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Digital Dilemma

June Andersen

ABSTRACT

Digital technology now facilitates not only the artist and printmaker but also the home office to produce images on paper. Such diversity produces a broad range in the quality and stability of papers and inks in the marketplace and their permanence is therefore suspect.

Traditional conservation mounting techniques are proving problematic with some papers. Mounting down these works to a substrate is commonplace in the framing industry. The desire to present works completely flat is particularly prevalent for the much larger works, which are now achievable with digital printing.

It is planned to discuss conservation issues with regard to the adhesives, substrates and framing materials being used and what impact these will have on the integrity and longevity of this new medium.

INTRODUCTION

I believe my responsibility as a framer is to have an understanding of the artwork that I frame. With the increase of digital prints arriving in my workshop, I decided to do some research into digital printing technology.

Digital printmaking is a relatively new medium and is constantly going through refinement and improvement as the technology is expanded. As with any work on paper, there can be inherent problems with the inks and paper being used as well as the printing process. These things have to be considered when deciding on mounting methods and materials.

Here is a brief description of how a digital print comes into being.

IMAGE CAPTURE: First step is taking the picture. This involves using a digital camera, or scanner to electronically record

images on a device, which captures light, reflected from the original scene and stores it as red, green and blue pixels.

IMAGE PROCESSING: Then, by using computer software to manipulate the information that was created in the capture process, the original picture can be enhanced or improved. This is where brightness, contrast, colour, sharpness and cropping takes place.

IMAGE OUTPUT: Finally, the output phase, which involves converting the information in the picture files back into a form that can be recognised as the picture originally taken. This is usually done using any number of digital printing devices such as an inkjet printer.

There are a number of printers on the market. The one I'm going to concentrate on here is the inkjet. This is by far the most commonly used as their ability to produce colour makes them popular with home users and professional printers.

INKJET (NON-IMPACT PRINT):

DESCRIPTION OF PROCESS: Inkjet printers generate drops by shooting a steady jet of pressurised liquid (water-based dyes) through a nozzle towards the substrate. The droplets are charged electrostatically as they exit the nozzle. Deflection plates that react to digital signals passed on from the image interpreting software can then determine their path. The drops that are to form the image are deflected in mid-flight and directed towards the substrate to form an ink dot. The drops that are not part of the image are intercepted and recycled. High resolution images are produced. Dot size depends on printer and print resolution.

PAPERS

Depending on the intended use, inkjet papers will have different weights, layer structures, coatings, print surface textures and brightness.

Paper, ink, even method of printing, all have an effect on longevity, and tests have been devised to estimate longevity of inkjet (inkjet prints haven't been around for

long enough to be time tested). However, it is clear from the test results, that you cannot consider paper and ink in isolation, as the choice of paper affects the life of the ink.

While there are many different types of paper, most fall into two main groups:

Non-porous (Art Paper): The non-porous papers are usually acid-free and sometimes 100% cotton rag (rather than wood pulp). As most of you would know, just as for ordinary art papers, acid free papers are less likely to attack the image printed on them, aiding longevity, and the cotton rag papers are less likely to yellow with age, as they do not contain the lignin that is present in wood pulp papers. They generally have a matt finish and are often textured. Non-porous coatings are also composed of ozone-resistant polymer materials, which cause ink to take longer to dry.

Porous (Gloss, satin or pearl finish papers): With microporous coatings, on the other hand, ink dries almost instantly because it is absorbed into the surface and held there. These papers generally have a more complex construction than the art papers, with barrier layers and microporous surfaces to trap the ink and draw it rapidly into the coating. The ink is protected from the paper base by an impervious plastic layer and so the type of paper used in the base is less important. They do not, however, have the same appearance as an art paper and look more akin to colour photographs. The downside is that it never completely seals and the paper is so absorbent that it's more susceptible to fading from harmful light and ozone.

INKS

Inks come in two main groups, pigment based and dye based. As a general rule, pigment inks have better longevity than dye, but dye inks have a wider colour range. Each of these factors is affected by the paper as well, especially longevity.

Pigment inks are best used with art papers and, with the right combination, have been

tested to an estimated 100 year lifespan by independent test organisations. They do not work well with the glossy papers, however, and have a tendency to remain on the surface, giving an unpleasant surface texture and may run off.

Dye inks, on the other hand, work better with the glossy papers and are likely to have a better lifespan when used with these papers, as they are absorbed into the paper underneath the protective coat. Their relatively poorer performance on art papers is recognised by the paper manufacturers; Epson for example, recommending its 'archival matte' paper only for its pigment ink printers.

Characteristics of pigment and dye inks:

| Characteristic | Pigment Ink | Dye Ink |
|-------------------|---------------------|---------------------------|
| Light Fastness | Superior | Inferior |
| Colour Gamut | Narrow | Wide |
| Water Fastness | Superior | Inferior |
| Colour Impression | Relatively Dull | Relatively Bright / Vivid |
| Overall fastness | Relatively superior | Relatively Inferior |

Source: www.PCTechGuide.com

GICLÉE (FINE ART PRINTS)

Art paper prints are mostly marketed as Giclée prints. The name is derived from the French verb "to spray". This term is commonly used to describe prints made by an inkjet printer, limited to the use of art papers and archival inks.

