



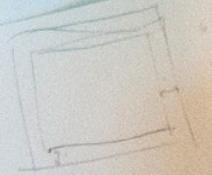
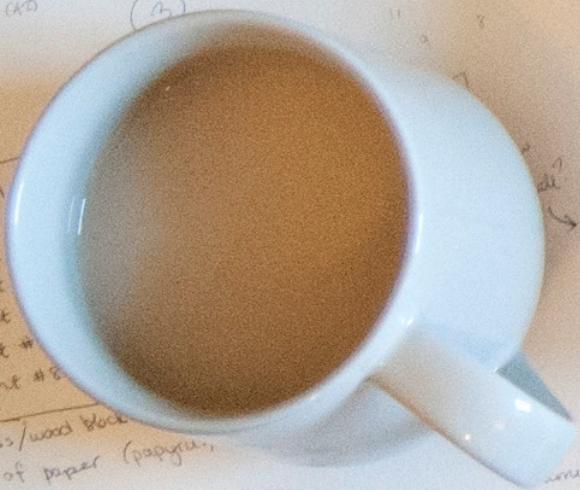
TIMELINE

- ✓ 1455 - Gutenberg
- ✓ 1794 - first machine
- ✓ 1834 - Linotype
- ✓ 1859 - LITHOSET
- ✓ 1884 - Linotype
- ✓ 1949 - phototypesetting
- ✓ 2005 - Postscript

✓ 1776 - typography

- 1850 - paper
- 1800 - parchment
- 1800-1850 - pigments
- ✓ 1879 - Hotch Snow Print
- ✓ 2005 - Adobe Creative Suite

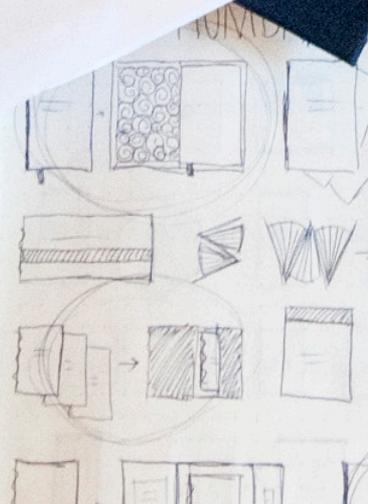
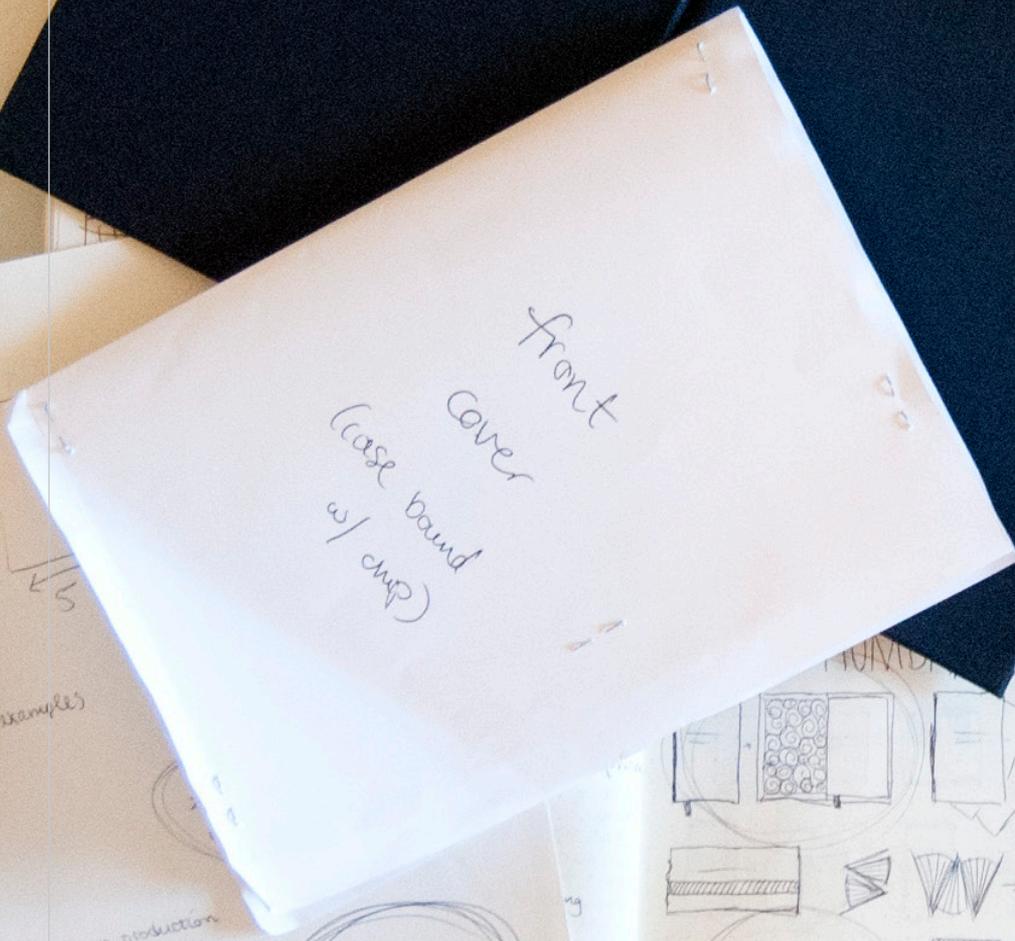
- title page
- table of contents
- Terris Price Deep (A2)
- 1900 (A1)
- West Camp (A2)
- Kocart (A2)
- Dorte (A3)
- Chude (A1)
- Assignment #1
- Assignment
- Assignment
- Assignment
- Assignment #2
- Assignment #3



