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# The State of the Art of Art Reproduction

*Confused about different methods of printing art reproductions? You're not alone. Here's a quick overview of traditional and digital printing methods and how they are used.*

BY EILEEN FRITSCH

THE DIGITAL-PRINTING REVOLUTION has forever changed the way art is reproduced. Combined with the growth of online galleries and social media, digital printing is transforming the way art is displayed, published, selected and purchased.

Print-on-demand art-reproduction gives you incredible control over how and when your art is published. But it has also given buyers many more opportunities to buy art at the price, size and format they prefer. The seismic changes sparked by digital printing have occurred so quickly that considerable confusion exists among artists, galleries and collectors.

The following article presents a brief overview of the most common methods of art reproduction, and why the term "giclée" is so often misunderstood. Note that some

**Digital printing is transforming the way art is displayed, published, selected and purchased.**

companies that specialize in art reproduction offer both traditional and digital methods. Additionally, many experienced printmakers can provide ideas on how to use new technologies to create new products or market your prints.

## Changes Brought by Digital Printing

Not long ago, it was mostly up to art publishers to determine when to print editions of selected artwork. Because publishers didn't want to be stuck with an inventory of unsellable prints, they focused on publishing works by artists who successfully sold originals.

Today, anyone with an inkjet printer can publish art prints. Prints can even be produced a few at a time, as the prints sell. This "print-on-demand" capability avoids the risk that stored art prints will

be damaged by humidity or other hazards, and enables you to sell open editions.

According to art-print expert Barney Davey, open editions enable you to earn more money over the long run, because you aren't artificially capping production and depriving customers from owning your most desirable work.

While many artists, galleries, publishers and buyers have benefitted greatly from digital printing, some artists and buyers have been disappointed by inferior print quality. Thus, it can be helpful to understand more about how art is reproduced and how to choose the right printmaker.

## Traditional Printing Methods

Until digital printing came along, the most common method of art reproduction was offset lithography. Although the serigraphy/silk-screening process was used for some reproduction work, serigraphy is typically used for original prints.



IMAGE COURTESY COLSON ART PRINTING

Colson Art Printing ([www.colsonprint.com](http://www.colsonprint.com)), in Valdosta, Georgia, has been producing lithographic art prints for 20 years. They also print posters, postcards, greeting cards, reference sheets, brochures, and catalogs, and provide fine-art packaging and shipping services. The experienced press operators use a well-maintained Heidelberg lithographic press to make limited and open edition art prints in sizes ranging from 2" x 2" to 25" x 39.5". Colson also makes giclée reproductions on an Epson Stylus Pro wide-format aqueous inkjet printer that is color-managed to proof press prints.

As the market for giclée reproductions has exploded, Wendy Colson has noticed a renewed interest in lithographs among buyers. Although giclées are awesome products, Colson says some buyers value the fact that lithographs have become less common.



**ABOVE RIGHT:** Fine Balance Imaging Studios on Whidbey Island, Washington not only helps artists reproduce their work, but also hosts and promotes “Gratitude: A Giclée Print Art Show” featuring their work. All of the proceeds from all sales go directly to the artists. (Photo by Joe Menth, Fine Balance Imaging Studios, [www.fbistudios.com](http://www.fbistudios.com))

**ABOVE LEFT:** Find a giclée printmaker who will fully explain the printing and proofing process to you and can recommend steps you can take to reach your marketing goals. For example, at Fine Balance Imaging Studios (above), Joe Menth and Nancy McFarland showcase new types of printing materials, coach artists about how to price their work, and advise them on how to use social media. They also offer tutoring on book-making and Adobe Photoshop and Lightroom. (Photo by Joe Menth, Fine Balance Imaging Studios, [www.fbistudios.com](http://www.fbistudios.com))

Both lithography and serigraphy require time and materials to set up a press run. To control costs, it makes sense to print an entire edition at the same time. Because each color is applied one at a time, the quality of the reproduction depends on how precisely the printmakers keep the paper in alignment on the press.

