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# Synthesis of Handcrafts and Digital Printing: Creative Sustainable Apparel Design.

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# Synthesis of Handcrafts and Digital Printing: Creative Sustainable Apparel Design.

## **Abstract**

Apparel manufacturing processes are one of the most prevalent sources of environmental problems at almost every stage (Gam & Banning, 2011). Some apparel designers/manufacturers are striving to incorporate sustainable and socially responsible processes to create non-toxic, healthy, biodegradable textiles and apparel products. This apparel design project combined handcraft techniques and digital printing to create an eco-friendly line entitled *Life of Earth*. The design process model used was created by LaBat and Sokoloski (1999) including: (a) problem definition and research, (b) creative exploration, and (c) implementation; and the designer included an evaluation step.

## **Keywords**

Digital printing, Free form embroidery, Sustainable apparel design

## **Disciplines**

Fashion Design | Fiber, Textile, and Weaving Arts | Graphic Design | Industrial and Product Design

## **Comments**

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## Synthesis of Handcrafts and Digital Printing: Creative Sustainable Apparel Design

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Keywords: Digital printing, free form embroidery, sustainable apparel design

Apparel manufacturing processes are one of the most prevalent sources of environmental problems at almost every stage (Gam & Banning, 2011). Some apparel designers/manufacturers are striving to incorporate sustainable and socially responsible processes to create non-toxic, healthy, biodegradable textiles and apparel products. This apparel design project combined handcraft techniques and digital printing to create an eco-friendly line entitled *Life of Earth*. The design process model used was created by LaBat and Sokoloski (1999) including: (a) problem definition and research, (b) creative exploration, and (c) implementation; and the designer included an evaluation step.

**Implementation of a Design Process Model in Creative Sustainable Apparel/Textile Design**

*Step 1: problem definition and research.* Digital inkjet printing emerged in the early 20<sup>th</sup> century, and rapidly increased in the 2000s offering three major eco-friendly advantages: lower wastes levels, faster speed of production and energy savings (Memon, 2012). This line is ready-to-wear, targeted to 20-35 years old females who pursue sophisticated design details, unique styling, superior fabrications, and care about sustainability.

*Step 2: creative exploration.* The line was inspired by the air pollution in Chinese cities. The world map was the major design inspiration and a motif digitally printed on the fabrics (Figure 1). The first outfit represents unpolluted Earth while the second outfit through fourth outfits illustrates the damage by pollution on the Earth (Figure 2).



Figure 1. World maps were digital printed on fabrics and illustrations of the outfits.

*Step 3: implementation.* All four outfits were draped on size 8 dress forms. The patterns were digitalized into OptiTex, a CAD patternmaking software. Then the Earth motifs were “engineered” to fit directly onto the pattern pieces in Photoshop, based on the width of fabric to get the best usage of fabric and least amount of waste. The designer selected eco-friendly silk organza, charmeuse, chiffon and dupioni for digital printing due to the fiber’s physical properties and color performance in digital printing. Some of the garments were hand-dip dyed for subtle effects. A unique light weight translucent fabric was created using free-form machine embroidery (a handcraft technique) from rayon threads. Silk threads were the ideal material

providing their sustainability and physical performance; however, due to the cost restraints, rayon threads were used in these prototypes.



Figure 2. The freeform embroidery vest for outfit one and all four final outfits.

### Self-evaluation and Conclusions

The Self's LA (level of aspiration) theory was used to evaluate the completed line to determine whether the "ideal goal" defined at the beginning of the design project was achieved (Hoppe, 1931; Lawin, 1944; & Diggory, 1966). Identifying the self (designer) and value (performance of designs) before doing self-evaluation helped the designer measure the outfits and the entire process more accurately. The self-evaluation questionnaire included linear rating scales and was filled out by the designer at the end of design process.

The presentation will include: (a) explanation of the background research, framework and design process, (b) photographs of the completed ensembles, and (c) outcomes of the evaluation and overview of how the outcomes will impact future design projects. The significance of this experimental design project is how a design model can be a foundation for the creation of a design line and how to use social psychology self-evaluation theory as a guideline to evaluate creative design works.

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