

Save the Coral

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Beautiful and fragile coral reefs are home to millions of fish and fundamental to human survival. Coral bleaching is a global crisis caused by rising ocean temperatures from climate change, particularly by carbon pollution (Fight for Our Reef, 2021). Coral bleaching is when corals are stressed by changes in conditions such as temperature, light, or nutrients. They expel symbiotic algae that live in their tissues, causing them to expose their white skeleton and turn completely white (Douglas, 2003). Corals can survive a bleaching event, but they are more vulnerable to disease and are subject to mortality (National Oceanic and Atmospheric Administration, 2021). Coral reefs support some of the most biodiverse ecosystems on the planet, making thousands of marine species dependent on them (Hancock, 2022). Once these bleached corals die, reefs rarely come back. Between 2014 and 2017, more than 75 percent of the planet's tropical coral reefs experienced bleaching levels of heat stress (Scott & Lindsey, 2018). According to the Oceanic Society, up to half of the reef has died since 1980, and some fear the rest could disappear entirely within the next 30 years (Penniman, 2020).

As a researcher and educator specializing in apparel and textiles, my works extended far beyond the realm of simply developing new production techniques, couture skills, and materials. In my research, I have made conscientious efforts to effectively communicate crucial information to both my students and broader audiences. The subject matter at hand pertains to the multifaceted aspects of environmental pollution and carbon emissions, including their devastating impact on vulnerable coral reefs. Despite the significance of these issues, there remains a lack of understanding among some individuals, highlighting the need for continued education and advocacy. Hence, the purposes of this research were: (a) to disseminate information regarding the current global peril of coral reef destruction along with its causes and impacts, through the ultimate research findings, (b) to employ engineered textile printing as a means of expressing the splendor of thriving coral reefs serving as a language and medium to showcase their beauty, and (c) to create bleached corals using hand couching technique, aiming at presenting a contrasting effect with healthy corals.



Figure 1. #1 motif of the four single repeating motifs

The design process mainly included silhouette structure design and graphic print creation. The first step of the design process was silhouette structure design. A double-layered flare dress

with a back tail was selected from ten sketches drawn by the designer/author. The initial sample was created in muslin by draping on a size eight women's dress form. All draped muslin pieces were transferred to paper patterns and got truing. The lower skirt incorporates digital print patterns inspired by vibrant and healthy corals to provide the audience with a more vivid and impactful visual distinction. Conversely, the upper showcases the effects of bleached corals, effectively accentuating the contrast. In addition, to create an engineered digital textile print, all pattern pieces were digitized into Lectra Modaris software and converted into DXF files to be opened in Adobe Illustrator and saved in one file.

The next phase involved the creation of graphic prints. Vibrant and diverse in nature, healthy coral reefs boast an array of colors and forms. To emphasize this distinct characteristic, four colorful single repeating motifs were crafted based on three coral photos, each exhibiting unique color tones and patterns. The sources for the graphic print creation encompassed two micro-photos of corals and a photograph capturing the essence of a coral. In addition, the fifth single repeating motif was created only from the coral photograph with red branches to create a less busy graphic print. Once all single repeating motifs were done in Adobe Photoshop and evaluated by the designer carefully, one of the motifs of the four options (see Figure 1) was selected to create the final print of the top bodice of the dress. The fifth motif was selected to create the final print of the skirt part. In addition, all digital garment patterns opened in Adobe Photoshop in actual size to engineer the prints so that the overall graphic print on the final garment matches each seam. All seams need to be joined together without seam allowance and apply corresponding repeated prints on garment patterns. Then, a coral picture as a mask was applied on top of the repeated print under the waistline of the skirt, and a layer of dark red gradient overlayed it. The final prints were arranged on an artboard measuring 70.8 inches in width and 177 inches in length before being placed onto polyester sheeting fabric (see Figure 2).

In order to visually contrast healthy to bleached coral, the designer employed the couching technique to meticulously hand-stitched the bleached coral view onto the ruffle layer of the skirt and the top. Coral fleece yarn and velvet yarn were selected after comparing them with various types of yarns. Sequins and pearls were hand-stitched next to the yarn to represent shells, pearls, and water drops under the sea. A sheer poly organdy was chosen as the foundational material to enhance the yarns due to its stiffness, lightweight, and transparent characteristics. This allows the

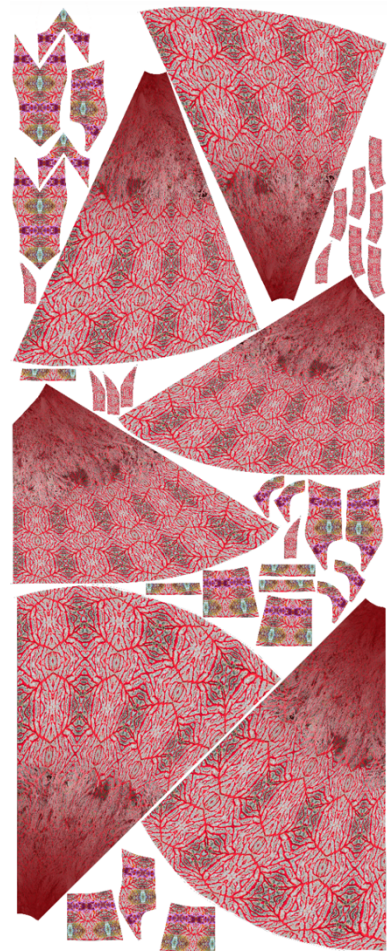


Figure 2. Engineered print with garment patterns

audience to observe bleached corals against a vibrant coral background, leading them to think about the crisis the corals are going through. The organdy fabric was laser cut to seal the edges and prevent unraveling.

Save the Coral effectively highlighted the splendor of vibrant coral reefs as well as the stark contrast of bleached corals through the skillful integration of advanced technologies. The final garment employed a combination of digital textile printing, laser cutting, and handcrafted techniques, resulting in a distinctive and captivating portrayal of coral reefs. The comprehensive design and research process has the potential to educate a wider audience, including young people and students, on the detrimental effects of environmental issues on coral reefs. Furthermore, the design serves as a compelling exemplar to the general public, accentuating the allure and advocating for the importance of environmentally conscious clothing design.

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