**Offset Lithography:** First, each image is photographically separated into four colors: cyan (C), magenta (M), yellow (Y) and black (K). Then, each color is exposed onto a smooth plate. From there, it is transferred to a flexible “blanket” from which the image is transferred to the papers. Lithographers that specialize in art reproduction use fade-resistant inks and acid-free printing papers. They also know how to print with colors beyond the traditional CMYK.

One company that has been producing lithographic art printing for 20 years is Colson Art Printing, in Valdosta, Georgia. They offer limited and open-edition prints, posters, postcards, greeting cards, reference sheets, brochures and catalogs, as well as fine-art packaging and shipping services. Colson uses Epson wide-format inkjet printers to create both color-accurate press proofs for their offset prints and giclée reproductions.

As the market for giclée reproductions has exploded, owner Wendy Colson has noticed a renewed interest in lithographs among buyers. Although giclées are awesome products, Colson says some buyers value the fact that lithographs have become less common.

**Serigraphy/Silkscreening:** In this stencil-like process, ink is squeezed through the openings of a fine-meshed fabric (“screen”) that is tightly stretched on an aluminum frame. Reproducing a multi-color image requires multiple screens, because each screen controls where a color of ink will pass through when the screen is mounted on a serigraphy machine.

The “chromist” in a serigraphy studio separates the colors in the art, and custom mixes each color. With this method, a single reproduction print might require as many as 100 different screens.

According to master printmaker Jon Cone of Cone Editions, a four-color (CMYK) silkscreening process exists, but was never used for art reproduction

## WHY IMAGE CAPTURE MATTERS

Although “digital printing” implies push-button automation, printing fine art reproductions is still very much a craft. It requires color-matching expertise, attention to detail, and an understanding of what the artist is trying to achieve.

Every experienced printmaker will tell you that the most important step in getting a great reproduction is capturing a great digital image of your original.

“The image capture process for fine-art print reproduction is a highly specialized field,” says Dan Saccardo of SuperiorGiclée in Chester, New Hampshire. “It is the single most important step in creating a reproduction faithful to the original process. Many who claim to be fine-art printers don’t fully understand the capture process as well as they should.”

Gary Kerr, of Fine Art Impressions in Davidson, North Carolina, believes that 90 percent of the quality of a giclée is derived from the capture process. And, he says, “The only way to truly match the color in your art is for the printmaker to handle both the capture and the proofing, with the original painting in the studio. Can you imagine bringing a digital photo of your wall to a paint store to match paint? That’s what artists are doing when they send

us a digital file from an original artwork and expect the color in the giclée to match.”

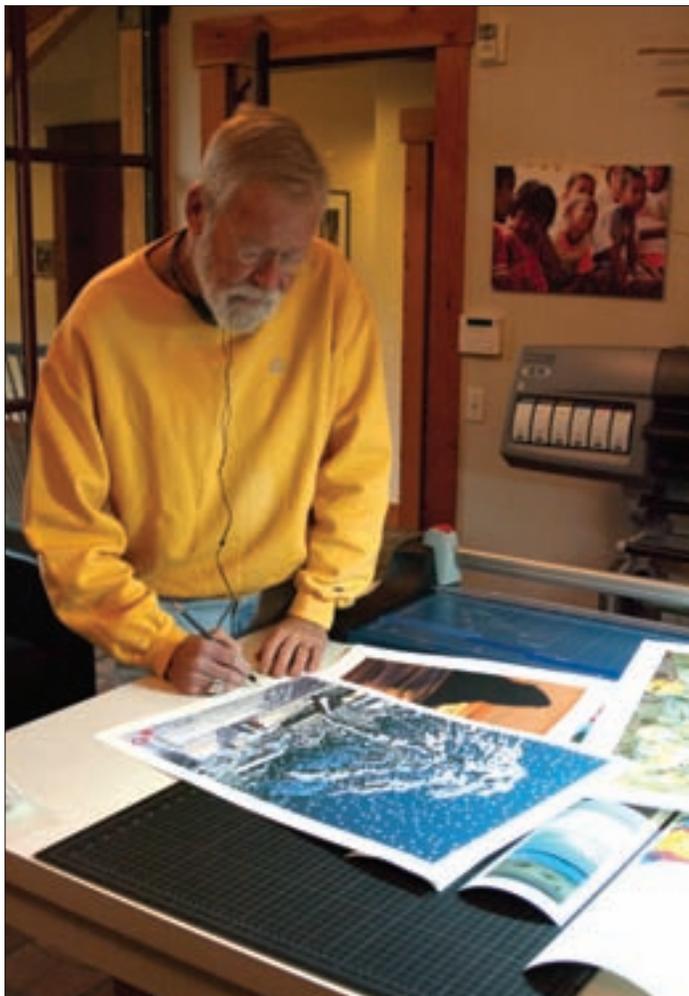
An experienced printmaker knows how to set up and control the lighting to capture nuances in the surface texture and detail.

