

# Digital Photoreproduction

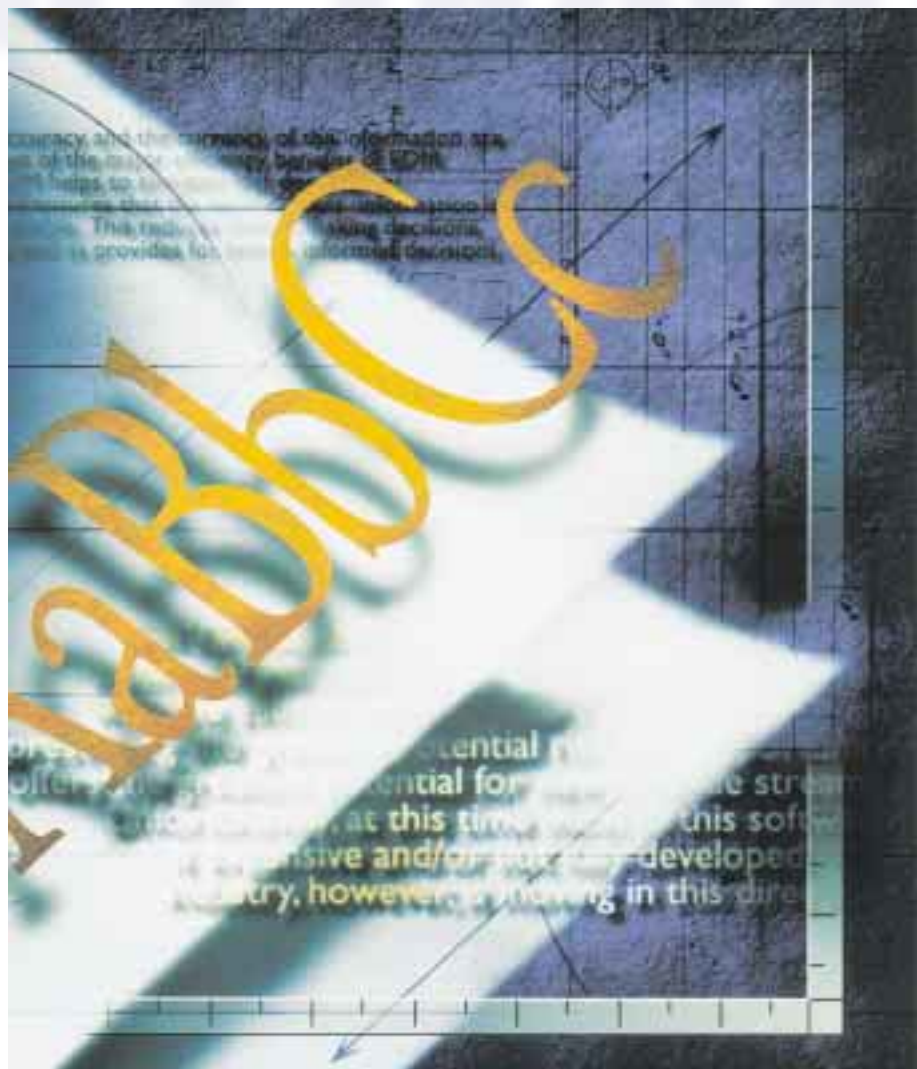
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**D**igital photoreproduction can be defined as the use of digital technology to scan images and save them to a storage medium such as a chip, tape, floppy disk, or compact disc. It differs significantly from the analog copying method, which reproduces images without saving them. Currently, there are more terms for the photoreproduction process than machines available to carry it out. A few terms for the overall process are print on demand (POD), on-demand printing, book at a time (BAT), one off, audience of one, and point-of-purchase book production.

No matter what you call the process, it promises to revolutionize the book publishing and distribution industries by indefinitely extending a book's life cycle in the marketplace while making it more widely available more quickly. With new equipment—most of which has been developed only in the past few years—not only can new books remain in print for eternity, rare and out-of-print books can now be brought back into print if at least one copy is available for scanning.

This new method of printing and distribution has helped thousands of persons (including myself) to privately publish and sell their own books quickly and inexpensively. Moreover, the commercial publishing industry is taking note and redefining the way it has produced books since Johannes Gutenberg invented the printing press in the mid-fifteenth century. Digital photoreproduction can be expected to have a great impact on technical communication as well. One of the advantages is that it will allow a writer to update material in a book more easily. For technical subjects, which normally need regular

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updates, digital photoreproduction is an excellent tool. It is particularly useful for instructors who need only a specified number of books at an affordable price.