see examples

Timeline of graphic production

- ↳ paper
- ↳ lithography
- ↳ processes
- ↳ pantone
- ↳ 1930s Newton & color
- ↳ Computer means info
- ↳ Hotch Snow Print



PHOTOS

* how to show

end papers (whole stack)

- letterpress/wood block
- history of paper (papyrus)
- raptures *
- Hotch Snow Print
- 5 main printing processes *

*When you see a teaspoon of honey, you are
looking at the product of twelve bees' lifetimes.*

h  n e y

*When you see a designed object, you
are looking at the product of a designer over
an untold number of hours.*

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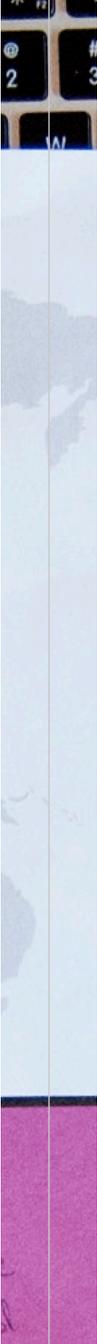
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history of graphic production

binding predates the invention of printing, paper and the alphabet system of writing. As the ancients moved from scratching symbols and pictograms onto stone and clay to writing on more pliable materials

A BRIEF HISTORY of BINDING

From Early Chinese Logographs to 21st Century Print Communications

Including palm leaves, papyrus, parchment, bamboo and wooden slats, they looked for ways to organize their longer documents in neat, sequential order by tying, sewing and gluing loose sheets together.



4/21

PRINTING

- "litho" = stone
- lithography now considered fine art
- texture of wet surface
- photos can be transferred to stone
- texture can be wet or crayon
- direct drawing on stone
- oil based ink/water
- put through tight press
- can be multicolor, but one stone per color
- offset lithography took over in 1960s
- aluminum plates and machines
- PEGLEG GREG
- offset good for large quantities, high quality (not fancy), lower cost (for higher quantities)
- true pantone ink (good for brands)
- offset has high initial set up cost & clean up cost (esp. for a short run)
- pantone plus - most recent
- not gain - ink dots spread a little
- web offset printing (used for big magazines, can't sweat pd - uses giant oil instead)
- hot-dried ink used for web offset



