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Developing a Trend Analysis Instrument to Establish a Taxonomy of Digital Textile Printing Attributes for Costume and Theatrical Fashion Design Use

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Keywords: digital textile printing, theatrical fashion, costume design

Background and Problem. Since its introduction, the evolutionary use of digital technologies in fashion, textile, and costume design has led to significant changes in the appearances, processes, and pedagogies of these three related, yet distinct, disciplines. "Technological change is more than just procedural – it requires or prompts conceptual shifts" (Joseph, Fraser, & Cie, 2010, p.4). Not only are digital textile printing, 3D printing, computer-aided design, laser cutting, and wearable electronics changing the execution of "making" processes, but equally importantly they are changing the intentions of making (Polston, 2011; Quinn, 2012). When new technologies are introduced into a discipline, the initial focus is on adapting that technology into an already prescribed way of doing - in other words replacing one traditional step with a digital method (Parsons & Campbell, 2004). As designers experiment with the digital technologies they "no longer focus on technology but the innovation it enables" (Ballie, 2012, p.219). The new visual language that is evolving from the increased use of digital textile printing use is resulting in increased design sophistication that blur the line between technology and craft (Bowles & Isaac, 2012). When digital textile printing was first introduced, the images for the surface design were clearly computer generated, but now there is an interesting evolution happening. Bowles and Isaac (2012) attribute the change to "increased experimentation by designers, who are creating designs based on scanned or digitally photographed subjects, facilitating effects such as trompe l'oeil as well as graphic and illustrative styles that are only possible using computerized drawing and manipulation tools" (p.13).

Purpose. When a new artistic language emerges, there is a need to define the aesthetic characteristics of the new art form. The purpose of developing a trend analysis instrument for determining digital textile printing attributes for costume and theatrical design use is useful to understand the conceptual design research of digital textile design. For this study, *taxonomy* is defined as a systematic way of classifying things and the hierarchal relationship between the things. While *theatrical fashion* is defined as garments that incorporate costume, fashion, and textile design theories, processes, and technologies.

Method. Visual analysis has been a methodology used by fashion and costume scholars as a way to obtain data for material culture research of dress (Cosbey, Damhorst, &Farrell-Beck, 2002; DeLong & Petersen, 1998; Hall, 2013; Severa & Horswill, 1989). Material culture

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research is a combination of artifact analysis and historical contextual analysis (Hall, 2013). Severa and Horswill (1989) identified costume as material culture, described costume as a tool for primary data collection, and stated that visual analysis is one approach material culture research. Their four-step procedure includes: (a) identification, (b) evaluation, (c) cultural analysis, and (d) interpretation (Severa & Horswill, 1989). DeLong and Petersen (1998) and Cosbey, Damhorst, and Farrel-Beck (2002) identified dress as material culture, applied art historical methods to material culture studies, and developed visual analysis instruments. DeLong and Petersen (1998) emphasized the importance of examining garments collectively, as well as individually. Hall (2013) created a new visual instrument when she combined both object-based and image-based fashion methodologies since her study "involved examining three-dimensional objects (costumes) through a two-dimensional medium (film)" (p.75).

In this study three-dimensional objects (costumes and theatrical fashions) were examined through a two-dimensional medium (screen shots). The trend analysis instrument allowed for: (a) structured documentation of the elements and principles of design and (b) digital textile printing characteristics as identified in previously published literature. Additionally grounded theory methods and open coding methods were applied to analyze thematic descriptions of the costumes use of digital textile print to allow trends to emerge. A taxonomy was created for the structured documentation using the visual analysis instruments of Hall (1989) and Cosbey, Damhorst, and Farrell-Beck (2002) to guide the aesthetics and characteristics documentation.

Significance. The results from the trend analysis instrument were used to identify new design directions, inform new design processes integrating digital textile printing and create a taxonomy. The trend analysis instrument, after verification and future testing, is potentially useful for any study that involves digital textile printing and can be useful to researchers, educators, and practitioners to further develop the new artistic language that is being formed digital textile printing.

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