“Some artists do their own their digital photography of smaller pieces of art, and if they use good technique, they can get acceptable results for small-scale prints,” says Joe Menth, of Fine Balance Imaging Studios. “However, larger artworks require a professional type of capture, whether on a large flatbed scanner, or with a large-format digital-scanning camera. The artist needs to understand that taking a digital picture of their art at home may result in the need for more adjustments to the image, if poor lighting was used for the photo.”

Additionally, before selling an original, you should invest in a “preservation capture.” This ensures that your art can be reproduced now and in the future at different sizes and on a range of print technologies. A preservation capture will also enable your art to look its best on the ultra-high-definition digital displays that Samsung and Planar are developing to further expand ways to sell and display art.

to the extent that lithography was. Today's inkjet printers offer wider color gamuts than four-color silkscreening. One advantage silkscreening offered was the ability to reproduce art on materials that offset lithography couldn't handle, such as canvas, fabrics, ceramics and rigid substrates. That capability, too, has been replicated by digital printing.

Marco Fine Arts ([www.mfatalon.com](http://www.mfatalon.com)) in Hawthorne, California, offers "serio-lithographs" that combine the fine detail of a lithograph with the more painterly look of serigraphy. After an edition has been printed by offset lithography, the chromist creates stencils for adding color and depth to the print.



## Digital Printing Methods

Unlike lithography or serigraphy, digital printing doesn't require plates or screens. The amount of prepress work depends on: (1) the quality of image capture; and (2) the color-management expertise of the printmaker.

Once a file is ready, prints can be made one at a time or by the hundreds. Digital printing made it possible to fulfill one-at-a-time orders from online art galleries.

**Inkjet (Giclée):** This is by far the most common digital printing technology for art reproduction. Inkjet printers can produce incredibly accurate, long-lasting reproductions on the same types of canvases and art papers you used for the original painting. Prints can be made in the exact same size, or smaller or larger than the original.

Inkjet printing is a non-impact printing method. The print-head that sprays the tiny droplets of ink never touches the print surface. All ink colors are applied at once, with the droplet sizes and dot patterns controlled by print-management software.

The first inkjet printer used for art prints (the IRIS 3047) was very slow and used water-soluble dye inks that weren't intended for long-lasting prints. Since then, ink chemists and printer manufacturers have developed an astounding variety of inkjet printers that can reproduce your artwork in almost any size and on any material that you (and art buyers) might want.

All pro-model inkjet printers for art reproduction use pigments (not dyes) as colorants. Pigment inks can produce wall art prints that will last 80 to 100 years and longer, depending on the type of print material used and how the print is protected.

In recent years, a new class of fast "industrial" inkjet printers has emerged. Some industrial inkjet printers produce larger quantities of prints on wider rolls of canvas, papers, and wallcovering materials. Other industrial inkjet printers enable art to be printed directly on wood, mirrors, acrylic, metals and other rigid surfaces.

Industrial inkjet printers are typically being used to reproduce art for the interior décor of hotels, restaurants, hospitals and offices. But if your art is sold through an online gallery, chances are it is output on an industrial inkjet printer.

