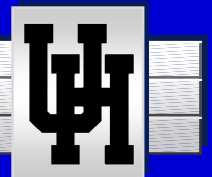


University of Houston
College of Technology

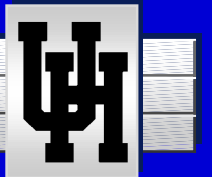
**Printing Processes:
Advances in Technology**

Dr. Jerry Waite
UNIVERSITY *of* HOUSTON



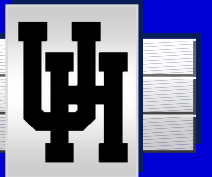
What is printing?

- Transferring an image from one medium to another.
- It involves more than just ink on paper.



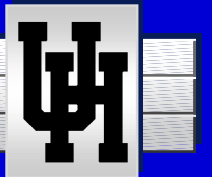
Printing is Important

- In 1997, *Life* Magazine called printing the most important invention of this *millenium*
- No reformation?
- No American Revolution?
- Our own Constitutional Amendment
- Third largest manufacturing industry in the US
- Accounts for 1/12 of the US manufacturing economy



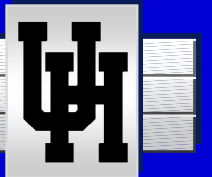
Choices, Choices, Choices

- 600 years ago, most printing was done by scribe.
- 400 years ago, most printing was done by letterpress.
- 10 years ago, most printing was done by offset–lithography.
- Today there are more choices of printing processes than ever before!



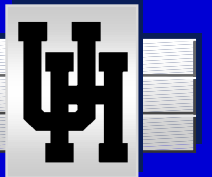
How can you decide?

- What are the attributes of the printing process?
- What are the requirements of the job?
- What are the economic benefits/drawbacks?
- What is the run length?



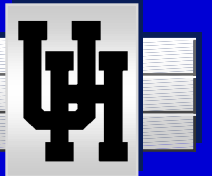
Categories of printing processes

- Relief
- Intaglio
- Planographic
- Screen
- In-Line
- On-Demand
- “Finishing” Processes
- “Alternative Substrate” Processes



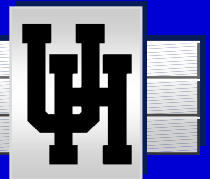
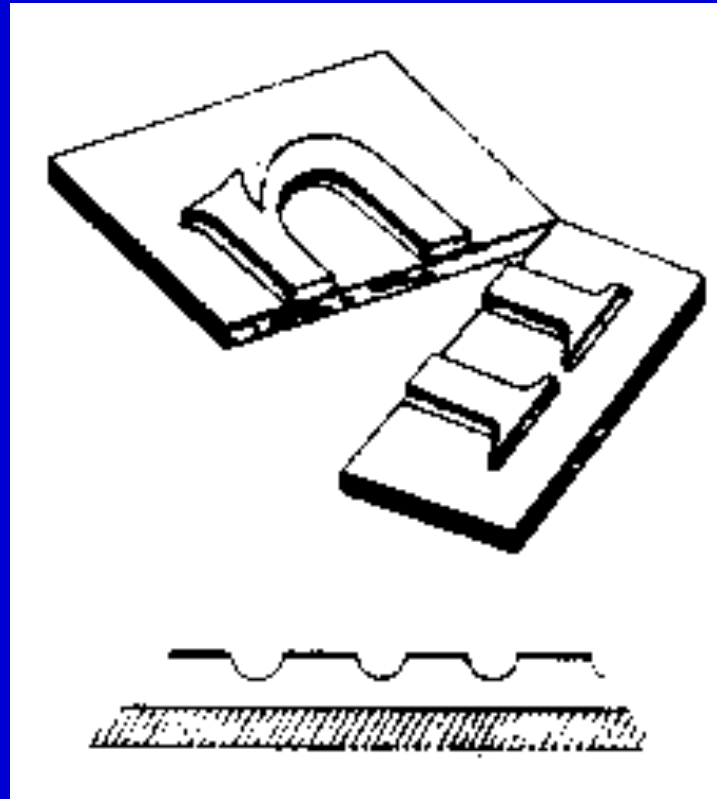
Relief

- Letterpress
- Flexography



Letterpress

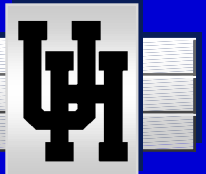
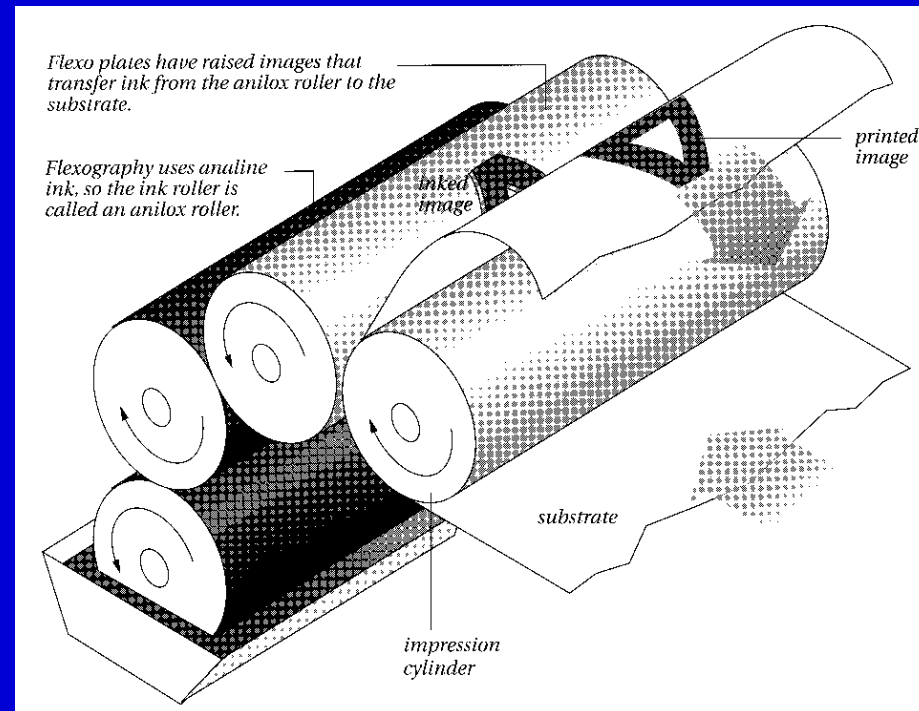
- Plate
- Press
- Printed image
- Today's uses