Intaglio
Lithography
Letterpress
Serigraphy
Digital

1455
Gutenberg Bible

1796
Lithography invented

1879
Hatch Snow Print

1884
Linotype invented

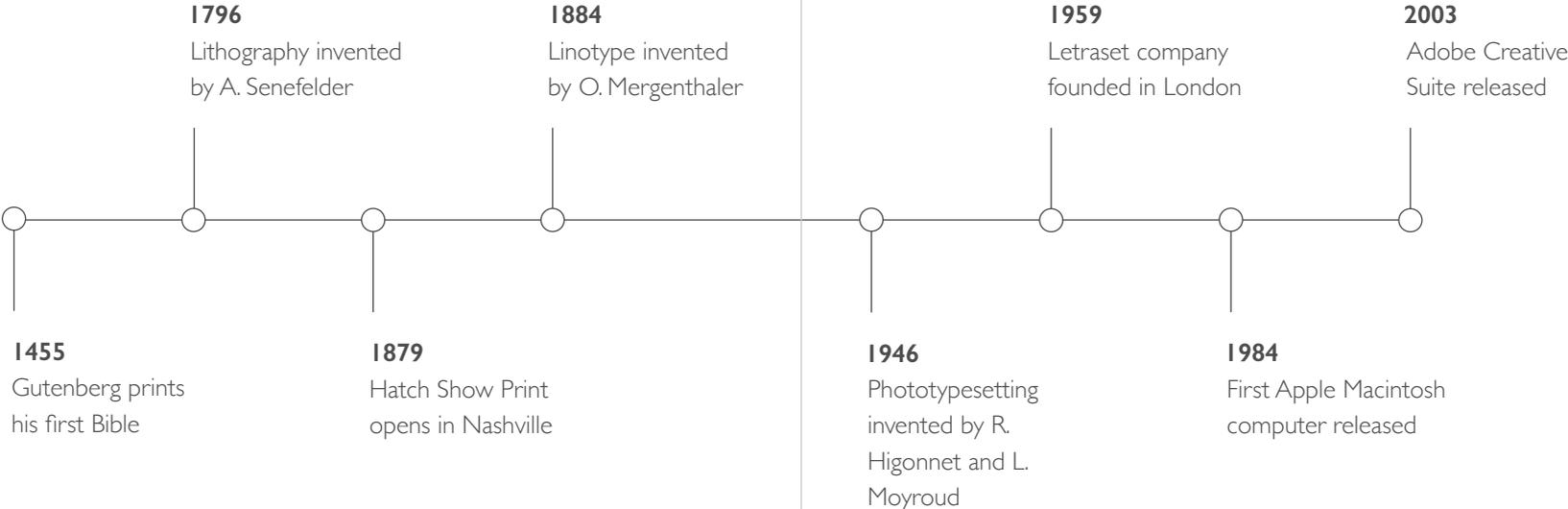
1946
Phototypesetting invented

1959
Letraset founded

1984
Fast Mac released

2000
Abbe Creative Cloud released

timeline



paper

Sumeria | 3500BCE

Cuneiform was carved into a wet clay tablet with a wedge-shaped stylus. Once the clay dried, the text could not be changed and the tablet could not be reused.



Egypt & Mediterranean | 3000BCE

The papyrus reed, which was abundant along the Nile, was written on with damp ash. Pieces of papyrus were connected to make large surfaces that were then rolled. Since the sheets were made from an organic material, they rotted over time.



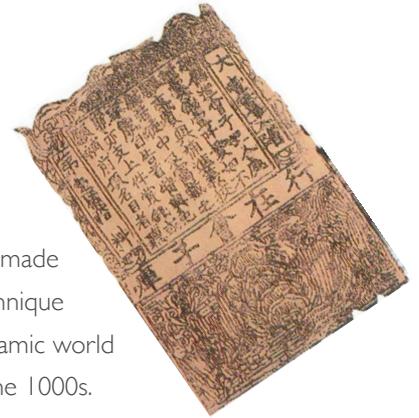
Roman Empire | 100BCE

Tablets of wax were mounted into wooden frames that were then connected in the middle with a cord. The markings scratched into the wax could be changed by rubbing them away. This hinged structure was an early precursor to the modern book form.



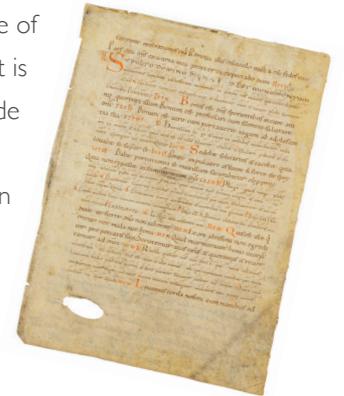
China | 105CE

Paper as we know it today was invented in China during the Han Dynasty. Once the first paper was made using rags and plant fibers, the technique spread throughout Asia and the Islamic world before finally reaching Europe in the 1000s.



