1056-Z1-1837 **Fatma Mete*** (fm95@cornell.edu), Cornell University, Department of Fiber Science & Apparel Design, Ithaca, NY 14850. *Geometric Transformations in Design and Their Self-assembling and Self-organizing Structures.*

We present a method for transforming a simple plane figure into another, which is related to it in a definite way, by applying a group of systematic geometric transformations. The method creates certain classes of complex star motifs from a basic plane figure, by applying certain symmetry and transformation rules in chain operations. In these chains, the successive designs are derived from the initial and previous designs in the chain. We demonstrate that design is a 'self-assembly' as well as a 'self-organizing' process, and expansion, figure, motion and symmetry are the only properties in surface design which can be directly represented mathematically. The process which resembles very closely the self-reproduction of biological molecules also sheds light on uncovering the mathematical mystery in different cultural practices and artifacts. (Received September 22, 2009)