

Designing For Reproduction & Print

Lesson 2

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Today's Lecture: Printing

- ▶ Relief printing / Letterpress.
- ▶ Flexography printing.
- ▶ Lithographic printing.
- ▶ Gravure (Intaglio) printing.
- ▶ Screen / Stencil printing.
- ▶ Paper.
- ▶ Folds, Binds, & Finishes.

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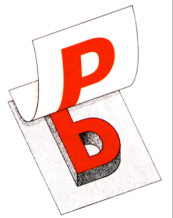
A brief overview of printing.

- ▶ When you graduate you will most likely be asked to prepare work for more than one printing process.
- ▶ In order to help you understand the various techniques that are available we will discuss some of them in this lecture.
- ▶ Printing can be defined as the transferring of an image to another surface using ink.
- ▶ Very little changed until the introduction of computers.

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Letterpress printing

- ▶ One of the most commonly known techniques is relief printing – woodcuts, linocut, spud prints etc.
- ▶ This method is still used today commercially but is not the most commonly used technique.



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Letterpress printing

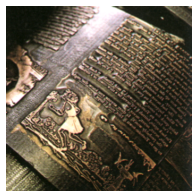
- ▶ Letterpress employs both individual pieces of type and specially made metal plates.
- ▶ All are assembled into a framework called a 'forme' and locked together.



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Letterpress printing

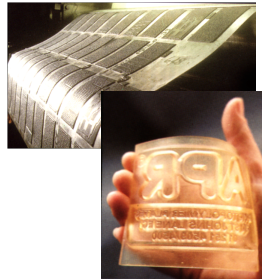
- ▶ Platen presses use a vertical design.
- ▶ Flat bed presses, as the name suggests, lay flat and can accept larger sizes.
- ▶ Rotary presses are designed for high volume printing and require special printing plates.



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Flexography printing

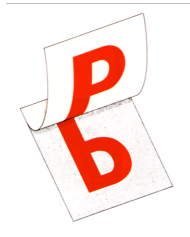
- ▶ A derivative of letterpress.
- ▶ Plates are made of rubber or photopolymer.
- ▶ It is flexible by name and by nature, it can print onto almost anything.
- ▶ Uses include printing onto boxes, plastic bags, drinks cartons, wallpaper...



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Lithographic printing

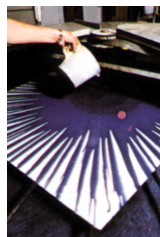
- ▶ Most of your work will be printed this way.
- ▶ It relies on the fact that oil and water do not mix.
- ▶ This allows the printing surface to be flat.



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Lithographic printing

- ▶ Plates were originally made of stone. They are now made from sheets of aluminium with a special coating.
- ▶ The coating is a photo sensitive chemical.
- ▶ Different coatings can create either a negative or a positive printing plate.



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Lithographic printing

- ▶ The plate is brought into contact with the negative in a special booth.
- ▶ Vacuum pumps suck the two together ensuring a close contact and accurate registration.
- ▶ Timers then ensure accurate exposure.



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Lithographic printing

- ▶ The plate is rinsed clean and dried.
- ▶ This leaves water resistant grease attractive areas to accept the ink.
- ▶ These areas are not raised or etched as some would expect.



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Lithographic printing

- ▶ The plate is clamped to the press.
- ▶ This is an important part of the operation as registration is critical.
- ▶ Most volume presses will have a large roller which the plate is carefully fitted to.



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Lithographic printing

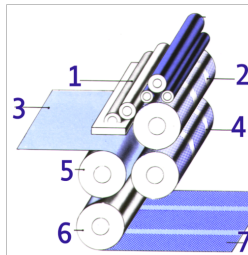
- ▶ Process inks are available and spot colours are mixed to a formula.
- ▶ These are applied to a series of rollers that spread the ink evenly between them ready for print.