Flexography

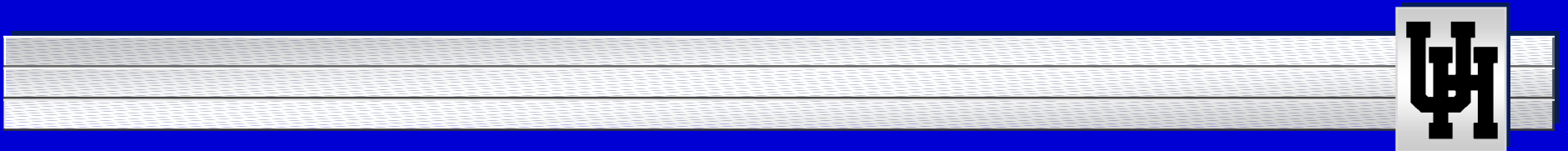
- Plate
- Press
- Printed image
- Today's uses

Candies



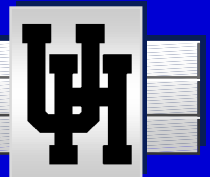
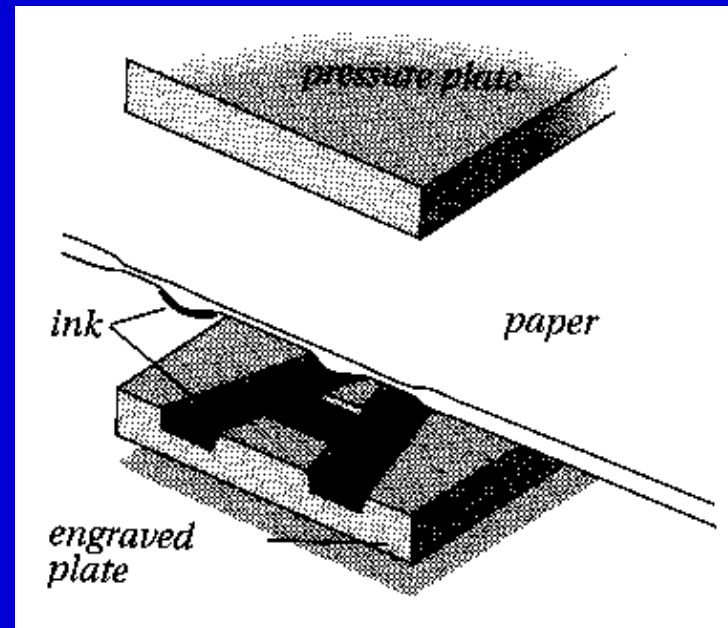
Intaglio

- Engraving
- Gravure
- Holography



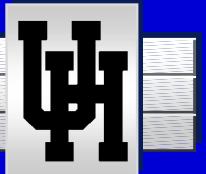
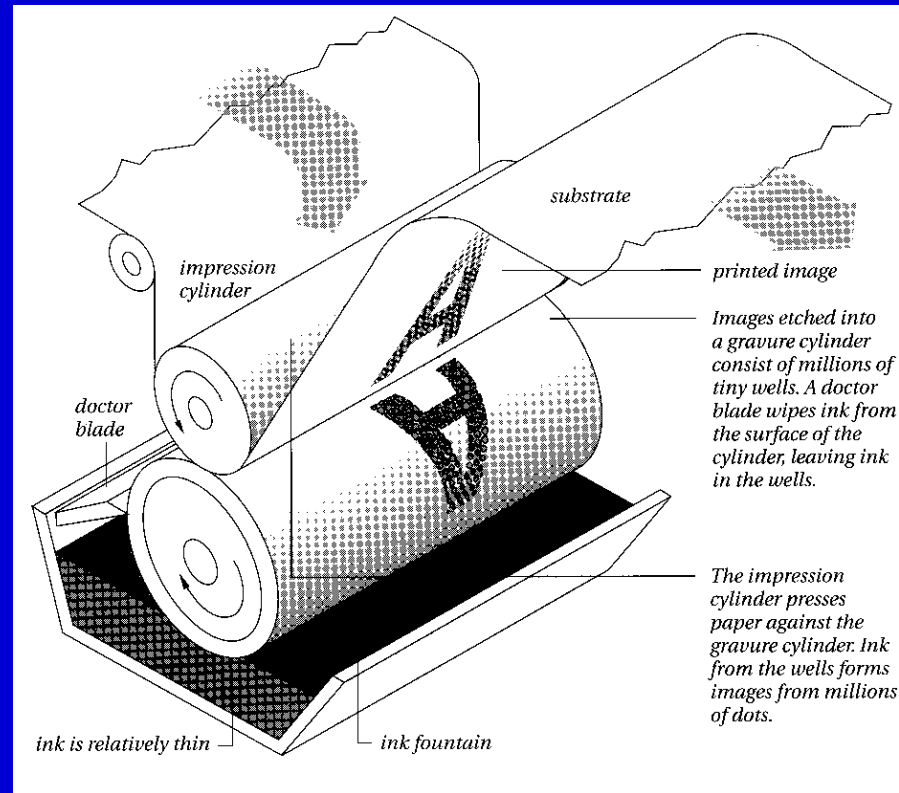
Engraving

