TEXTILE + DESIGN LAB

Case study number: 01/2011

Project Title: Digitally printed artwork

TDL Partner: Elemaria Cabral

Contact: Elemaria Cabral

Project Period: August 2010 - January 2011

Partner Profile: Elemaria Cabral is a Brazilian/Kiwi visual artist living in New Zealand who works from her Auckland based studio. Her designs combine Brazilian and New Zealand cultural influences and draw on a wide range of inspirations from sustainable production to the aesthetics of people sitting at cafe tables. She works with oils and acrylics, paper and fabric, and with multiple techniques and methods. Her art is expressed in vibrant powerful colours, spontaneous brush strokes and with exacting attention to detail. She creates a wide range of items from hand painted tablecloths to tapestries, many of which have been exhibited both locally and internationally. She is interested in technologies and techniques to extend the nature of her work.

Project background: Elemaria has extensive experience using textiles and fabrics in the production of her work. Having been aware of the potential of digital printing for some time, she became interested in the overlap between hand painted and digitally produced images. The project with the TDL was concerned with the translation of the 'hand brush stroke' aesthetic into digital prints, both as a photo-realistic transfer and as a 'zoomed in' enlargement of the painting.

Elemaria found out about the TDL through word of mouth having already worked with several commercial digital printing services in both New Zealand and overseas. The TDL was able to meet Elemaria's needs for small runs of large scale digital prints on various fabric types. The TDL's Auckland location was also beneficial as it facilitated quick fabric and sample print delivery and good communications.

Project Description: Elemaria took high-resolution digital photos of her abstract paintings for the TDL to print onto fabric. The lab digitally printed 2 metre lengths of fabric using her photographic images. The fabric substrates included silk, cotton and linen. Important aspects of the process included accurate reproduction of the image, consistent quality and clear, vibrant colour. She used the printed fabric in various applications including products such as table place mats, cushions and wall hangings.

Project Methodology: Photographer, Jo Clark, took high quality photographs of Elemaria's paintings: some of them were cropped using the actual scale whilst others were greatly enlarged. The TDL produced multiple small runs of digital prints of different sizes on the range of chosen fabrics. Some specially prepared for digital print (PFDP) fabrics were supplied by the TDL and others were provided by the client. A pre-treatment solution had to be applied to the latter fabrics so that the printing dyes would fully bond to the materials without bleeding and washing out during the wet finishing process. Experience has shown that problems can occur with fabrics supplied by clients as it is difficult to ascertain what kind of finishing processes have been used in manufacturing. Print quality cannot therefore be guaranteed on such fabrics and partner organisations are made aware of the risks involved.

Outcomes: Multiple runs of digitally printed fabrics were produced. Those printed on the TDL supplied PFDP fabrics, turned out as expected, and Elemaria was satisfied with the colours and print quality. However, a small number of the prints onto the client

supplied fabric were rejected due to bleeding and cross-staining.

Elemaria's preference was to use her own fabrics so that the high value of the digital printing process could be matched to a specifically chosen high value material. She chose what she regarded as the most appropriate fabrics according to their intended application: for example, linen for tableware, place mats and tablecloths. Some of the fabrics that she supplied worked well with the digital print process while others were less successful due to the way in which they had been mill finished.

She received positive feedback from her customers about the enlarged scale paintings that had been digitally printed. Her digitally printed linens generally looked good but some minor cross-staining spoilt the overall quality of the product. Her silk prints also had the desired level of vibrant colour, but again, the fact that this was not a PFDP fabric, affected the overall quality of the prints. The nature of her work demanded excellent print quality, which unfortunately could not be achieved consistently on fabrics that were not PFDP.

Feedback: Having been shown around the Textile and Design Lab's facilities, Elemaria was able to gain a good basic understanding of the digital printing processes. However, as this technology doesn't support a 'hands-on' approach to printing, as is the case with small scale screen printing, she felt 'removed' from the process, which in turn limited her understanding of the technical issues in relation to the behaviour of textile materials. This limitation, combined with the comparatively high cost of digital textile printing, created some degree of concern, which subsequently inhibited her continued use of this technology. However, she was highly satisfied with many of the printed outcomes both in terms of print quality and the technology's ability to reproduce enlarged photographic images and successfully interpret her vibrant colours and large brush stroke technique.

Insights: Whilst Elemaria herself had a good insight into the techniques associated with digital textile printing, she was particularly interested in how others would react to her photo realistic prints, whether they would be easily recognisable as digital prints, and if so, how they would feel about the use of technology for the reproduction of her artworks.

Both Elemaria and TDL staff agree that the choice of fabrics for any given project is an important decision. Fabric options for digital printing are likely to be limited due to modest demand, which could create a need for some compromise between achieving high quality prints and the function for which the printed textile is intended.

The TDL provides a stock supported service of high quality imported PFDP fabrics for its students and clients. The decision to do this was taken in 2008 and was based on its earlier experiences of pre treating and printing fabrics that were supplied by students and clients. Whilst many of these fabrics produced good quality prints, others that contained large percentages of size (starch), wax, fabric softeners and other finishes, were not conducive to good quality printing, and resulted in bleeding, cross staining, fixation issues and ultimately disappointed customers.

Whilst a wide range of PFDP fabrics is available through international wholesalers, they often have to be purchased in bulk quantities. The TDL has partnered with a US based supplier, which enables it to purchase modest quantities of a limited range of around 12-14 qualities for which there is a consistent demand. Students and clients are still welcome to supply their own locally sourced fabrics should the TDL not be able to offer anything of a similar nature. However, it is vital that such fabrics undergo a test printing process before any larger quantities are accepted for printing to ascertain if they are suitable for digital printing.

Inevitably, the testing of such fabrics takes a little additional time and cost. In addition local fabric suppliers often cannot guarantee that finishes on particular fabric types won't vary from one batch to another. TDL director, Dr Frances Joseph comments: 'There is a tension here between the potential of digital printing for 'on demand' production and customisation, which are attributes being

explored by artists and designers like Elemaria, and the limited availability of a wide range of PFDP substrates for small scale production within New Zealand. This is a problem of both scale and the level of demand rather than a technical issue'.

The TDL offers a range of textile design short courses through to master classes presented by international experts to assist textile designers develop a deeper knowledge of digital print technology and processes. The lab's research work, teaching and product development demands make it difficult to offer 'hands on' access to its printing and finishing processes to other AUT staff and its clients. 'Having a smaller 'test printer' available for developmental work would be a way of addressing this problem', says Dr Joseph.

Conclusion: The opportunities for artists and designers to access new textile technologies and expertise, and to experiment and develop new applications are important roles of the TDL. However, the quality of client-supplied substrates in terms of their suitability for digital textile printing cannot be guaranteed. Trial and error approaches can lead to the identification of good for print fabrics but this process can be costly, the long-term quality of the print cannot be guaranteed, and the long-term availability of such fabrics cannot always be assured. While the provision of PFDP substrates goes a long way towards addressing this problem, there will inevitably be some limit in the choice of fabric options offered to our students and designers.