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Lithographic printing

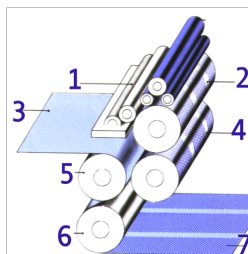
1. The plate is kept wet by rollers transferring water from a small bath.
2. The ink rollers spread the ink and transfer it to the plate on the cylinder.
3. The paper is fed into the press. This may be sheet or web (off a roll).



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Lithographic printing

4. The Blanket Cylinder accepts the image from the printing plate.
5. The Impression Cylinder presses the paper against the Blanket Cylinder.
6. Thus the image is transferred.
7. Several sheets may be on the press at a time.



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Lithographic printing

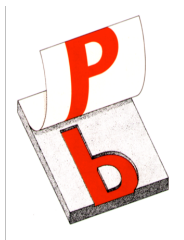
- ▶ Four or more inking sections enable full colour printing.



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Gravure (intaglio) printing

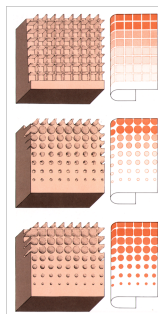
- ▶ Gravure is a specialist technique used mainly for long print runs and high quality
- ▶ Almost the opposite of 'Relief', it has cells etched into the surface of the plate to accept ink.



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Gravure (intaglio) printing

- ▶ When the plate is inked the surface is wiped clean before printing.
- ▶ This results in minute pools of colour being drawn out by the paper.
- ▶ Friction is minimal so long runs of extremely high quality can be made.



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Screen (Stencil) printing

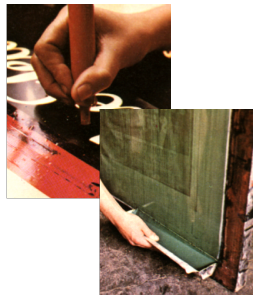
- ▶ Screen printing utilises a stencil.
- ▶ It is cheap, flexible and very suited to small specialist print runs.



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Screen (Stencil) printing

- ▶ Often hand made, once again a negative is required which can be photographic or hand cut.
- ▶ The screen is covered in a special photosensitive emulsion.



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Screen (Stencil) printing

- ▶ The fine mesh is placed in close contact with the negative and then exposed.
- ▶ The unexposed areas of the screen are then washed away.
- ▶ This is where the ink will pass through the screen and onto the paper.



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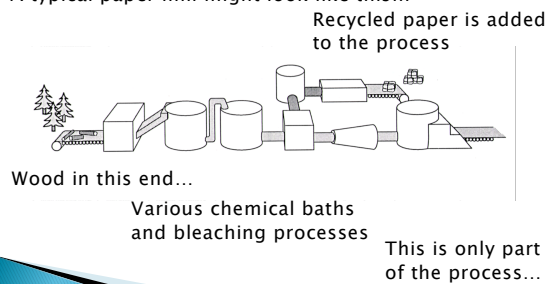
Printing – a summary

- ▶ In most cases you will be dealing with the Offset Lithography method of printing.
- ▶ However, you may need to work with another, for example Gravure for packaging or Screen printing for T-Shirts.
- ▶ Be prepared to take advice if you are unsure.
- ▶ Don't be afraid to talk to printers.

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Modern Papermaking

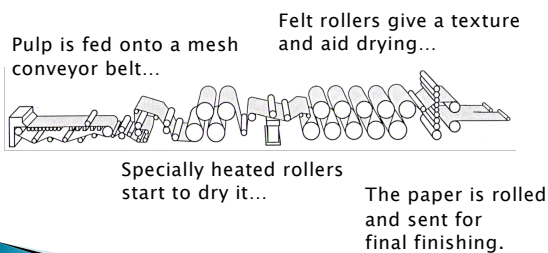
A typical paper mill might look like this...



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Modern Papermaking

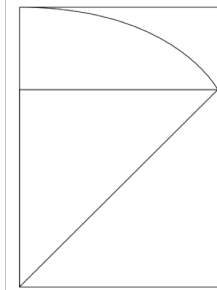
The process continues onto several rollers...