Europe | 500s CE

Parchment and vellum were used in place of paper during the Middle Ages. Parchment is made from animal skin, and vellum is made from baby animal skin. Both are treated, smoothed, stretched, and lightened. When sheets of parchment or vellum were folded, sewn, and stacked, they formed a book-like structure called a codex.



printing processes

Intaglio

Intaglio printing, which is the opposite of letterpress printing, is characterized by the etching of the image itself onto a metal plate. Ink is rolled over the entire plate, and then wiped away from the surface only so that the ink remains in the grooves. Paper is laid over the inked plate, and both are pressed tightly together by a roller. The ink transfers to the paper, as does a texture.

Lithography

Developed in 1796, lithography is a printing technique that relies on the inability of oil and water to mix. The term *lithography* comes from the Greek word *lithos*, meaning stone, because the oil, water, and ink are applied to a smooth stone slab. The stone is treated with an oil-based mixture where the design or image is and with a water-based mixture where the empty space is. When oil-based ink is applied, it sticks only to the oil-based mixture. The prepared stone is then pressed against a piece of paper to transfer the image.

Letterpress

Letterpress printing, which is the opposite of intaglio printing, requires applying ink to a raised surface. That surface is then pressed against paper using a press or roller. Letterpress usually involves a lockup

of letterforms and shapes that are then printed many times. Unlike, intaglio printing, a texture may or may not be transferred when using a letterpress. A kiss impression touches the paper to the ink just enough to apply the ink. A bite impression, on the other hand, presses the plate and paper together such that an impression is left behind.

Serigraphy

Serigraphy, also called screen printing and silkscreen printing, is a technique that presses the ink onto the substrate through a mesh material. A stencil ensures that the ink is only applied to certain areas. Ink is applied to the mesh, and then a squeegee is pressed across to transfer the ink.

Digital

Digital printing is what most people think of when they think of printing, and it can refer to both toner-based and inkjet printing. Xerography is a type of digital printing that does not use liquid ink but instead uses a dry powder called toner. Unlike earlier print methods, digital printing does not require a plate to produce the image. Rather than sinking into the substrate, the ink or toner forms a thin layer on top of the substrate. Digital printing is accessible to most and is cheaper for shorter runs.

pantone

Pantone is a company that, contrary to popular belief, does not manufacture inks. Rather, they create a color reference system that is used around the world to ensure consistency and vibrancy. Other systems similar to Pantone are also used, like the HKS system in Germany, the RAL system in Europe, and both the Toyo and DIC systems in Japan. Pantone inks are mixed specially by experts and are applied as spot colors during the printing process. CMYK printers, such as digital printers, may or may not accurately replicate a Pantone color. The Pantone Bridge book, shown here, pairs true Pantone colors with their closest CMYK equivalent.



color spectrums

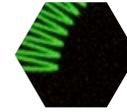
Humans have three cones (which detect red, blue, and green), so we see violet, blue, green, yellow, orange and red.

Dogs have two cones (which detect blue and green), so they can only see blue, green, and a little yellow.

Butterflies have five cones (which detect red, blue, green, and ultraviolet), so they see colors that we have no names for. The best we can do is call them ultraviolet, violet, violet-blue, blue, blue-green, green, green-yellow, yellow, yellow-orange, orange, red-orange, and red.

Mantis shrimp have 16 cones, of which at least 8 are color receptors (like our red, blue, and green cones) and at least 4 are ultraviolet receptors. Theoretically, mantis shrimp can see deep into the ultraviolet spectrum as well as 5 or more kinds of each violet, blue, green, yellow, orange, and red. Deeper research into them has shown, however, that they are able to differentiate colors less than humans are. It turns out that their eyes are adapted to recognize colors, not discern between them like ours have adapted to do.





Colo

*If you
different m
about getti
how color is
methods.*

*One method i
images you are
overs, etc. This
relap each ot
ir-color proces
other methoo
a tube of ink i
spot color in*

assignments



— INTRO & CH. 1 —
 rapid advancements in design & print technology
 - good for designers & non-designers
 - beginning questions
 - what kind of project?
 - what's the budget?
 - what's the deadline?
 - next level questions
 - what kind of job?
 - client, venue, ad, brochure, etc.
 - who's printing it?
 - run the printer, trade, commercial press, etc.
 - what's the paper size? (page + paper after folding)
 - how many piles of paper?
 - inside double-sided 2 folds
 - outside double-sided (eg 8, 16)
 - printer specs

THE WORLD OF COLOR

Do you dream in color? Many people report dreaming only in black and white. But some scientists say all dreams start out in black. Then the color fades along with the details of the dream. No matter what your dreams, here's how to add color to your print.