- Plate
- Press
- Printed image
- Today's uses



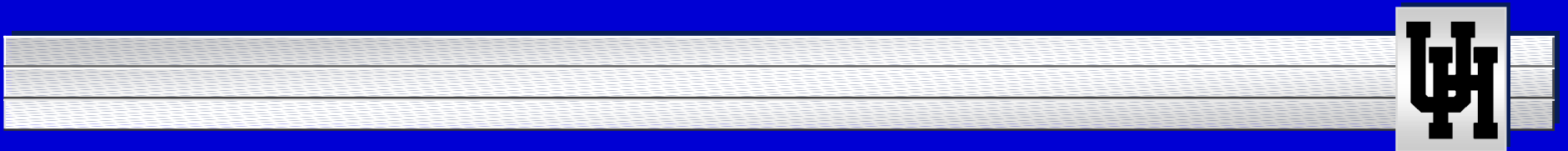
Gravure

- Plate
- Press
- Printed image
- Today's uses



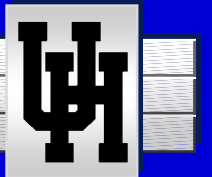
Holography

- Plate
- Press
- Printed image
- Today's uses



Planographic

- Lithography
- Conventional offset–lithography
- Waterless offset–lithography



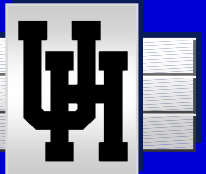
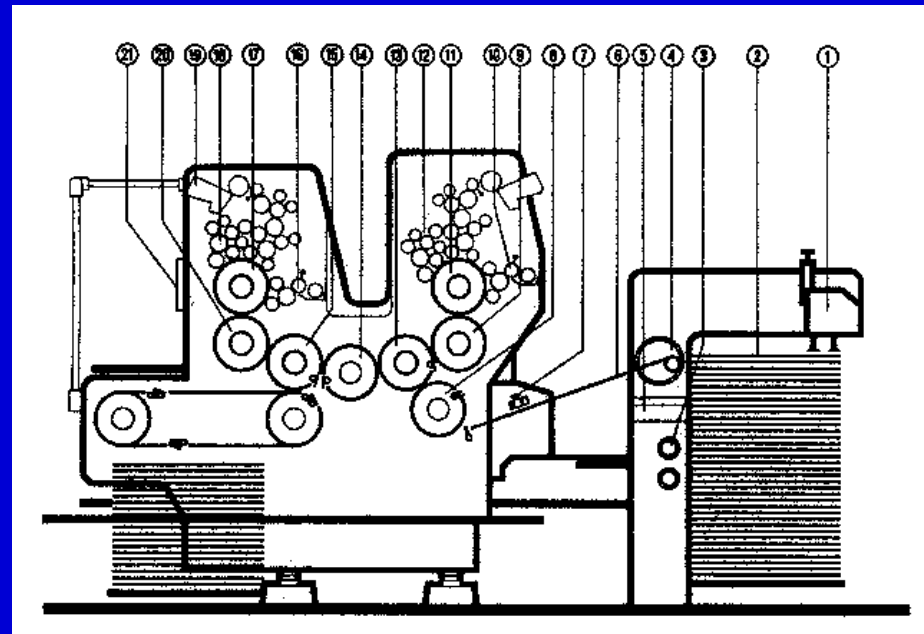
Lithography

- Plate
- Press
- Printed image
- Today's uses



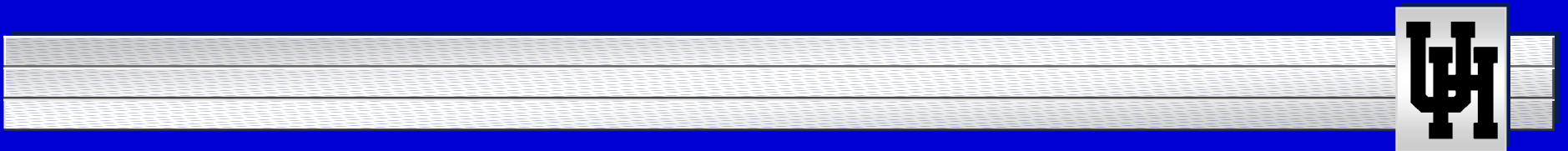
Conventional offset-lithography

- Plate
- Press
- Printed image
- Today's uses



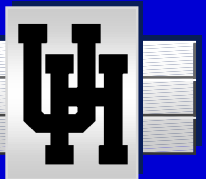
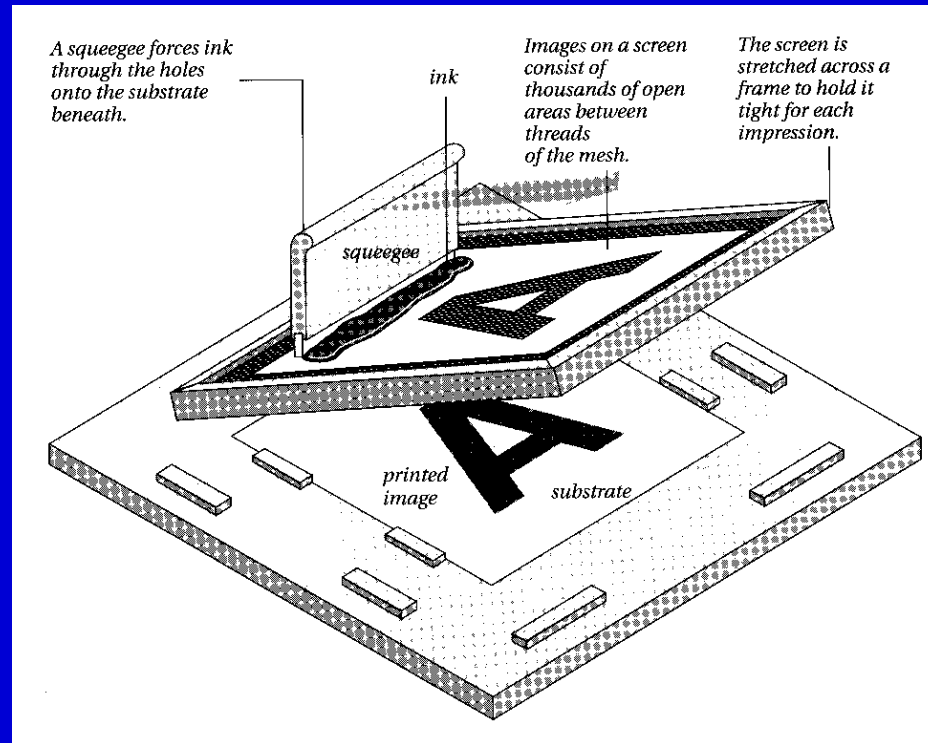
Waterless offset-lithography

