Achromatizing Effect

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Background and Inspiration.
Within the ocean lie essential coral reef ecosystems that sustain of almost one third of the world's marine life (Van Oppen & Lough, 2009). Algae living within the coral provide its vibrant color and serves as the coral's major food source (Endangered Species International, 2012). These tropical coral reef ecosystems are among the most biologically diverse and beautiful self-sustaining ecosystems in the world (Van Oppen & Lough, 2009). Yet the future of these vital marine ecosystems are uncertain, as human-caused global warming slowly diminishes their chance of survival and with them the survival of other marine life. Global warming is occurring as a result of the increased greenhouse or carbon gases created by a myriad of human activities which includes the manufacturing of apparel and textile products. Global warming effects have been considerably damaging to the ocean, as it absorbs approximately one third of the excess atmospheric carbon gas produced and has caused water temperature to increase (Van Oppen & Lough, 2009). The warming waters cause substantial coral reef ecosystem stress. When coral is stressed it expels the algae living in it, causing the coral to lose its color and become achromatized (bleached). Without the algae as a food source, the coral cannot survive long. If the stress is not reduced the bleached coral will die, along with the marine life sustained by it.

Purpose.
The purpose of this design was to create an environmental activist art wear ensemble through the use of apparel industry bi-products. Design activism, which includes apparel and art wear design, is viewed as a way to use imaginative design thinking to create a counter-narrative that communicates positive social or environmental change (Fuad-Luke, 2009) This design endeavor uses art wear as a medium for a visual awareness to the coral bleaching effects of global warming to individuals who may not be engaged in environmental issues or aware of global warming's consequences on the ocean. This design provides a mode of communication that can be used to initiate conversations and spark interest for furthered learning of global warming's effects. The ensemble's transportable nature allows for an interactive representation of coral reef devastation to be taken into unlikely settings as most people are not able to witness it firsthand.

Framework.
The design process for Achromatizing Effect draws from the *waste equals food* tenet of the Cradle to Cradle design framework (McDonough & Braungart, 2002) by utilizing apparel and textile manufacturing waste to create the art wear ensemble. The ecosystem life cycle of the coral reef is an example of a self-sustaining natural ecosystem which exemplifies the *waste equals food* concept. In the coral reef ecosystem all nutrients that are needed to sustain its existence are provided by the system and no waste is generated. The materials used were fabric discarded in the closing of a garment factory and jacquard weaving selvages from an upholstery fabric mill. Home décor waste has previously been recognized as a resource for sustainable apparel design

and creative scholarship (Jennings, 2014). The materials were given to the designer to explore new uses. The implementation of the *waste equals food* tenet occurred through the use of *waste* or bi-products to create new items where the textile waste served as the *food* for the new design (McDonough & Braungart, 2002). To reduce any further the environmental impact from the creating of the ensemble, the designer chose to not use any additional energy source other than her hands in the creation of the garments. The garment materials are natural fibers and with the removal of the notions used for closures can be composted at the end of their useable life.

Technique.

The ensemble is made up of two pieces: a macramé vest and yoyo dress. Fabric manipulation techniques were used to create over 100 yoyos of varying sizes and round shapes. The structure of the yoyo was selected to mimic the shape and texture of corallites or coral skeleton of hard corals which can be seen when bleached coral is view closely (Endangered Species International, 2012). The yoyo dress was assembled by draping the yoyos onto a dress form and sewing the yoyos together one at a time. The yoyos were sewn together slightly overlapping each other with layering in some areas to bring a three dimensional effect to the dress surface. The dress is asymmetrical by design to more closely embody the natural formation of coral in the ocean.

The designer constructed the vest by twisting and knotting varied shades of green, blue, and white cotton yarn strands from the jacquard selvage waste. To create the dress, the selvage yarn strands were draped onto a dress form at the shoulders and using various macramé techniques additional yarns were added with all the yarns connecting to construct the vest. The vest was made from over 40 selvage yarn strands that ranged from five to ten yards in length. The bottom half of the vest flows into a fringe-like effect simulating the warming oceans movement around the coral. The macramé techniques used on the upper portion were chosen to symbolize a metaphorical net in which human generated destruction has the coral caught, unable to escape and held captive to slowly die away.

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