

***Fractal fabrics for restorative environments:
Textile design will well-being in mind.***

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My master's research project is entitled *Fractal fabrics for restorative environments: Textile design will well-being in mind*. This research is broadly located within the emerging field of biophilic design—a design paradigm based on the innate human need to affiliate with nature, and the positive effects of this affiliation on human health and wellbeing. Biophilic design aims to improve wellbeing through the incorporation of the restorative attributes of nature into the built environment.

Fractal fabrics for restorative environments is based on new knowledge from the field of environmental psychology which reveals that viewing certain fractal patterns—the scaling, self-similar patterns found virtually everywhere in nature—can significantly reduce human physiological stress. Hence, proponents of biophilic design urge architects and designers to incorporate these patterns into the built environment at a variety of scales, from the architectural form and detail of the building to the materials and finishes utilized within.

My research investigates and deliberately applies this new knowledge to woven textile design, resulting in a collection of interior fabrics which feature the particular type of fractal patterns that have been shown to reduce stress. Though textiles have been suggested as one possible way for architects and designers to incorporate these patterns into the built environment, until now there has been no research aimed at helping textile designers incorporate them into their fabrics. Hence, my research began with a critical literature review to establish a set of design criteria for stress-reducing fractal patterns. Then, through practice-based research, I developed and executed a five-step design process which helped me to create patterns meeting these criteria. The results of this process are five fractal fabrics which could be used to reduce stress in environments such as hospitals, offices, and schools.

I chose to execute my patterns in wool for its durability, handle, and other favorable properties which make it uniquely suited for upholstery. Beyond that, wool also helps satisfy another, separate biophilic design guideline: the use of natural materials. I always had a proclivity for wool upholstery fabric in my previous career as an interior designer, so when selecting materials for my own textile designs it seemed a natural fit. My appreciation for UK wool has only increased during my studies at Heriot-Watt due to

many opportunities to learn about the industry and its history through mill visits in the Borders, Highlands, and even the Isle of Harris.