- Plate
- Press
- Printed image
- Today's uses



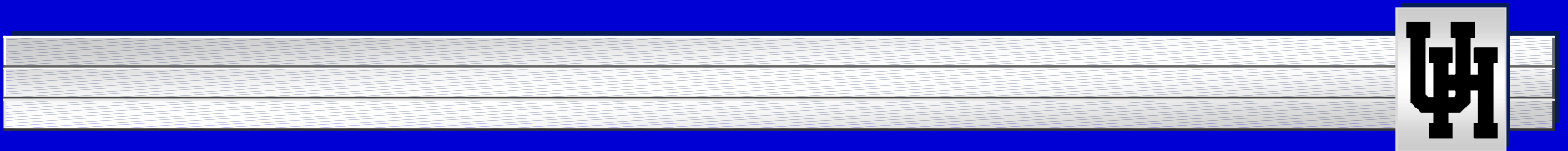
Screen printing

- Plate
- Press
- Printed image
- Today's uses



In-line

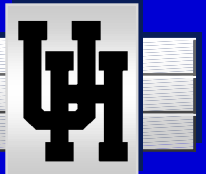
- Ink-jet
- Tampographic
- Screen process



Ink-jet

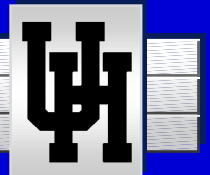
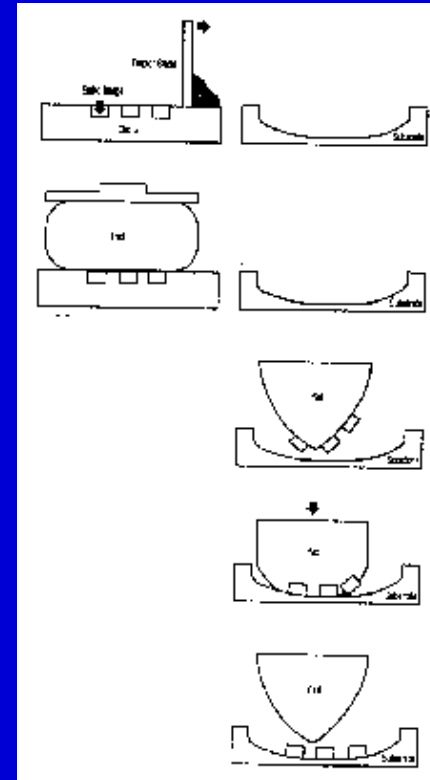
- Plate
- Press
- Printed image
- Today's uses

```
*****5-DIGIT 77204
F101-0519-007 CODE #50179
JERRY J WAITE
ASST PROFESSOR
UNIVERSITY OF HOUSTON
IND TECH DEPT
HOUSTON TX 77204
PKG:
/41983
/52812
293
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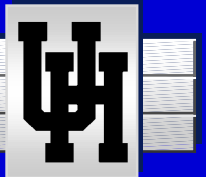
Tampographic

- Plate
- Press
- Printed image
- Today's uses



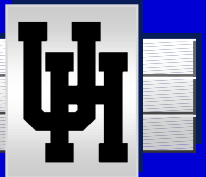
Electronic Revolution

- **Desktop Publishing resulted in the “democratization” of printing**
 - Not necessary for large capital investment
- **Webtop Publishing extended this democratization**
- **Results in somewhat messy situation**
 - poor graphic design