Inkjet printers can be categorized by ink types:

**Aqueous Inks:** These odorless, water-based inks are safe for homes and offices. The newest professional-model aqueous inkjet printers from Epson, Canon, and HP eject eight to 12 colors of ultra-fine

Artist Byron Birdsall signs giclées output with pigment inks on archival papers on the Epson Stylus Pro aqueous inkjet printer at Fine Balance Imaging Studios. (Photo courtesy of Fine Balance Imaging Studios, [www.fbistudios.com](http://www.fbistudios.com))

## CONFUSION AROUND THE TERM GICLÉE

There is no universally accepted definition for the term *giclée*. As the market for digital prints has exploded, the term has become generically used to describe any high-quality, digitally produced fine-art print.

"The definition of giclée changes according to the needs of the folks who are using it," agrees Jack Duganne of Duganne Atelier ([www.duganne.com](http://www.duganne.com)) in Santa Monica, California. When he coined the term in 1989, IRIS dye-ink prepress printers were the only inkjet printers used for fine-art reproductions. Duganne coined the term giclée to distinguish an IRIS print made for art purposes from those made for press proofing.

"My original intent was that a print could be called a giclée if the person who created it (or contracted to have it printed) would be using it as a fine artwork — a print that would be signed by the artist," says Duganne. "I created giclée with the firm belief that it would be used for

many forms of digital output. I tell people that you can call it a giclée if you intend to sign it!" From Duganne's perspective, it didn't matter if the original was a painting, drawing, photograph or computer-generated art.

In his 2006 book, "Mastering Digital Printing: Second Edition," Harald Johnson includes a refined definition that was agreed upon by an ad hoc Digital Art Practices and Terminology Task Force: "giclée (zhee-clay) n. "1. a type of digital fine-art print. 2. Most often associated with reproductions; a giclée is a multiple print or exact copy of an original work of art that was created by conventional means (painting, drawing, etc.) and then reproduced digitally, typically via inkjet printing."

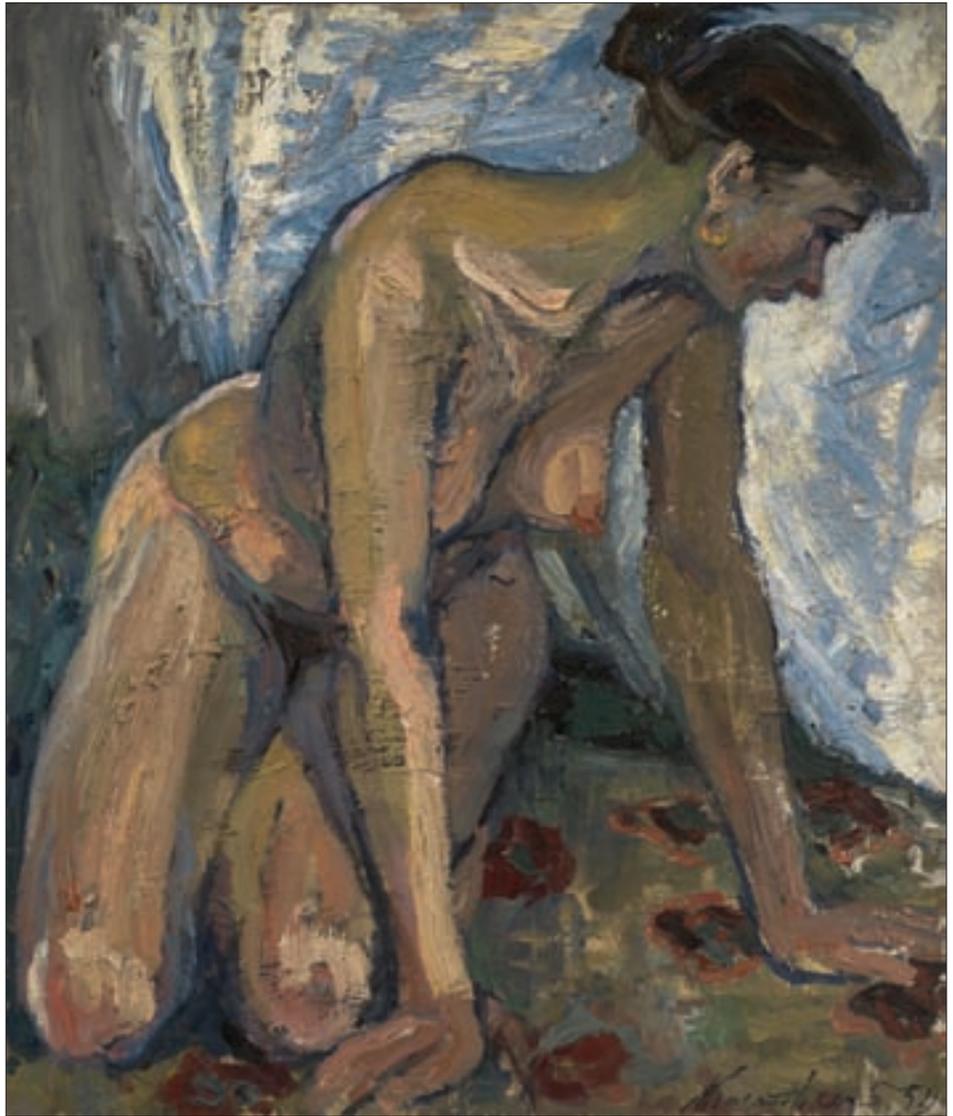
When people started selling "giclées" printed on color copiers or with fast-fading dye inks, fine-art printmakers (and printer manufacturers) tried to narrow the definition to include only art reproductions

