

# Changing Trends in the Preparation of Print Media

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## INTRODUCTION

Traditionally, the main purpose of printing is to generate reproductions in quantity. Before printing existed, scribes reproduced manuscripts by hand. Frank Romano, in the foreword of *Pocket Guide to Digital Prepress*, tells the story of a monk who, shortly after Gutenberg's development of cast-metal movable type sparked the advent of printing, authored an essay titled "In Praise of Scribes." The essay advocated the continuation of copying manuscripts by hand because of the character-building values it instilled in the scribes. The ironic part of the story is that the monk decided to have his manuscript printed. The moral that Romano teaches us is that the monk "was caught in the paradox of transitioning technologies" (1996, p. iv) and that a similar situation is taking place as digital technology revolutionizes the printing industry. The objective of this section is to provide some historical perspective and background of printing technology, particularly in the area of preparing media for printing (prepress), and then identify current issues in the field as well as future trends that are developing.

## BACKGROUND

Movable type existed before the time of Gutenberg. However, the concept of mass-reproduction of graphic images was not fully realized until Gutenberg created metal type and adapted a wooden screw-type olive press to invent printing around 1450 A.D.

Typesetting remained the primary form of "prepress" work for about the next 500 years. The industrial revolution brought several technological advancements to the printing industry and, in the middle of the twentieth century, phototypesetting became the norm for generating type. Artwork was assembled into paste-ups to be "shot" on a camera, and many people were involved in the process of getting a job ready for press. Designers, photographers, copywriters, proofreaders, editors, typographers, paste-up artists, camera operators, color separators, strippers, and platemakers all were occupations supported by this process.

The "imagesetter," a device developed around 1980, represents a transitional technology that uses digital information and a laser to create an analog product—film. At the same time, page-layout software was developed that allowed the merging of text, line art, and digital photographic images into a layout. Output the page layout from a computer to an imagesetter, add the ability to electronically separate colors, and we have process-color films that are already positioned, thus eliminating the need for several workers.

More recently, platesetters and other "direct-to-plate" technologies have eliminated film from the process. Now, even offset lithographic presses are available with plate-making systems right on the press. A file can be sent from the computer directly to the press. The invention of the silicon chip, and associated digital technologies, has virtually eliminated the majority of the occupations listed earlier.

In fact, "desktop publishing" makes it possible for one person to be all of the above and the printer too. Many do-it-your-selves proceed to create printed matter, regardless of the fact that they have little or no experience with typography or formal layout and design principles. The result is typically less than pleasing to the graphics professional's eye.

Today, the majority of professionally printed jobs are created using computers. Often they include a mix of text, line art, and photographic images. All of these types of "copy" are typically created using different software applications that have evolved to become very powerful each in their own way. Once all of this various copy is generated, it can be merged using an electronic page layout application. This is the heart of professional digital prepress.

Digital technology, along with highly skilled personnel, has made it easy to do tasks that were once challenging. The rapidly increasing processing power of computers, coupled with ingenious software tools and useful peripheral devices, has enabled the printing industry to make improvements in speed and quality. But it has also increased the likelihood of mistakes and poor design. The technology continues to advance, but so do the problems that need to be solved.

## ISSUES, CONTROVERSIES, AND PROBLEMS

Because the technology is readily accessible to non-professional designers, a lot of unprofessional design work is being submitted to printing companies. While many of those who submit a job to a printer will claim that it is “ready to go,” unfortunately this is usually not the case. A preflight technician reviews data sent to a printer to make sure that all artwork, fonts, file formats, and so forth are included and will work with the systems at that printing firm. Other concerns that a preflight technician might delve into would include checking whether a job meets size limitations, whether trapping issues are resolved, imposition, and if finishing and bindery requirements are met.

Though most professional graphic designers have enough experience that they are familiar with the common issues related to preparing art and text for printing, sometimes they actually go beyond the limits of what can be achieved. While graphic designers and printers don’t always see things the same way, they do know that they need each other—and their ability to communicate will have to continually improve as digital prepress technology advances. Since the traditional occupations held by craftspeople such as typesetters, paste-up artists, color separators, and strippers are virtually obsolete, “designers are taking on more and more of the prepress process themselves” (Agfa, 1994, p. 1).

Most jobs, even jobs submitted by professional designers, rarely make it through a preflight check successfully the first time. Bob Atkinson, an electronic prepress consultant, claims that “only about 15% of clientele-supplied files are actually ready to output without problems. The other 85% have one or more problems—some are minor and hardly noticeable in the final piece; others have more serious problems that will jam an imagesetter or other output device or, worse, produce an unacceptable print job that the client won’t pay for” (2001, p. 1).

The most common mistakes in jobs that are submitted to printers are problems that relate to fonts. And, like fonts, any graphics files that are placed into a page layout file must be included with a job. Nested files can also create a lot of problems when trying to output a job to films or plates.

File formats are another puzzle needing to be figured out. In its educational brochure titled *An Introduction to Digital Color Prepress*, Agfa Corporation stated, “bitmapped images may be saved improperly and print poorly when placed into page-layout...applications.” The company continued: “to overcome these problems, a variety of graphics file formats have been devised which

link text, graphics, and separation capabilities among different programs and computer platforms” (1997, p. 24). Understanding which file formats are appropriate for the planned end-use is important. Photos scanned on desktop scanners have proven to be a problem area for printers. Not many can answer the question “at what resolution should I scan this picture?”—that is because it depends on a few different variables. If we plan to use the images in printed media, we need to know what resolution we are capturing with that digital camera.

The key to the resolution issue is understanding halftones and the line screens that are being used for printing halftone images. A halftone converts a regular photographic image (referred to as continuous tone) into dots of various sizes. When printed on white paper, this provides the illusion of tones (grays or various colors). The line screen specifies the number and frequency of these dots. Even if a client submits a file at the right resolution, they may set screen frequency, angle, and dot shapes incorrectly which will cause problems with halftone images.

Trapping is actually an old concept that is just handled differently with digital technology. The general idea is that we want two adjacent colors to overlap just slightly when printing so it does not leave a white space if it is printed slightly out of register.

Color management is perhaps the most vexing and perplexing problem facing design and printing professionals today. The issue of color begins with the original art or image that is captured and continues all the way through the process of creating the printed piece. Ingram, a professor of graphic communications, stated, “a color management system is a set of tools that permits consistent and predictable color reproduction. This includes all equipment in the production workflow having an impact on the color files as they move from one device to another” (2001, p. 26). The people involved in this process must have an understanding of color theory and how to make different devices generate color the same way. In many cases, designers and digital prepress departments do not use color management, and simply rely on experience and/or guesswork to approximate color matching.

One of the most significant, and yet simplest problems with jobs today are typographic errors that seem to slip by and get printed on the final product. Traditionally, jobs went through the hands of many people in the process of getting printed. Now, the chain of human workers that touch a job has become so short that many minor errors go unnoticed. Direct-to-press technology now makes it possible for jobs to go right from a designer’s computer to a press. While this is more efficient than in the past, it also enables us to make mistakes faster than before!

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