 - little quality control for content



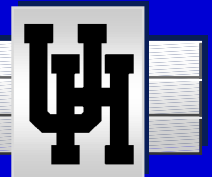
Printing & Publishing are Computer-Based Businesses

- **Printers/publishers have almost as much hard drive space as the IRS.**
- **Virtually all documents are now created electronically (prepress)**
 - text
 - illustrations
 - photographs
 - pages
- **Films/plates generated electronically**
- **Virtually all steps in the process are electronically controlled**



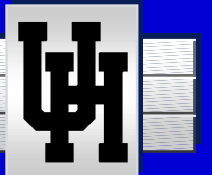
On Demand Printing

- Variable versus constant output
- Ink versus toner
- Decreases inventories
- Expensive equipment/process
 - Niches are hard to find



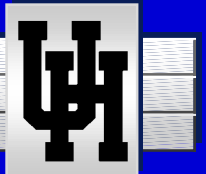
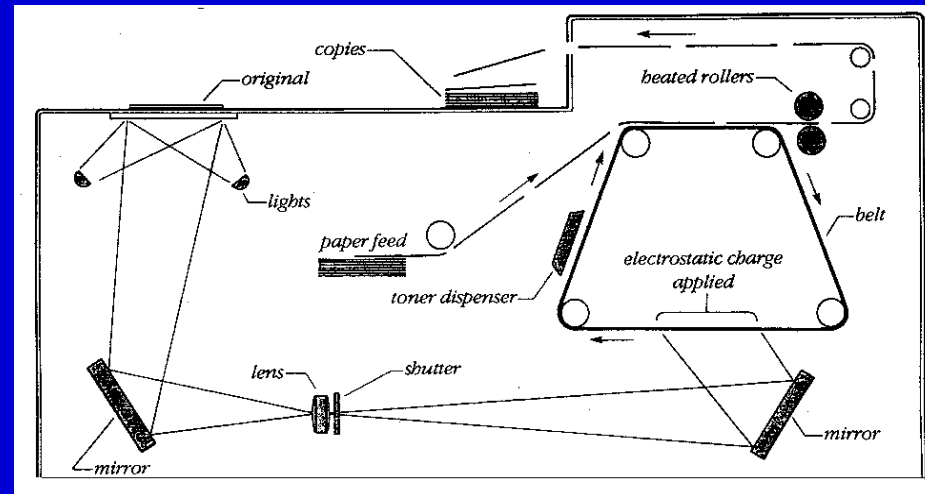
On-demand

- **Xerography**
 - Copiers
 - Laser-printers
- **Digital printing**
 - Docutech
 - Indigo
 - Xeikon
 - Agfa Chromapress

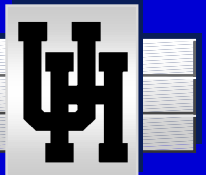
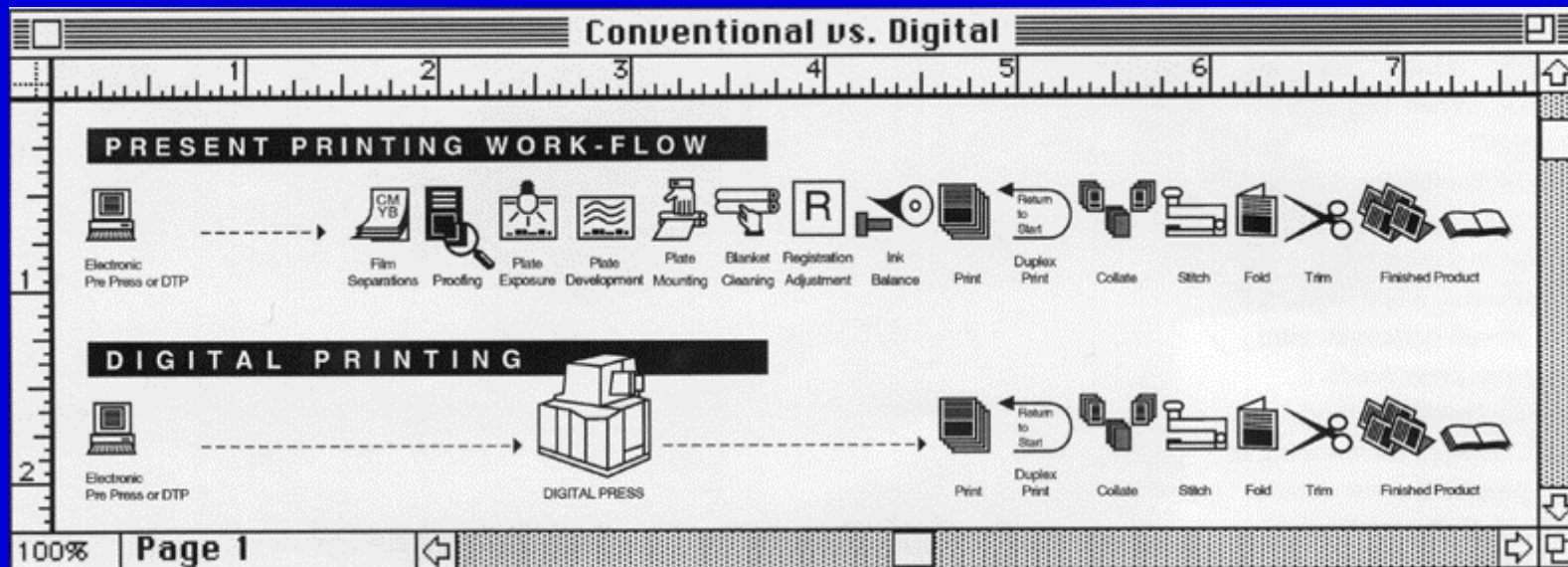


Xerography

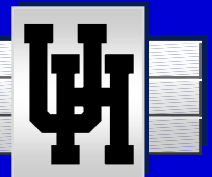