Process Color Printing

If you read *Chapter 5*, you know all about the different modes of color printing on a computer. But this book is about getting pages printed on a press. You also need to know about how color is printed on a press. There are two basic methods.

One method is called "process color," which creates the full-color images you are accustomed to seeing in magazines, posters, covers, etc. This method uses four separate transparent inks that overlap each other to create all the colors you see. It's expensive. The four-color process is usually only attempted on large presses.

The other method is "spot color," which uses a color of ink from a tube of ink for each area you want color. This is how you cover spot color in Chapter 10.

BOOKC
 Techniques for Printing, Folding
 to Create Books



MATERIALS

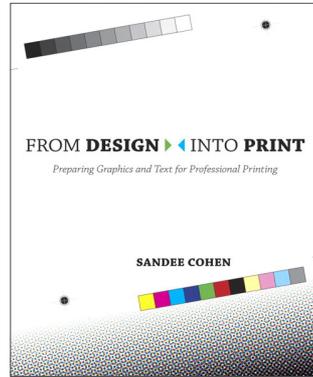
— CH. 1 —

- vs. of digital printing
- changed printing process
- old semiconductor
- CCD - higher quality
- CMOS - cheaper, more
- scanners usually have CCD
- bit depth vs. management
- interpolation & error
- mini-needle, sheet-fed, flatbed
- CCD software, sheet-fed, flatbed
- test database
- glossy paper wants better than
- scanning printed artwork
- scan first act as I've
- descreening

textbook

Starting Questions

What is the project about? What is the budget? When is the deadline? What type of job is it? Who is printing it? What is the paper size? What is the page size? What kind of paper is being used? How many pieces of paper are there? How many colors? How many copies?



Color Modes & Bit Depths

The bit depth of images acts a little like a binary code in that each bit can be “on” or “off.” In a 1-bit images, this means the color can be black or white. An 8-bit image, then, has 8 “on/off” switches which results in 256 combinations or colors. By the time an image is 24-bit or 32-bit, millions of colors can be created.

Color Mode	Bit Depth	Channels	Number of Colors
Bitmap	1-bit	1	2
Greyscale	8-bit	1	256 shades of grey
RGB	24-bit	3	16.7 million
CMYK	32-bit	4	16.7 million

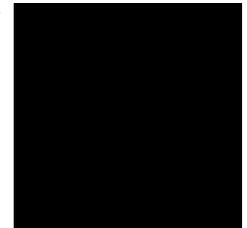
Printing Black

There are many ways to print black when using four-color printing because different designers use different formulas of cyan, magenta, and yellow to make black. In general, though, blacks can be flat, warm, neutral, or cool. Registration black is another type of black, and it is formed using 100% cyan, magenta, and yellow. This results in 400% ink, which is well above the typical threshold of 300% ink in any area.



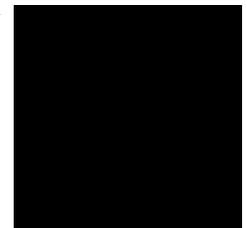
◀ Flat Black
0/0/0/100

Warm Black ▶
35/60/60/100



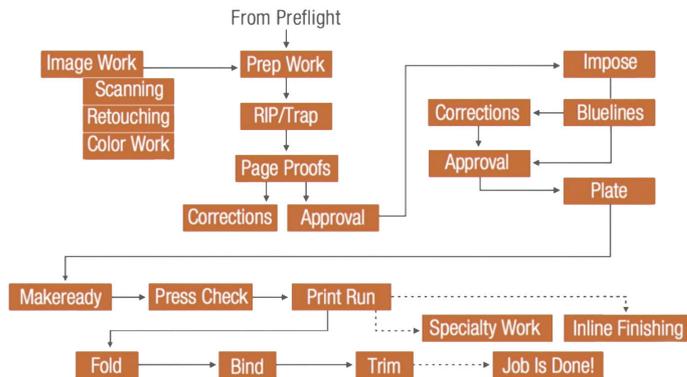
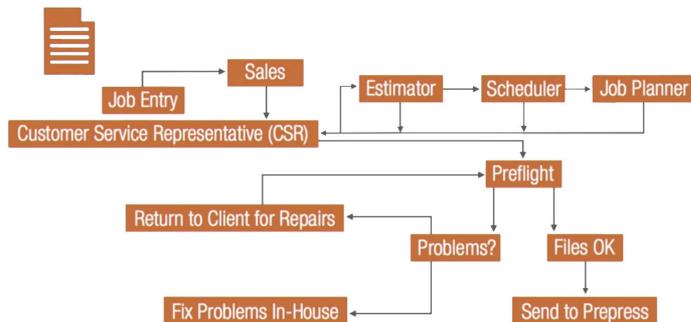
◀ Registration Black
100/100/100/100