### The Process

Point-of-purchase book production begins with getting a book into a POD machine's system. First, an author sends a soft copy of a book to a publisher via an e-mail attachment. If the file is extremely

large, it can be compressed (or "zipped") or put on a large-format storage medium standard with many computers, such as a 100-250MB zip disk or a 650MB compact disc. The file most likely will have been generated in Microsoft *Word*, or it may have been developed in a desktop publishing software package such as *Page-Maker* or *QuarkXpress*. Illustrations or photographs that are not electronic must be scanned and placed in the right loca-

# reproduction

tions in the electronic file of the book.

Once a book file is received, the publisher may perform some formatting work, then convert the file to a portable document format (PDF) file. This file is sent to a distributor, such as Ingram, which stores the text files for the text, and the graphic images for the covers, on hard drives. When Ingram receives an order for a book, the POD machine accesses the data files, merges the book contents and cover files (which are tracked by ISBNs to ensure that the covers match the content), and prints and binds the book, with black-and-white text and full-color covers.

Several models exist for POD. In one model, Lightning Source—a subsidiary of book manufacturer Sprout and the on-demand division of wholesaler Ingram Books—delivers the newly printed book to the wholesaler, Ingram in this case. Ingram then processes the order to the bookseller as a back-ordered title. In another model, the distributor prints the book and delivers it directly to a bookstore. In yet another model under development, books may actually be printed in the bookstore. An order for a book is placed through an online bookseller, such as Amazon.com, from a book manufacturing kiosk set up in the store. The machine may be located in a back room and operated exclusively by bookstore staff. If the machine is for customer use, the customer sits down at a console and checks the directory in a digital library to see if a title is available. If it is, the customer selects it and pays (usually full price) for the book with a credit card.

The machine sends a signal via satellite to a digital library where thousands of books are stored. The text is sent to a receiver, such as a satellite dish, at the store. Once the book is downloaded, the machine laser prints a two-sided copy from the electronic file on side-by-side digital photocopiers while also printing the cover on cover stock using a color printer. The machine collates the text pages, applies a line of glue, wraps the covers

around the stack of pages, and trims three sides. The completed book exits through a chute within anywhere from thirty seconds to five minutes, depending on the download time and dimensions of the book. The overall goal is for any individual or bookstore to have books within seventy-two hours of placing an order.

## The Players

A handful of visionaries have developed book manufacturing machines. The companies responsible for these innovations, and the machines they produce, are listed in the table below.

(For more complete information on price and availability, contact the companies.)

For my own book projects, the production steps have changed somewhat over time. When I produced my first book in November of 1995, I took a stack of hardcopy printouts to my printer, who photocopied the pages on an early model of a DocuTech digital scanning copier. Meanwhile, I used another printer to print the covers (which I designed on my home computer) on a traditional offset wet press. When both jobs were complete, I used a \$175 Unibind thermal binding machine to hand bind each copy on my dining room table.

Much better equipment is now available. I've changed printers several times,

and each printer has had newer equipment to serve my requirements. Today, the printer who produces the inside pages of my books takes my softcopy files in Microsoft *Word*, *WordPerfect*, or PDF and sends them directly to one of two Xerox DocuTech 135 Publisher digital copiers. At the same time, another printer uses my softcopy file to print covers on a six-color TurboStream Eprint 1000+ digital offset press made by Indigo. When both jobs are finished, I give the covers to the first printer, who perfect-binds and trims the books on a Horizon BQ140 book binding machine.

When it comes to choosing paper for my print jobs, I try to pick a stock that's always available. When I was printing my first book, I used Top Gun, and required that my printer use it as well. My rationale was that I could use my thermal binding machine to reheat the spine for replacing pages as I made revisions, and I could run to my nearest Office Depot to buy Top Gun. However, this was not standard stock with my printer, so I had to pay extra.

Currently, I let one printer use a standard 100-pound bond for the inside pages, while the other printer uses either eight-, ten-, or twelve-point coated one side (C1S) cover stock depending on the thickness and dimensions of the book. The inside of the cover is a matte finish and

**Table I. Book Manufacturing Machines**

Manufacturer	Machine	Price
On-Demand Machine Company	BookMachine	Approximately \$75,000 (leased for \$1,700/mo.)
	BookBuilder	Approximately \$65,000
Sprout, Inc.	Currently uses On-Demand Machine Company's BookMachine, but is developing its own model	N/A
InstaBook	InstaBook Maker	Approximately \$29,500 (leased for \$650/mo.)

the outside is glossy. Using a digital offset press for book covers is extremely cost-effective for small press runs. Instead of having to print anywhere from 250 to 1,000 covers as a minimum per press run (as required by my former printers, who were using traditional offset presses), I can print fewer than fifty covers without the economies of scale eating into my profits. Also, by using a digital photoreproduction process for my book insides, I rarely print more than twenty to fifty books at a time, which gives me the opportunity to revise as new information on the topics of my books becomes available—a necessity for books that address technological advances in numerous fields.