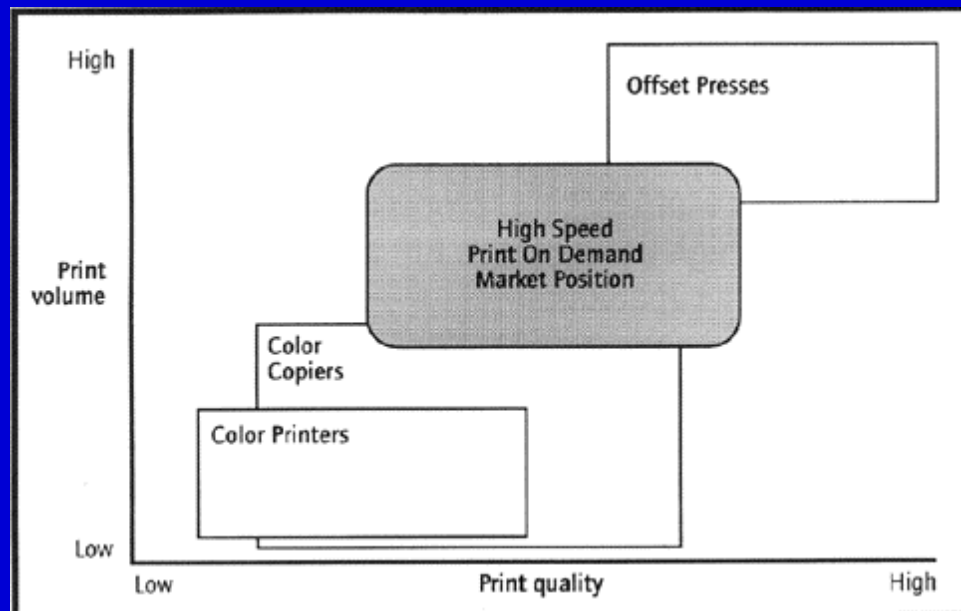
- Plate
- Press
- Printed image
- Today's uses



Digital Printing

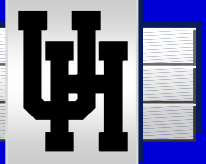
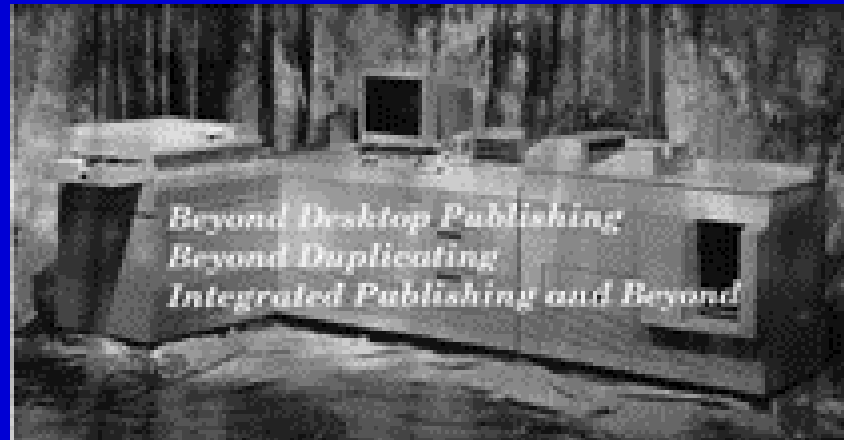


On-Demand Niche



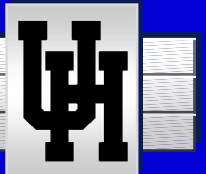
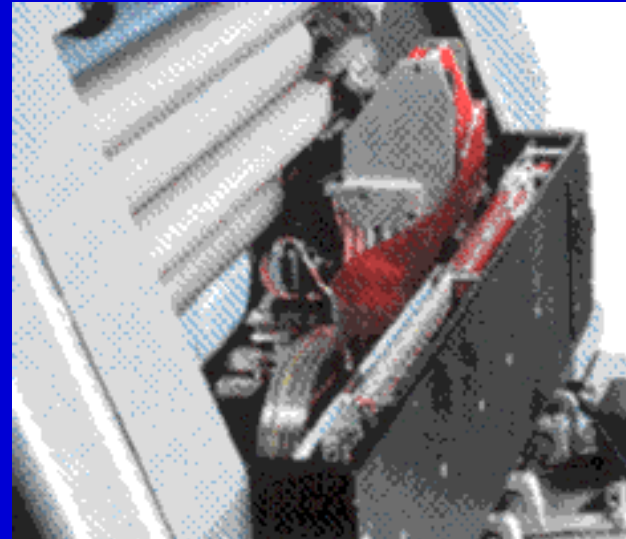
Docutech

- Plate
- Press
- Printed image
- Today's uses



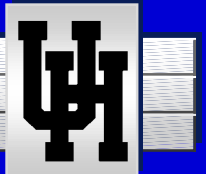
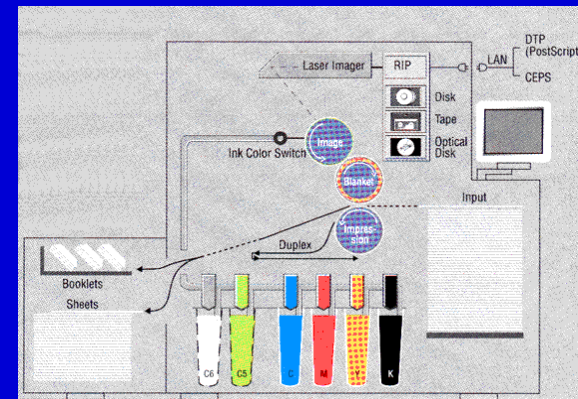
Heidelberg DI & Quickmaster

- **Plate**
 - Exposed on-press
- **Press**
 - Waterless lithographic press
- **Printed image**
- **Today's uses**



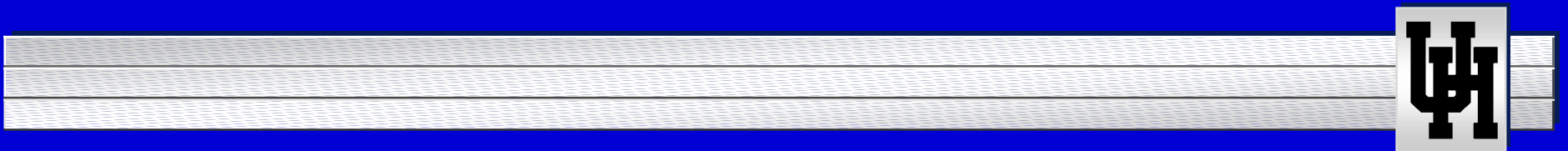
Indigo

- **Plate**
 - Image “formed” on special blank
- **Press –**
 - specially-coated paper
- **Printed image**
 - sprayed-on liquid ink
- **Today’s uses**



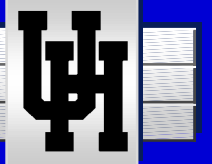
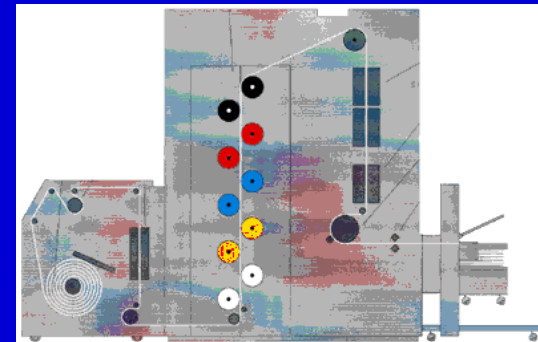
Xeikon

- Plate
- Press
- Printed image
- Today's uses



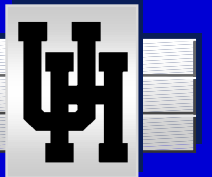
Agfa Chromapress