Cool Black ▶
70/35/40/100



print production

Life Cycle of a Print Job

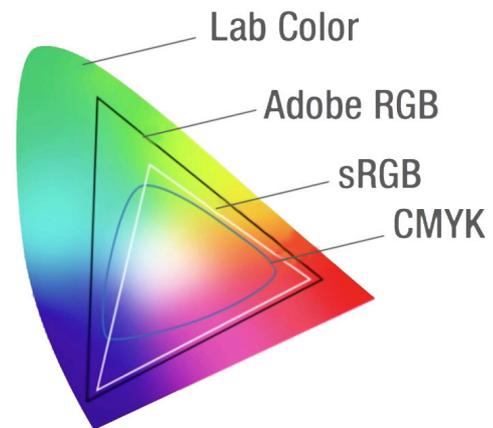


Thermographic Printing

Thermographic printing gives the appearance of a letterpress print, but isn't as labor-intensive to produce. First, the area is printed with slow-drying ink. A resin-based powder is applied to the wet ink, and any excess powder is vacuumed up. The substrate is exposed to heat, which combines the ink and powder and causes them to rise. When the paper cools, that area hardens.

Color Space

Lab Color, the outer area of this diagram, represents what the human eye can see. Adobe RGB is more limited than the human eye, but includes more colors than sRGB. CMYK is even more limited than sRGB, but it does include some cyan-based colors that sRGB doesn't.



the eight folding families



Accordion

Accordion folds alternate parallel folding directions to create zig-zag pleats.

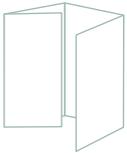
Variations include... wrapped, stepped, & swinger



Basic

Basic folds place a single crease in the material.

Variations include... 4-page standard, 8-page standard, trifold, & tent fold



Gate

Gate folds have two or more panels that fold into the center from opposite sides.

Variations include... closed, double, & open



Map

Map folds are a subset of accordion fold with a right-angle fold applied to the accordion.

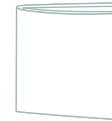
Variations include... 2, 3, & 4 story



Parallel

Parallel folds have panels that fold parallel to and in the same direction as previous folds.

Variations include... double, triple, & 10-page



Poster

Poster folds are made up of one base fold and one finishing fold, and can vary greatly.

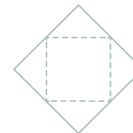
Variations include... tri-fold with double parallel



Roll

Roll folds are made of four or more panels that roll into each other.

Variations include... reverse & asymmetrical



Specialty

Specialty folds are folds that fall beyond the range of these other fold types.

Variations include... iron cross, petal, & twist

fieldtrips



Kobalt Studios

2/8

Chute Gerdeman

3/8

Terric Price - Deep
from Millcreek Paper

1/16

West-Camp Press

2/1

Lozoo Letterpress

1/25

Darite Sign Co

2/15

ALLISON CHAPMAN
Printer
ALISON@IGLOOLETTERPRESS.COM | 847-927-1528
601 E. HIGH ST. | WASHINGTON, OHIO 43086



COMPARATIVE BASIS WEIGHTS
The weight of 500 sheets (one ream) of a standard basic size.

Writing 17 x 22	Text 25 x 38	Cover 20 x 26	GSM
30	50	-	75
24	50	-	90
27	60	-	100
28	68	-	105
-	70	-	115
32	78	-	120
36	80	-	135
40	91	-	150
-	100	50	162
-	110	55	175
-	119	60	180
-	122	65	215
-	146	67	230
-	-	80	270
-	182	92	324
-	-	100	350
-	-	120	432
-	-	130	480
-	-	160	-
-	-	180	-

STANDARD BASIC SIZES

Writing	17 x 22
Text	25 x 38
Cover	20 x 26



Step inside the Mohawk Mill
where four generations have
an American legacy of fine
papermaking—roll by roll.

