

## Academia Is Taking Digital Printing to New Heights

by Kim Anderson, [TC]<sup>2</sup>

*The following article has been taken from a series of articles previously published in the [TC]<sup>2</sup> Technology Communicator Newsletter. Three professors who are investigating the opportunities of digital printing were featured. Each shared not only their artistic masterpieces but also their insight into the pros and cons of digital printing.*

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### **Susan Brandeis, Professor, NCSU School of Design**

Susan Brandeis, a professor at North Carolina State University School of Design, is not only a great teacher who adeptly breaks down and shares the mysteries of design, but also an immensely talented artist. Many see Brandeis as a purist, a hand printer using innovative materials and techniques to produce artwork that is impossible to create using conventional printing techniques. However, recently she has begun tapping into digital printing and the outcome is impressive.

Through a series of carefully considered projects, Brandeis has systematically investigated the pros and cons of digital printing from an artist's perspective—one who values the human hand. As a consequence, she has created some breathtaking pieces. Brandeis incorporates photographs of inspirational places. She uses the digital printer to translate the highly complex and sophisticated images onto fabric, then utilizes adept hand-skilled techniques to add surface texture and detail, creating pieces that could only be produced by a combination of technology and hand artistry. Brandeis has succeeded in utilizing the unique characteristics of each process to produce intricate pieces of art.



### **Succulence (2005)**

**Top: shown in its entirety**

**Below: Two sections shown close up**

**39" high x 79" wide**

**Digitally printed, hand and machine embroidered and hand beaded. Cotton and silk fabrics. Glass beads.**



**Messages from the Past (2001)**

**Top: shown in its entirety**

**Below: Two sections shown close up**

**38" high x 76" wide**

**Digitally printed, hand dyed, screen printed, discharge printed, felted, reverse appliqué, appliqué and machine embroidered. Cotton twill and broadcloth; silk noil and organza; merino wool fibers; cotton/polyester threads.**

From her research, Brandeis has made some valuable conclusions regarding the pros and cons of each of the processes. Brandeis points out that digital printing allows the artist to increase the complexity of their designs; relieves the artist of the sometimes harmful repetitive motion entailed with hand printing; reduces the artist's and the environment's exposure to chemicals; increases the speed at which the artist can produce intricate designs; and allows for the creation of designs that are not possible by hand.

Brandeis also points out some of the sacrifices an artist makes when utilizing digital technology. The artist loses intimacy with the materials. The absence of hand control in the application of color can jeopardize surface interest created by the human touch. Brandeis also explains that the separation from the materials can be a compromise to the artist. Every artist has a unique attraction to the tools and tactile elements of their chosen medium. Advanced technology separates the artist from the tactile senses.

Brandeis also understands the cost factor. A digital printer and the necessary accoutrements, computer, monitor, scanner, etc., requires a hefty investment. She also mentions the challenges of color calibration and the time it takes to become proficient in the software that allows the artist to translate their work into printed form.

Brandeis continues to experiment with combinations of patterns, colors, textures, and images using digital printing and hand artistry, producing spectacular pieces along the way. For more information on Susan Brandeis's current research and workshops go to <http://www4.ncsu.edu/~brandeis>.

***Hitoshi Ujiie, Professor and Director of the Center for Excellence of Digital Ink Jet Printing for Textiles, Philadelphia University***

Hitoshi Ujiie is a consummate artist and educator specializing in digitally printed textiles. Ujiie was inculcated into the world of textile printing at an early age. Growing up in Kyoto, Japan, Ujiie developed an early appreciation for beautiful textiles while working in the family business designing and printing kimonos via a wax resist process.

After acquiring a BFA and an MFA, Ujiie worked with some of the best—a stint designing at the Jack Lenor Larsen

Design Studio and teaching at the Rhode Island School of Design. Hitoshi Ujiie, now Assistant Professor and Director of the Center for Excellence of Digital Ink Jet Printing for Textiles at Philadelphia University, is well aware of the implications digital printing is having on the textile and apparel industries.

In a recent paper Ujiie outlines the numerous benefits of the emerging technology. The ability to quickly and easily produce strike-offs and short run samples, as well as drastically minimize inventory are just a few of the logistical benefits.

For the designer, the implications are both massive and exciting. As Ujiie points out, design styles that are impossible or extremely difficult to achieve with existing conventional printing technologies, can now be produced using digital printing. The technology allows designers to manipulate and print patterns containing millions of colors for over-the-top detail with perfect registration.

Equipped with printers capable of handling reactive, acid, disperse and pigment inks, the Center for Excellence of Digital Ink Jet Printing for Textiles is a creative haven for the serious design student. Under the direction of Professor Ujiie, students are turning out some printed designs worth checking out.