- **Plate**
 - Electrophotography using LEDs
- **Press**
 - Web-fed
- **Printed image**
 - Toner-based
- **Today's uses**



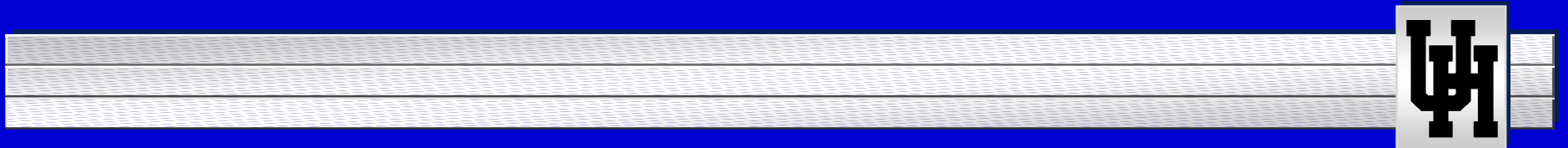
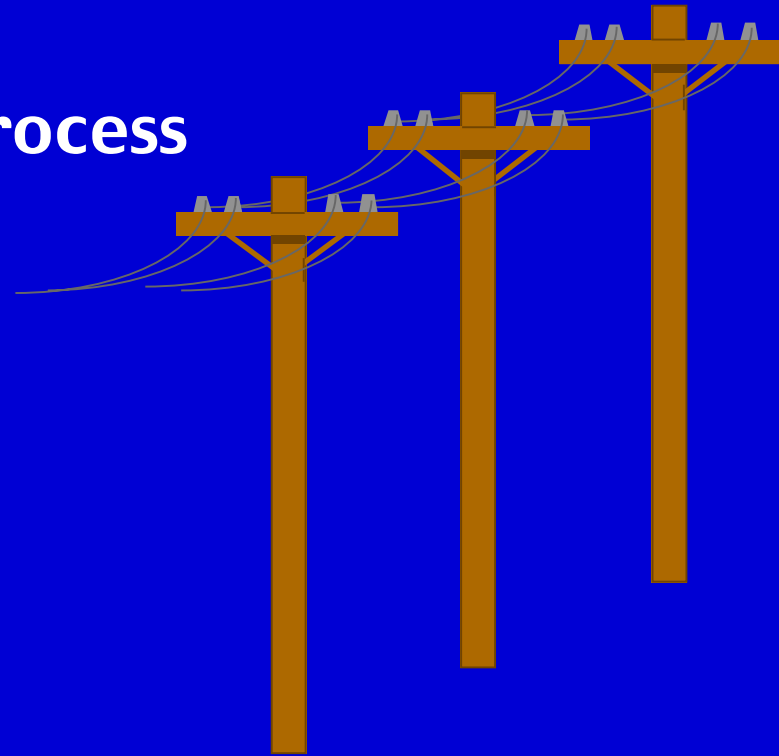
“Alternative substrate” processes

- **Internet and other “on-line” services
Multimedia**
- **Photo CDs**
- **Fax machine**
- **All have different “prepress” requirements
compared to traditional ink-on-paper**



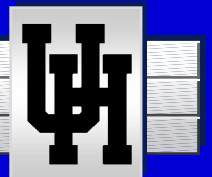
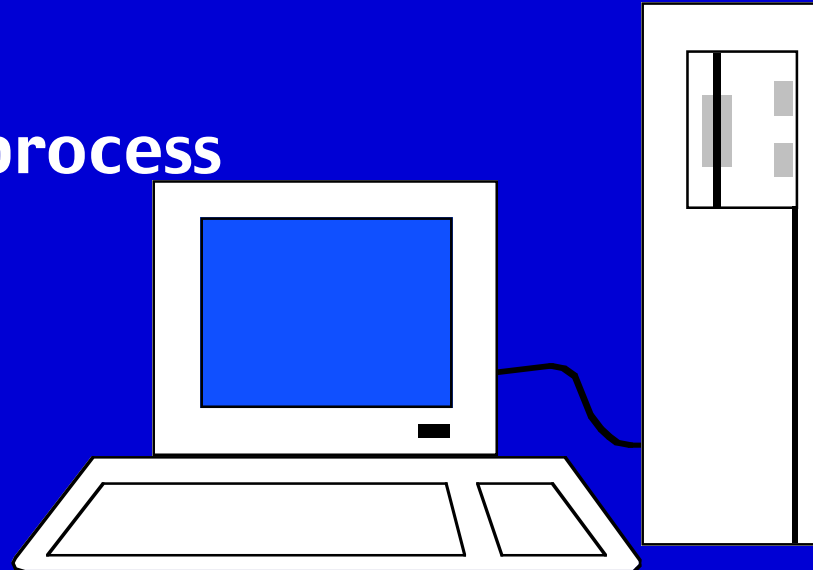
Internet and other “on-line” services

- What it is
- Why it's a printing process
- Some uses of it



Multimedia

- What it is
- Why it's a printing process
- Some uses of it



Repurposing Files

- **Converting existing documents to electronic media formats**
- **HTML loses formatting**
- **Print to File**
 - convert to JPEG, GIF, PNG with Photoshop
 - convert to Portable Document File (.pdf) with Adobe Acrobat Suite
 - » Acrobat Distiller
 - » Acrobat Exchange
 - Include features such as links, movies, etc.
