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ON MY VISUAL NUMERICAL ARTWORKS

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1. Introduction

Prior to 1970 much of my artwork could be classified as reliefs of a constructivist type. Some involved the use of coloured rods and coloured planes (Fig. 1). Towards the end of the 1960s I began to doubt whether the information I wished to communicate was sufficiently accessible to viewers in the reliefs and decided to abandon them in favour of pictures in which the symbols 0 to 9 of the decimal number system are arranged according to certain rules.

Such pictures have been made by numerous artists in the past. When digits or numbers are arranged to give meaning in terms of numbers and to provide visual aesthetic satisfaction because of the manner of presentation of their arrangement, the pictures have been called *visual numerical art* [1]. The advantage of arabic number symbols is that their significance is widely known and unusual properties of some of their arrangements in rows and columns can be recognized with some effort. A simple example of the latter is the 3 × 3 array of numbers in a magic square in which the sum of the numbers in each row and column and in the two major diagonals add up to the same sum. In more complex arrays arranged to demonstrate other mathematical properties of numbers, unexpected properties can sometimes be discovered. Discussions of these aspects can be found in Refs. 1 and 2.

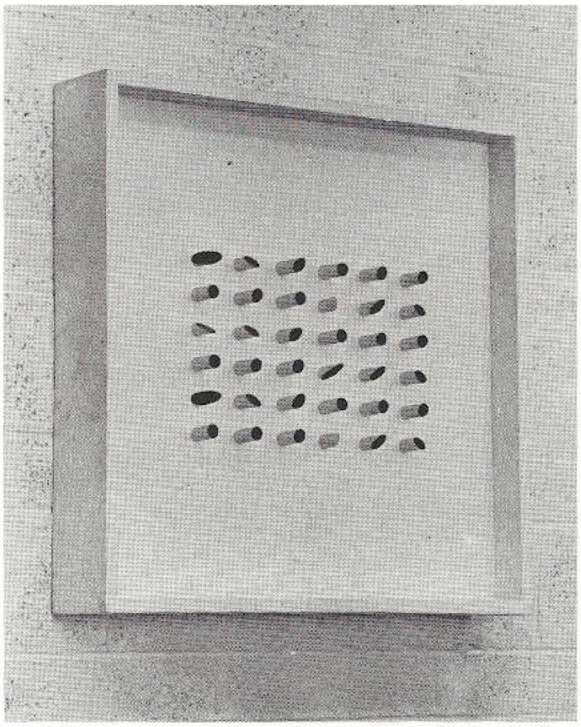

Fig. 1. 'Black on White', relief, painted wood, 60 × 60 × 12 cm, 1969. (Collection of Mr. Walpole-Davis, Washington, D.C., U.S.A.).

2. Three examples of my numerical artworks

The examples of my numerical artworks that I discuss here are limited to the use of the sequence of digits 0 to 9 arranged in lines parallel to the diagonal passing from the bottom left corner to the top right corner of a square array (Figs. 2–4). The numbering begins with 0 in the upper left corner. The first line reading down to the left has two digits: 1, 2. The next line reads upwards: 3, 4, 5; the next downwards: 6, 7, 8, 9; the next upwards: 0, 1, 2, 3, 4; etc. This numbering is continued until there are zeroes at all four corners. In this case one obtains a 100 × 100 array.

This array of 10,000 digits satisfies the aesthetic requirements that I had set—namely, (1) that the array is a square, (2) that the digit 0 is located at each of the corners and (3) that the total number of digits be a multiple of 10. The completed picture (Fig. 2) displays lines of diminished density sloping downward from left to right, a consequence of repeating digits (especially 1 and 7) that occupy a relatively small area of the unit square in which each is printed. If one examines the array carefully, repeating digital patterns can be discerned.

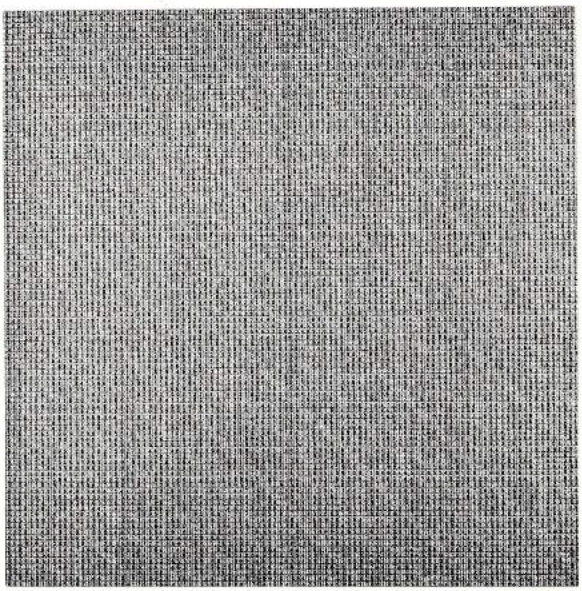

Fig. 2. Untitled, visual numerical artwork, silk-screen print, 59 × 59 cm, 1976. (Collection of the Arts Council of Great Britain).