Patricia Ferrera's piece illustrates what Professor Ujiie refers to as extreme tonal with diminutive effects. A conventional designer might peg this intricate design as a warp print. However, with digital printing technology a talented designer can create the look on any fiber—unlike traditional warp prints that require a synthetic or synthetic-rich warp, specialized equipment and a hefty amount of yardage.



**Patricia Ferrera**

*Courtesy of the Center for Excellence of Digital Ink Jet Printing for Textiles at Philadelphia University*

Through photographic manipulation, Elizabeth Tuva has created a wonderfully intriguing design. Tuva's piece is reminiscent of a discharge print, except that it's produced without finicky dye formulations and specialized equipment.



**Elizabeth Tuva**

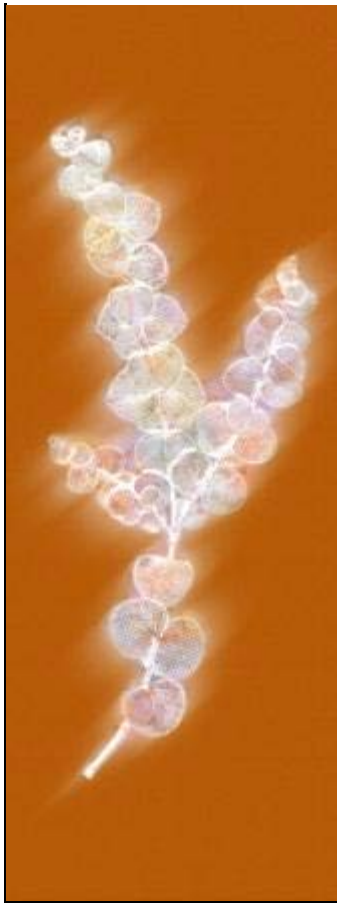
*Courtesy of the Center for Excellence of Digital Ink Jet Printing for Textiles at Philadelphia University*

Designers can now explore the world of gargantua. Images can be large, *very large*. In conventional flat-screen or rotary screen printing, the lengthwise design repeat is subject to limitations of the screens or rollers. In digital printing the only size limitation is the width of the printing machine.



**Hitoshi Ujii**

*Courtesy of the Center for Excellence of Digital Ink Jet Printing for Textiles at Philadelphia University*



**Hitoshi Ujiie**

*Courtesy of the Center for Excellence of Digital Ink Jet Printing for Textiles at Philadelphia University*

As with any new technology, digital printing has a few kinks to work out. Professor Ujiie points out that printing reliability; speed; cost of machines and supplies; a sufficient color gamut; and penetration and fastness of the inks are some of the issues that need a little fine-tuning. Regardless, there is no doubt, unbridled creativity will continue to stream from the Center for Excellence of Digital Ink Jet Printing for Textiles at Philadelphia University. To find out more about the center you can go to <http://www.philau.edu/textiledesign/center.html>.

***J.R. Campbell, The Centre for Advanced Textiles, Glasgow School of Art***

J.R. Campbell has no trouble thinking out of the proverbial “box.” In fact, Campbell is most comfortable pushing the envelope to the outer limits—especially when it comes to new technology. He has tackled digital printing with a vengeance and the output is impressive.

Campbell spent nearly seven years at Iowa State University collaborating with Dr. Jean Parsons, a consummate apparel designer. The two undertook a number of projects to explore the integration of digital printing into the apparel design process—scorching conventional ideas of design in the process.

Taking full advantage of the design opportunities digital printing offers, and unencumbered by a target market, Campbell and Parsons have explored “art-to-wear”—garments that are displayed in art exhibition settings.

Campbell and Parsons have designed some spectacular pieces. The piece entitled Transformation: Icarus, was digitally printed on wool gabardine. The garment was created from a double-sided circular shaped fabric, and is designed to be worn as a long jacket.



### **Transformation: Icarus**

The piece entitled *Oops, Sorry*, was recently shown in Glasgow at Digital Perceptions. The base fabric is a jersey constructed with viscose yarns. Campbell explains that part of the challenge was getting the strong orange color that he wanted.



**Oops, Sorry**

Exploring different color gamuts and color matching was the impetus for the piece entitled *I Still Can't Find It*.



**I Still Can't Find It**

Campbell currently holds a position at The Centre for Advanced Textiles (CAT). CAT is one of six designated research centers at the Glasgow School of Art. CAT is dedicated to researching digital textile printing technology. Last summer, Jean Parsons teamed up with Campbell and his colleagues to offer a workshop entitled Digital Textile and Product Design. The workshop targeted academics, advanced students and working professionals in textiles, apparel and interior design.

To find out more about upcoming workshops CAT is scheduling you can go to <http://www.catdigital.co.uk/>.

March 2007