droplets of pigmented inks onto materials with a coating that controls the dot sizes. Afterward, a protective coating must be applied to protect the print from being scratched or scuffed. Because aqueous-inkjet prints require pre-coated papers and a post-print coating, the cost per print is higher than other methods. The cost-per-print is also higher if you make only one or two prints at a time. But the reproduction quality of aqueous-inkjet prints is unsurpassed.

#### **Eco-Solvent/Low Solvent Inks:**

The pigments are carried by low-odor chemical solvents (instead of water), so the inks can adhere to uncoated substrates or materials with less costly coatings. More importantly, these prints don't require protective clearcoats. Art publishers started using eco-solvent printers, such as the 8-color Epson Stylus Pro GS6000, to make it more feasible to produce higher volumes of art prints.

**Latex Inks:** For commercial printing projects (including interior décor), HP developed pigmented, water-based inks that produce durable prints on the same types of lower-cost materials used by eco-solvent/low-solvent printers. These inks use an innovative polymer ("latex") technology to provide print durability. The water-based formulation avoids the need for special handling, hazardous-material labels and special workplace ventilation. When latex inks are used with certain materials, interior decorators can supply art that complies with standards established by the Greenguard Environmental Institute for improving indoor air quality and reducing people's exposure to hazardous chemicals.



Museum-quality giclées are extremely accurate inkjet reproductions that begin with an expert capture of the original art. When photographing your originals, experienced giclée printmakers know how to set up and control the lighting to capture nuances in the surface texture and detail. The level of detail in this giclée is the result of the asymmetrical lighting techniques used by Gary Kerr at Fine Art Impressions ([www.fineartgiclee.com](http://www.fineartgiclee.com)). Artwork: "Model" Oil/Canvas ©1952 A. Kostovsky

output on aqueous inkjet printers with pigment inks on archival materials. Since then, some printing companies that use inkjet printers with pigmented eco-solvent or UV-curable inks have started selling their prints as "giclées."

As the confusion continues, some providers of inkjet art-reproduction services no longer use the word. Other printmakers use the term "fine-art giclée" to indicate that they can create museum-grade giclées with high-resolution, aqueous inkjet printers and expertise in image-capture.

"Unfortunately, there are no 'giclée police' and therefore anything printed anywhere can be called a giclée," says Gary Kerr of Fine Art Impressions. "Giclée is akin to the term automobile. Who makes the automobile defines the quality and utility, as well as the value. So does

the printmaker of a giclée."

The lack of a standard definition for giclée has been problematic for galleries and museum curators, who rely on a consensus within the buying community and collectors to establish value for certain types of print.

Keep in mind that the word "giclée" is not the only term being re-defined by technology. Some dictionaries still define a photograph as "an image, especially a positive print, recorded by a camera and reproduced on a photosensitive surface." This old definition excludes the billions of digitally captured photos that are shared without being printed.

If you sell giclées, it's best to mention if your prints were made with pigment inks on archival materials. That will let buyers know that your giclée is a specific, longer-lasting type of digital print.



