

SOME IMPLICATIONS OF DYNAMIC STRUCTURAL ANALYSIS

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1. Introduction.

The interlacement structure exhibited by a woven textile has traditionally, and conveniently, been represented by a binary array. Graphically, this has taken the form of a cartesian grid with cells coloured either black or white [Figure 1]. This binary structural array can, in fact be considered as the product of three matrix factors. These factors are normally also binary matrices and, in most cases, their product arises as a result of conventional matrix multiplication [1]. The factorization process is of great practical interest, since these matrix factors

correspond to parameters for the production of the corresponding structure [2], as well as being of considerable theoretical interest. The development of fast efficient factoring algorithms has been considered and has resulted in the processes described in [3,4].

In analysing an interlacement structure in this way, the data structure is first created using interactive graphical input to colour the cells of the corresponding grid [5,6]. When the data structure is complete, the factorization algorithm is invoked and

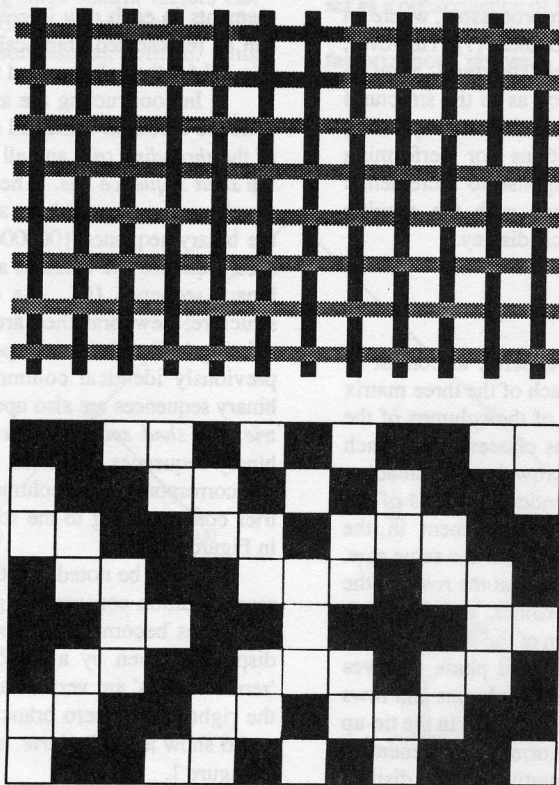


FIGURE 1