Photos
Jeff Dey

Inside the



terri price-deep

millcraft paper

“ The paper industry is a lot more sustainable than people think it is. Years ago, changes were made to be more environmentally friendly, and they continue today.

Terri Price-Deep is a creative consultant with Millcraft in Columbus. After majoring in marketing and minoring in graphic design at Indiana University, she began working with Millcraft after ten years in the field. Her current job, which is Business Developer and Creative Specialist, is mostly marketing with a side of sales. Terri gives presentations about paper to let designers and printers know about new papers, and also aids people in selecting appropriate paper for all kinds of projects.

Terri discussed the environmental impact of the paper industry, which is often misrepresented. Millcraft is FSC-certified (Forest Stewardship Council), as are many other companies in the industry. Additionally, the paper industry plants six trees for each one that is taken, and they use the “cherry picking” method to protect wildlife. Paper can also be tree-free since materials like hemp can be used instead, and uncoated paper can be made of up to 100% recycled material.



igloo letterpress

letterpress printing

“

I started working letterpresses when I was in kindergarten. My grandfather used a letterpress, and I would keep him company. He bought me a child-sized press so we could work together.

Allison Chapman started Igloo Letterpress 22 years ago when she received several vintage presses from her grandfather. When she was young, Allison worked alongside her grandfather on a child-sized press that he bought for her when she was in kindergarten. Now, she owns and runs a thriving letterpress business that is only a couple blocks from her home. Igloo combines many of Allison's passions and offers a variety of services like custom jobs and classes open to the public.

Allison explained some printing techniques that can add a little something extra to a piece. One of her favorites is transparent white ink, which creates a subtle tone-on-tone effect. Blind impressions are also popular and achieve a similar effect. Edge painting can be applied to stacks of thinner pages or to thick stock. Allison also explained the difference between kiss and bite impressions: while a kiss impression just touches the paper; a bite impression leaves behind a physical form.



kō·bōlt
STUDIOS INC

kobolt studios

environment design



It's important that you guys, as designers, don't tell the fabricators you work with what to do. Tell them what you want to accomplish and trust them to do it well.

Kobolt Studios was started in 1995 by Jerry Ulibarri, and began by producing murals and sculptures for clients. Now, with around eight employees, Kobolt completes custom fabrication jobs for places like Jeni's Ice Cream, the Columbus Zoo, and COSI. Jerry and Chris explained how important it is for us as designers to respect the skills of fabricators we work with, and how we should know our dimensions, materials, budgets, and deadlines. And the basic mechanics of gravity.

Kobolt's murals are almost always done on canvas that is shipped to the client, and a variety of methods are used to add the mural to the canvas. Many of Kobolt's sculptures involve molds, but Jerry added that larger pieces are carved by hand, since 3D-scanning a large object is more difficult. Kobolt also uses MDF, which is similar to particle board. It is much cheaper and more predictable than actual wood, and looks just like real wood when cut with a router and hand painted.



chute
GERDEMAN

chute gerdeman

experience design



We aren't interior designers. We don't design just a space. We design the space, the signage, the interactions. We create environments that have a specific experience.

Chute Gerdeman is a high-end design firm that creates experiences and environments for their clients and their clients' customers. Their goal is to match the perception of their client's (usually preexisting) brand to a space and thus encourage brick & mortar stores through those experiences. At Chute Gerdeman, all the employees work together to manage timelines, budgets, and expectations while combining technicality with personability.

Within Chute Gerdeman, there are several departments that work together throughout the design process, each playing a critical role in creating an experience for the client. For example, the architectural design team connects with construction workers, contractors, and architects to ensure smooth on-site problem-solving. The digital design lab team helps the client visualize the solution by creating rendering, panoramas, VR experiences, animations, and computer walk-throughs.

glossary

Accordion fold: a fold characterized by a zig-zag pattern

Basic fold: a fold characterized by its simplicity

Bit depth: a measurement of color complexity in an image; each bit acts like an “on/off” switch

Bite impression: a printing method that transfers the ink to the paper and leaves behind an impression

Cherry picking method: a method of cutting trees that doesn't remove all the trees in an area; protects forest wildlife