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Paper sizes

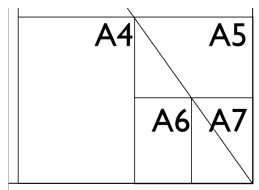
- ▶ The 'A' sizes are best known.
- ▶ They are based on the 'Golden Triangle'.
- ▶ There are other paper sizes...



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Paper sizes

- ▶ 'S' and 'SR' accommodate the oversize papers that allow for crop marks and bleed etc.
- ▶ 'B' sizes exist for poster formats.
- ▶ 'C' are for envelopes.



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Paper Thickness

- ▶ Countries using the ISO 216 sizing system refer to the thickness of paper as 'weight'.
- ▶ Measured in grams per square metre.
- ▶ Printing paper is generally 60g to 120g.
- ▶ Heavier than 160g is considered card.



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Paper samples

- ▶ Research paper merchants.
- ▶ Ask for paper samples.
- ▶ Sample books allow you to see textures, finishes and weights.
- ▶ More importantly...
- ▶ They allow your CLIENT to see textures, finishes and weights.



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Folding

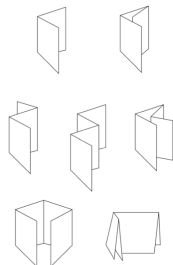
- ▶ Folding weakens the paper by damaging the fibers in the paper.
- ▶ An obvious type of fold is for pages in a book or magazine.
- ▶ The technique of folding can become quite complex.



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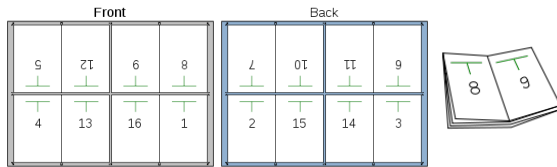
Folding

- ▶ Each folding technique can be specified by name: Single, Gate, Concertina, Parallel, Double, Broadside etc.
- ▶ The designer will be expected to specify required folding.
- ▶ When ever possible supply a mockup of the folding.



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Imposition



- ▶ Pages of your design may need to be arranged for printing. This is called Imposition.
- ▶ It can get very confusing so make up a dummy to get your page numbering correct.

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Binding

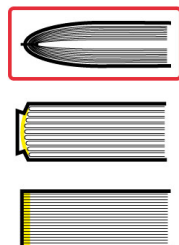
- ▶ There are many forms of Binding.
- ▶ Three methods are most common in mass production.
- ▶ Saddle Stitch.
- ▶ Edition Binding.
- ▶ Perfect Binding.



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Saddle Stitch

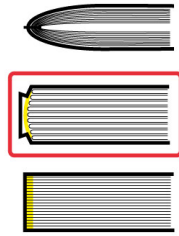
- ▶ Common in coffee table magazines & some newspapers.
- ▶ Made up of spreads containing 4 pages then stapled together.
- ▶ Number of pages are always in multiples of 4.
- ▶ Generally 64 pages or less depending on paper stock.



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Edition Binding

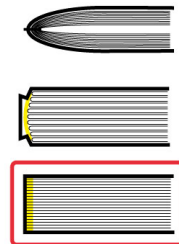
- ▶ Made up of 'signatures' that are stitched together with thread.
- ▶ Signatures have a similarity to Saddle Stitch in that they are made up in a similar way.
- ▶ Used in binding hard back books.



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Perfect Binding

- ▶ The pages are more individual than in other methods of binding.
- ▶ All the pages are gathered and glued into the cover.
- ▶ This method easily allows for different paper stock to be used in the same book.



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Cutting

- ▶ Once printed the work will require trimming.
- ▶ This can be straight forward by using a guillotine.
- ▶ More complex Die Cutting.
- ▶ Or Laser Cutting.
- ▶ Laser cutting can create greater detail but is more expensive.



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Foil Blocking

- ▶ Allows for special colours & metallic finishes.
- ▶ The process requires heat and the stock needs to be chosen accordingly.



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Embossing

- ▶ Embossing can be a subtle way to enhance your designs.
- ▶ Good paper stock is a must.
- ▶ The paper is effectively clamped between a male and female mold.



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