1096-C5-136 **Shelley Lynn Rasmussen***, Mathematics Department, Olney 428T, Lowell, MA 01854.
Colorings of Plane Patterns Defined by Sequences ad Arrays, With Applications to Weaving. Preliminary report.

This work describes schemes for coloring an $m \times n$ grid in two or more colors. Such a grid is based on the "product" of two q-ary sequences, one of length m and the other of length n, each built from an alphabet $\mathbb{A}$ containing q distinct symbols and a $q \times q$ product matrix that defines the product of two elements a_i and a_j of $\mathbb{A}$. With this product matrix and a color set containing up to q^2 colors, we define the $m \times n$ product of two such q-ary sequences, along with its associated $m \times n$ colored grid. Considered in detail is the special case when the product matrix is a one-step right circulant latin square and the number of colors is from 2 to q. These ideas are then extended to a systematic procedure for creating patterns within patterns (nested or hierarchical designs). Because a traditional weaving draft or drawdown is a rectangular grid of black and white squares that defines a fabric structure, these results can be applied to textile design, allowing for construction of hierarchical patterns not previously described in the weaving literature. (Received August 07, 2013)