These prints are having a big impact on the signed and numbered limited edition print market.

CONSIDERATIONS FOR MOUNTING AND FRAMING OF DIGITAL PRINTS

We know that inkjet printing is a non-impact method, which means that the ink used to create the image has not been transferred under pressure from a printing plate, screen, stone or block. The ink is dropped onto the surface of the paper, which could result in the printed image being more susceptible to abrasion and

scratching. Therefore, particularly when handling and storing an art paper print it is important to remember this is non-porous paper and the ink surface can be easily damaged.

It is also evident that to keep colours from fading, especially dye based inks; protection from U.V. light is essential. U.V. blocking acrylic or glass is strongly recommended. The use of UV blocking glazing will also slow down the deterioration of papers, which contain lignin.

Hinging

Hinging is a time tested method of attaching works on paper. It is best to keep the paste as dry as possible when hinging digital prints with Japanese paper and wheat starch paste. This will help to avoid unnecessary cockling where the hinge is attached.

T-hinges are by far the best method because as they allow for expansion and contraction of the paper without restriction.



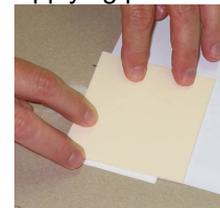
Tearing the paper



Applying paste



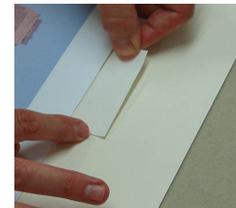
Dry-brushing on



Blotter and card



Drying under weight

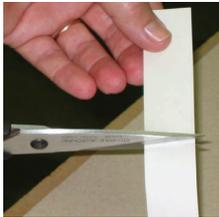


Cross Bar

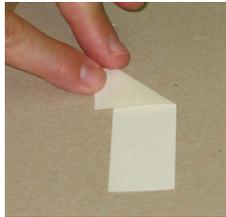
Corners

Corners are the preferred method of mounting prints, since attaching a pasted hinge could prove problematic on some papers.

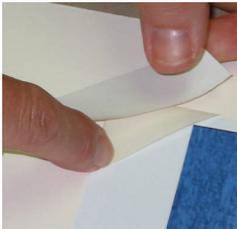
When fitting corners it is crucial to allow for paper expansion. Extra support to the paper can be achieved by fitting gutter supports. These can be fitted to all sides if necessary.



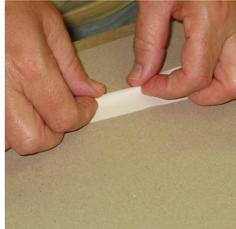
Cutting paper strip



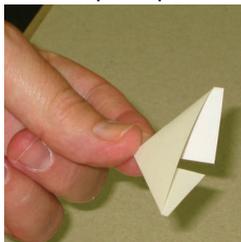
Folding a corner



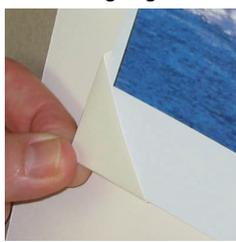
Paper tape



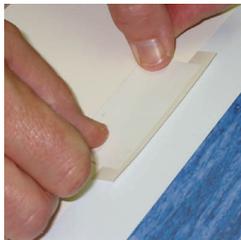
Folding a gutter



Corner



Fitting



Paper tape



Finished

Mounting Down

It is common practice in the commercial framing industry to mount down digital prints. This practise is market driven by the demand from both artists and the owners to display the works completely flat.

Pressure sensitive mounting films, which consist of an acrylic based adhesive on a polyester carrier, that can be applied to a variety of substrates are replacing the use of conventional dry-mounting techniques such as heat tissues used in conjunction with a hot press.

Some of the substrates being used range from aluminum, stainless steel, acrylic sheet and GatorFoam® to craftwood and acidic mountboards.

CONCLUSION

We can see, that digital printing will facilitate an increase in the number and size of printed works on paper. With market demands for flat, sleek, minimalist and modern looks, the likelihood of these being mounted down to a substrate is high.

Can conservation professionals address this ongoing practise in the framing industry? Can a method using a stable adhesive and inert substrate become a recommendation approved by the conservation profession? Such recommendations could replace the continuing use of damaging and destructive mounting materials.

Can we collaborate and assist those trying hard to meet the demands of the marketplace whilst striving to produce adhesives and substrates that have the least amount of risk and impact on the prints longevity? Digital dilemma – when new technologies bring new challenges

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AUTHOR BIOGRAPHY

June is a Guild Commended Framer (GCF). This qualification is awarded by the Fine Art Trade Guild in the United Kingdom. She has almost 30 years experience in the framing industry. June gained a solid understanding of conservation practices whilst working at the Victoria and Albert Museum in London. Her position there involved the mounting of artwork for exhibition and archival storage. June owns and operates Andersen Shaw and Associates Conservation Framing in Leichhardt Sydney.

June Andersen

Andersen Shaw & Associates
Suite 1, Lower Ground, 220 A Norton Street
Leichhardt NSW 2040
T: (02) 9564 5576 F: (02) 9564 5578
asaframers@bigpond.com.au