letters standing proud.
- The process can be used to print on paper as well as plastics, metals, cellophane, and other materials. Flexo is mainly used for packaging and labels and to a lesser extent also for newspapers.

Printing Methods



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SOME COMMON PRINTING TERMS

- **Bleed**: extending the image area slightly so that, after a final trim, the image extends to the edge of the substrate.
- **Image area**: the area on a plate or screen that will show on the substrate.
- **Plate**: metal or rubber-like material used to produce image and non-image areas for printing.
- **Proof**: showing an approximation of the final product through a less expensive production method.
- **Run**: quantity printed.
- **Substrate**: material being printed. Examples: paper, cardboard, plastic, foil, tissue, metal, clothes, glass. In next month's article we will explore the world of pre-press and we will expand on what to look for when shopping for a printing company.

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