The same aqueous pigment-ink printers that produce giclées on canvas and art papers can also be used to reproduce art on fabrics and adhesive wall-mural materials. Here artist Deborah Koff-Chapin holds a silk banner of her work "Hearts Flowing." The silk was printed on an Epson Stylus Pro aqueous inkjet printer at Fine Balance Imaging Studios. (Photo by Joe Menth, Fine Balance Imaging Studios, [www.fbistudios.com](http://www.fbistudios.com))

New Era Portfolio, an Austin-TX-based company uses HP Scitex latex inkjet printers to produce print-on-demand art and custom wallcoverings for designers of healthcare, hospitality, corporate, residential and institutional/governmental facilities. New Era also works with art consultants, television and film production, wholesale showrooms, and fine art retailers around the globe. New Era has used HP Latex ink to print art onto fabric that was made into a dress, and onto a substrate that was adhered to headboards on the beds in a chain of hotels.

**UV-Curable Inks:** These inks harden when exposed to controlled amounts of bright light. UV-curable inks are used on flatbed inkjet printers that can print art directly on almost any surface — including flat sheets of thick, uncoated art papers,

canvas, wood, acrylic, metal, tabletops and doors. The inks are outdoor-durable, and no additional coating is required

A&I Studios in Los Angeles encourages artists to use their HP Scitex FB500 UV-curable inkjet printer to test new ideas for original works or art reproductions. Veronica Thomas of A&I Studios says, "For artist Victor Horcasistas, we printed all of his editions on a delicate handmade paper that he supplied. Another artist, Alexandra Pastorino, prints her editions on canvas on the HP Scitex, and then hand-paints embellishments as part of the process.

"One advantage of printing on the Scitex is that you can literally take the work as is, and hang it outside for years, and it will look as if it were just printed," says Thomas. "We had one artist who hung her show

unframed, fresh off the press, in a 16th-century Bastion on the Island of Corsica. This would not have been possible with other forms of technology."

**Digital Presses (Electrographic Printing):** Toner-based "digital presses" offer a print-on-demand option to offset lithography.

In the electrographic printing process, a positive electric charge is produced on a drum in the image area, and a negative (or neutral) charge exists in the non-image areas. As the drum rotates over toner particles that have a negative charge, the toner particles are attracted to the positive charge of the drum. The imaging drum then transfers the image to paper, which then passes through heated rolls and fuses the toner to the paper.

Digital presses from Canon, Xerox and others use dry toner; the HP Indigo presses use a liquid ink, in which the color particles are suspended in imaging oil.

Digital presses are used to produce art books, promotional materials, catalogs and smaller-size reproduction prints. Digital press prints are typically referred to as "digital prints," rather than "giclées." They sell for lower prices because the projected longevity for wall prints is not comparable.

One online gallery that sells art prints produced on an HP Indigo press is Edition One Hundred ([www.editiononehundred.com](http://www.editiononehundred.com)). To enable more people around the world to become art collectors, Edition One Hundred sells editions of 100 signed and numbered 12" x 18" prints, at \$100 per print. The prints are produced at A&I Studios in Los Angeles, where experienced press operators watch the color consistency of every print that comes off the press.

A&I Studios also uses their HP Indigo press to create smaller runs of promotional materials and books for artists.

A&I Studios ([www.aandi.com](http://www.aandi.com)) in Los Angeles uses an HP Indigo 5000 digital press to make print-on-demand art books, exhibition catalogs for gallery shows, and smaller runs of promotional materials for artists.

Although most art-clients love Mohawk's ProLine papers, "Our artists can bring in sheets of paper to run through the printer if they find that a paper conveys best for their work," says Veronica Thomas of A&I Studios.

A&I Studios also uses the HP Indigo 5000 digital press to make limited-edition prints for Exhibition One Hundred ([www.editiononehundred.com](http://www.editiononehundred.com)). To enable more people around the world to become art collectors, Edition One Hundred sells editions of 100 signed and numbered 12" x 18" prints, at \$100 per print. The experienced press operators at A&I Studios watch the color consistency of every print that comes off the press.