Books are not the only products that are easily produced on digital equipment. I used my local quick-print shop's digital photocopier to produce a whole literary journal—a sixty-page, saddle-stitched, 8.5 × 11-inch publication with a gray granite vellum cover. Such an undertaking would have been financially prohibitive with traditional typesetting and offset printing, but I used my Gateway 450 computer with Microsoft *Word* for Office 2000 and printed on my Hewlett-Packard 4050 LaserJet at home.

### Final Thoughts

At one time, digital photoreproduction was a rare and mystical process. The only machine I knew of in the whole city of New Orleans was at my place of employment, a medical research facility. But within a few years, everyone from local offset printers to my neighborhood Kinko's was using digital photocopiers by manufacturers such as Ricoh, Cannon, Sharp, Brother, and, of course, Xerox. And this boon to the printing and quick-print industries has also been a boon to independent publishers.

Professionals in the publishing, printing, and book distribution industries anticipate that, in addition to machines being located in book stores as in the model discussed earlier, book production kiosks will appear in the next few years in shopping malls and on storefront sidewalks. Readers will be able to download books via databases or satellites. The books will be printed and bound while the buyer waits. Moreover, industry experts anticipate that

within five years all books—existing and new—will be available in both downloadable formats and hard copy.

Digital printing and the consequent independent publishing explosion are getting a lot of press. With as many as 8,000 self-publishers entering the market annually, every medium from *CNN Financial News*, *The Wall Street Journal*, and *The New York Times* to Oprah's Book Club is aware of the phenomenon. There is no reason for any current title to ever go out of print, and works that have gone out of print can easily be revived as long as one hardcopy exists for an initial, one-time scanning to create a soft copy.

Digital printing not only has revolu-

tionized book production and distribution but has changed the publishing and distribution landscape—for both commercial and self-publishing endeavors. Authors should explore this affordable and accessible technology to leave their legacy in print, and printers should ensure that they can provide these cutting-edge services. **1**

*Gary Michael Smith is a writer, editor, and small press publisher based in New Orleans. He teaches a publishing course at the University of New Orleans, and his book, *Publishing for Small Press Runs*, details much of the information in this article. He can be contacted at [gsmith@comm.net](mailto:gsmith@comm.net).*

### Companies Offering Digital Print Production

The author and *Intercom* provide this list as a reference for anyone interested in gathering more information about digital print production. It is not intended as an exhaustive list nor as an endorsement of these companies.

Danka Office Imaging Company, Inc.  
St. Petersburg, FL 33716  
(800) OK-DANKA  
[www.danka.com](http://www.danka.com)

Indigo America  
400 Unicorn Park Drive  
Woburn, MA 01801  
(800) 272-6649  
(781) 937-8810 (fax)  
[event@indigousa.com](mailto:event@indigousa.com)  
[212.143.159.243/products/turbostream.shtml](http://212.143.159.243/products/turbostream.shtml)

Ingram Book Group  
(800) 937-8200  
[www.ingrambookgroup.com](http://www.ingrambookgroup.com)

InstaBook  
901 Waldo Road  
Gainesville, FL 32641  
(352) 371-1154 (fax)  
[sales@instabook-corporation.com](mailto:sales@instabook-corporation.com)  
[www.instabook-corporation.com/index.html](http://www.instabook-corporation.com/index.html)

Lightning Source, Inc.  
1246 Heil Quaker Blvd.  
La Vergne, TN 37086  
(615) 213-5815  
(615) 213-4426 (fax)  
[inquiry@lightningsource.com](mailto:inquiry@lightningsource.com)  
[www.lightningprint.com/intro.html](http://www.lightningprint.com/intro.html)

On Demand Machine Corporation  
787 Cross Creek Drive  
St. Louis, MO 63141  
(314) 878-3695  
[information@bookmachine.com](mailto:information@bookmachine.com)  
[www.bookmachine.com](http://www.bookmachine.com)

PrintTECH  
3311 W. Esplanade Avenue  
Metairie, LA 70002  
(504) 831-1941  
(504) 835-7313 (fax)  
[metairie@printtechnonline.com](mailto:metairie@printtechnonline.com)

Sprout  
430 Tenth Street NW #s-007  
Atlanta, GA 30318  
(404) 892-9600  
(404) 881-1383 (fax)

Garrison Digital Color, Inc.  
4921 Jefferson Highway  
New Orleans, LA 70121  
(504) 734-0916  
(504) 734-0928 (fax)  
[garrison@gdci.com](mailto:garrison@gdci.com)  
[www.gdci.com](http://www.gdci.com)

Unibind  
[www.unibind.com](http://www.unibind.com)

Xerox Headquarters  
800 Long Ridge Road  
PO Box 1600  
Stamford, CT 06904  
(203) 968-3000  
[www.xerox.com/go/xrx/products/PT.jsp](http://www.xerox.com/go/xrx/products/PT.jsp)