 - » Acrobat Reader

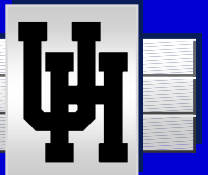
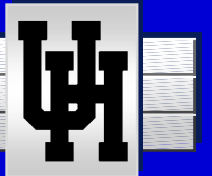
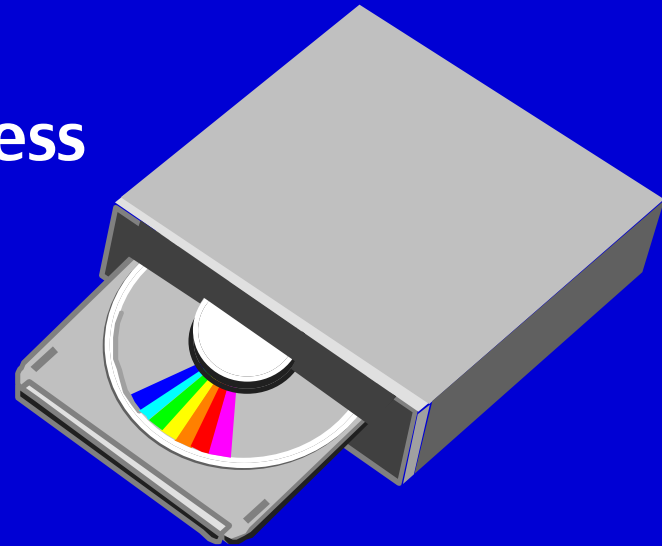


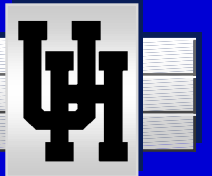
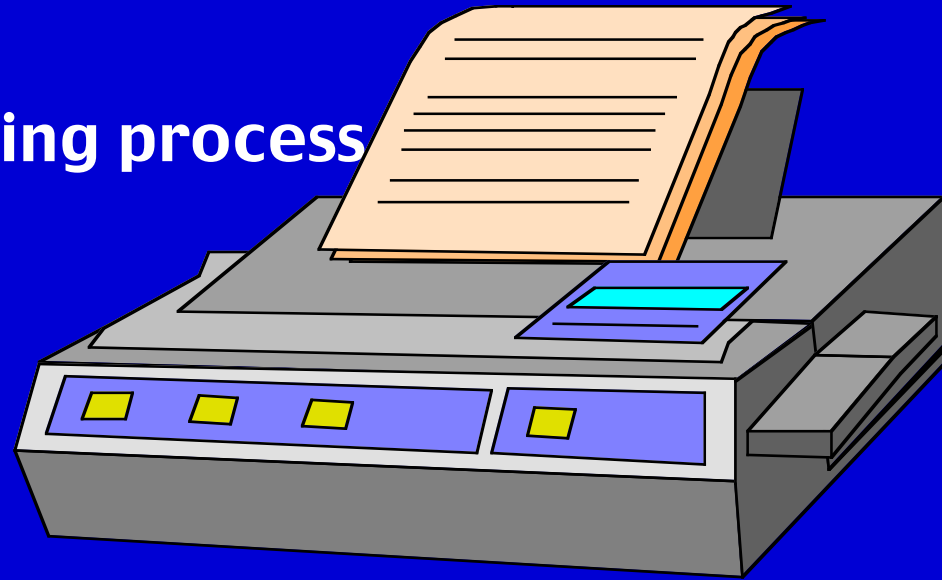
Photo CDs

- What it is
- Why it's a printing process
- Some uses of it



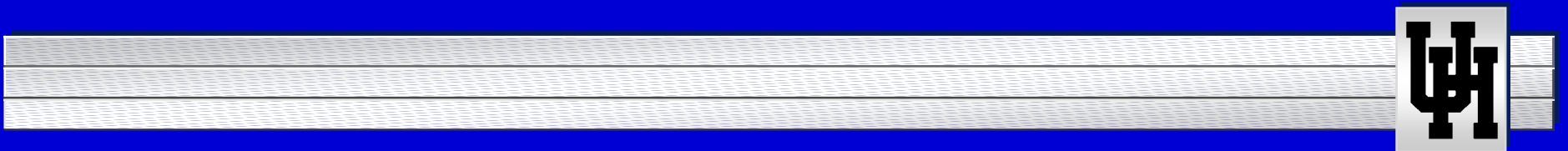
Fax Machine

- What it is
- Why it's a printing process
- Some uses of it



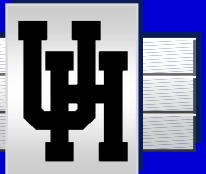
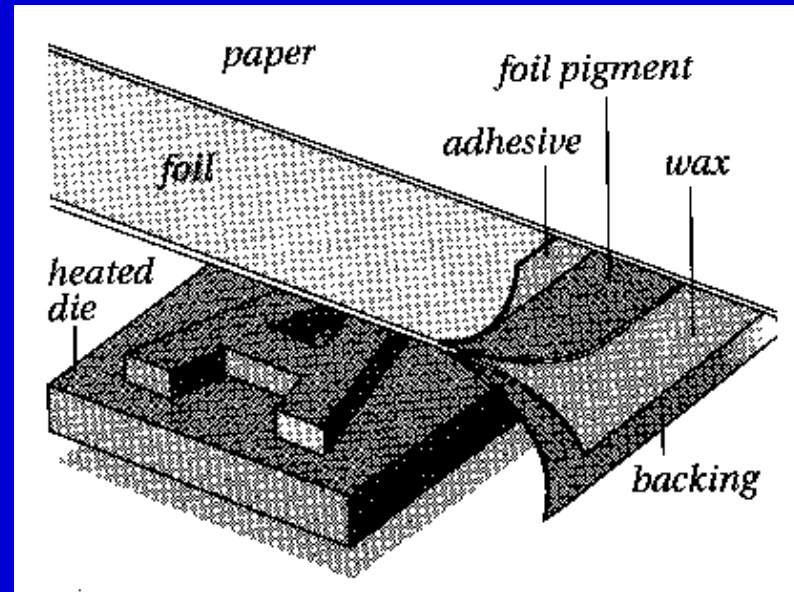
“Finishing Processes”

- Foil Stamping
- Embossing
- Debossing
- Diecutting



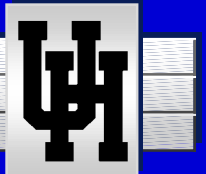
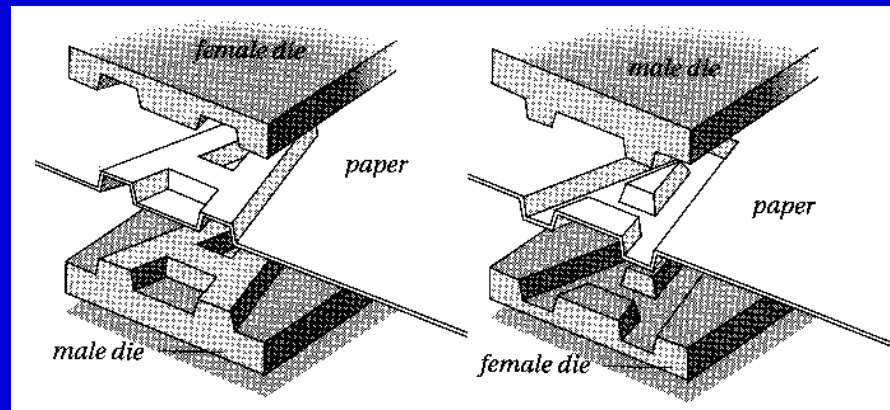
Foil Stamping

- Plate
- Press
- Printed image
- Today's uses



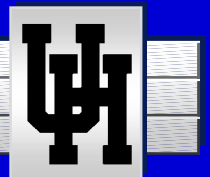
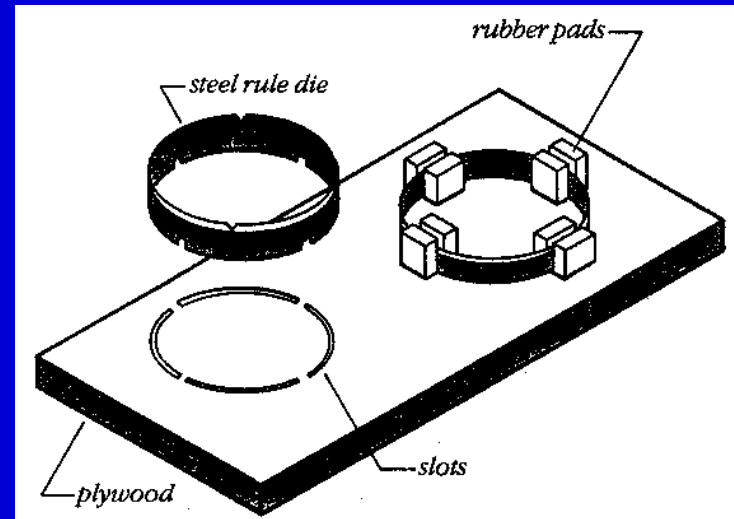
Embossing/Debossing

- Plate
- Press
- Printed image
- Today's uses



Diecutting

- Plate
- Press
- Printed image
- Today's uses



The End!

- Thanks for coming!