New Era Portfolio, an Austin-TX-based company uses a superwide, industrial-grade HP Scitex LX800 inkjet printer with Latex inks to produce art and custom wallcoverings for designers of healthcare, hospitality, corporate, residential, institutional/governmental facilities. New Era has used HP Latex ink to print art onto fabric that was made into a dress, and onto a substrate that was adhered to headboards on the beds in a chain of hotels.

New Era Portfolio also uses two HP Scitex UV-curable flatbed inkjet printers and can produce limited-edition art on acrylic, mirrors, and aluminum. "We can print art on anything," says New Era's CEO Joe Garcia. (Photo: New Era Portfolio, [www.neweraportfolio.com](http://www.neweraportfolio.com))



Although most art-clients love the ProLine papers from Mohawk, "Our artists have the option to bring in sheets of paper to run through the printer if they find that a paper conveys best for their work," says Veronica Thomas of A&I Studios.

### Choosing a Printmaker

If you're overwhelmed by the ongoing changes in printing and marketing, you're not alone. Don't be afraid to ask questions before hiring someone to reproduce your work. Don't use price as your sole criteria.

"Artists will be judged by the quality of their art prints," says Kerr. "They should not let a poor quality print into the market any more than they should sign a painting they didn't paint." If you aren't satisfied with your prints, you will be unenthusiastic about showing and selling them.

John Lorusso, who has been making fine-art giclées at Parrot Digigraphic Ltd. for more than 10 years, agrees: "The quality of the edition print is a key factor that determines the reputation of the artist."

Because technologies are dramatically changing the relationship between artists, galleries and buyers, it can be wise to hire an experienced printmaker who understands the complexities of today's art market.

An experienced fine-art printmaker will first listen to why you want to make prints, then ask how you intend to sell your work. A good printmaker can then suggest other things you can do to help reach your sales goals. For example, an experienced printmaker can help you determine pricing consistent with your targeted market.

Wendy Colson of Colson Art Printing says one of the best parts of his job is advis-

ing artists of the many creative ways they can use printing for sellable prints, promotional materials, and new products. He loves getting calls from artists who report that an edition has sold out.

Each year, Joe Menth and Nancy McFarland of Fine Balance Imaging in Langley, Washington, host and promote "Gratitude: A Giclée Print Art Show" featuring the work of their clients. All proceeds go directly to the artists. Joe and Nancy also coach artists about how to price their work, introduce them to new types of printing materials, and advise them about social-media marketing.

Choosing a printmaker simply on cost-per-print can be shortsighted in the long run, because the cost will be irrelevant if you are unable to sell your work. As Colson points out, "If the art reproduction isn't great, it doesn't matter what the price is."

Joe Garcia of New Era Portfolio has seen a lot of changes in the art market since he began reproducing art on IRIS printers in 2000. He believes print-on-demand technologies and online galleries have opened up tremendous opportunities for artists and publishers: "I think the market for art is going to continue to expand, but it will be different." **PA**

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*As editor of The Big Picture magazine from 1996 to 2003, freelance writer Eileen Fritsch covered the early adoption of digital-printing for art reproduction. Her "Creatives at Work" blog tracks technology that might affect career options for artists, designers, photographers and writers.*

### THE DIGITAL PRINT PRESERVATION PORTAL

As digital printing technologies have become more pervasive, curators of museums, libraries, and archives need to know how to preserve and care for the growing number of digital prints being added to their collections. To teach archivists and curators about the different print technologies currently used to produce all types of documents and photographs, the Image Permanence Institute at The Rochester Institute of Technology established the Digital Print Preservation portal. The wealth of in-depth research published on this site shows why you can't make blanket generalizations about the relative durability of different types technologies for indoor-use prints.

"Each technology has its own susceptibilities to different stressors such as heat, humidity, light, pollutants, abrasion, and scratches," explains research associate Nino Gordeladze.

For example, aqueous pigment-ink prints might be less sensitive to light, but can abrade more easily than other prints.

The Digital Print Preservation portal contains in-depth research reports and consumer-oriented publications that can help you advise buyers about how to properly care for the type of prints you sell.

Visit <http://dp3project.org>.