Digital printing: printing done by toner or inkjet

Gate fold: a fold characterized by outward-opening panels

Intaglio: printing done by pressing paper against inked wells

Kiss impression: a printing method that transfer to the ink to the paper and does not leave behind an impression

Letterpress: printing done by pressing paper against inked blocks
lithography: printing done by placing oil and water side by side

Mantis shrimp: a sea animal that has 16 cones, but cannot differentiate colors as well as a human

Map fold: a fold characterized by an accordion fold in addition another type of fold

Pantone: a company responsible for a widely-used color-reference system

Parallel fold: a fold characterized by its parallel creases

Poster fold: a fold characterized by the use of two fold styles

Registration black: a black made of 100% cyan, 100% magenta, and 100% yellow

Roll fold: a fold characterized by the ability of the piece to roll in

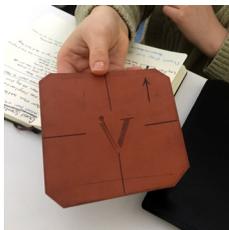
Serigraphy: also called screen-printing; printing done by pressing ink through a mesh screen

Specialty fold: a fold that falls outside the other characteristics

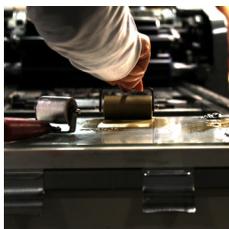
Thermographic printing: printing done using heat to raised areas

photo credits

Steve Johnson
pages 24-25



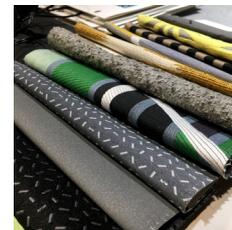
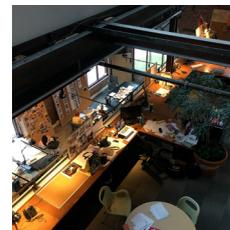
Michael Fletcher
pages 26-27



Michael Fletcher
pages 30-31



Lexie Shao
pages 34-35



colophon

This book uses Gill Sans Light and Adobe Garamond Pro Regular.
It has been printed on 28-pound Hammermill paper, and was
hand-bound by Maria Burns.



Maria Burns
Design 3550 – Spring 2018
Steve Johnson, Instructor

MEASURING THE SPINE GAP

- 1 The spine gap will vary from book to book depending on the thickness of the book block.
- 2 To measure the spine gap, place the boards at the front and back of your book block. Boards should protrude about 1/4 in. (3 mm) at top, bottom, and fore-edge. The spine should overhang the boards by about 1/4 in. (3 mm) along the spine edge.
- 3 With a small strip of paper, mark the distance from the spine edge of the front cover to the spine edge of the back cover, around the spine. This is how big your spine gap should be.
- 4 When placing the boards on the glued cloth, use a strip of card the width of the measured spine to ensure that the boards are the right distance apart. The strip is just for measuring and should not be glued in.

THE CASE

Step 1 Beginning at the center, mark the intervals along the inner spine and pierce the five holes all the way through.

NOTES:

- Take care not to pierce the cloth as you stitch through the hole. This will prevent you from being able to tie the thread tightly.
- Wherever you begin the stitching, when the final knot will be on the inside of the book, if so, start from the inside.

Step 1

With a large piece of paper under your work, glue all the boards of the book block from the center toward the edges. Leaving enough space for the spine (see the glued cloth), make sure the bottoms are straight and the boards firmly flat.



Step 3

Using a bone folder, tuck in the cloth around each corner, where cloth meets board. Once this is done, hold the short edges and ensure that they are smoothly pressed down. It may be necessary to apply glue, especially on the areas of tucked cloth.

Step 4

Run a bone folder along the outside of the spine to define the spine edges more clearly. Place the case under a flat, clean weight while it dries.

Five-hole stitch order

Starting from the outside of the book and at the center hole, follow the numerical order of stitching. The dotted lines show the underside of the stitches.



Handwritten notes and diagrams on a piece of paper. At the top, it says "3/7". Below that, there are several rectangular boxes, some containing words like "seed", "mac", "egg", "photo credits", "back page", and "west camp". A blue pair of scissors is placed over the bottom part of the notes. To the right, there is a yellow sticky note with a "TO DO" list: "- move info for folder", "- print grad", "- textbook".

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