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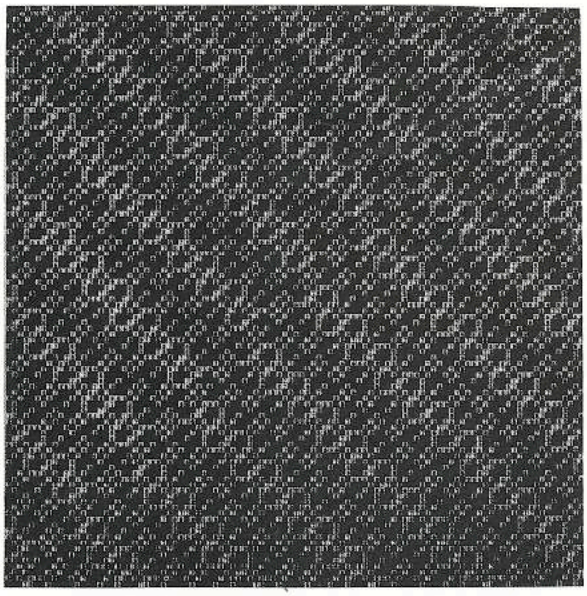

Fig. 3. Untitled, visual numerical artwork, drawing on silk-screen print, 59 × 59 cm, 1976. (Collection of the Arts Council of Great Britain).

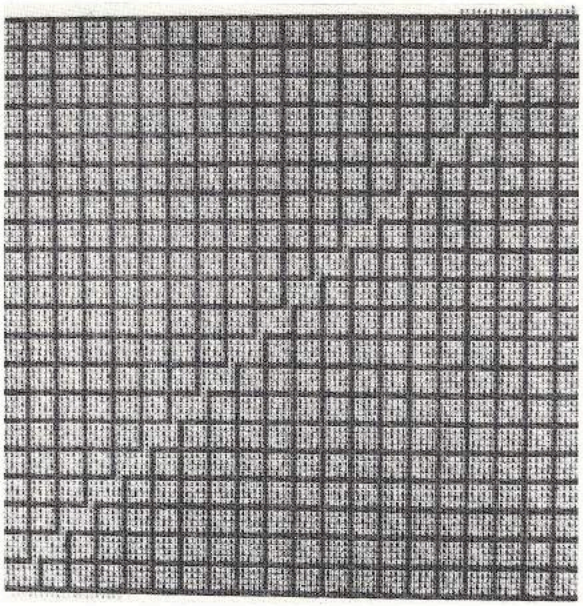

Fig. 4. Untitled, visual numerical art, drawing on silk-screen print, 59 × 59 cm, 1976.

The picture in Fig. 3 is the seventh in a series of 11 in which certain digits are blacked out. In this case, only the unit squares occupied by the digits 6, 7, 8 and 9 are not blacked out.

The picture in Fig. 4 is the fourth in a series of four in which the location of two repeating sequences of digits is emphasized. The sequences of 20 digits indicated at the right end of the top row and the left end of the bottom row are, respectively: 0, 1, 5, 6, 4, 5, 7, 8, 4, 5, 5, 6, 0, 1, 9, 0, 2, 3, 9, 0; 0, 1, 7, 8, 0, 1, 9, 0, 4, 5, 5, 6, 2, 3, 5, 6, 4, 5, 9, 0. The upper and lower grids in Fig. 4 are executed in grey to facilitate the location of the sequences. The sequences appear in the grey rows. In the lower grid at intersections of the grey columns and rows at the center diagonal one finds alternately 0, the start of the sequence (0, 1, 7, 8, . . .), and 5, the start of the mid-half of the sequence (5, 6, 2, 3, . . .). In the upper grid at the intersections of the grey columns and rows at the center diagonal one finds alternately 0, the end of the sequence (. . . 2, 3, 9, 0), and 5, the ending at the mid-half of the sequence (. . . 7, 8, 4, 5). With every fifth column and row shaded in grey, in the manner shown, there is a total of 380 grey-enclosed squares.

3. Concluding comments

I have exhibited my visual numerical artworks in Britain and in the U.S.A. I invite viewers to discover in my pictures certain relations resulting from the location of digits. There are similarities between my visual numerical art and that of Kostelanetz [1], particularly in the aesthetic aims. We differ, however, in the way we manipulate numbers. Kostelanetz employs arithmetic to produce order; I use numbers as locational and serial elements only. Visual numerical art is a fruitful field because of the variety of relationships that can be found by arranging numbers in arrays or in other groupings.

References

1. R. Kostelanetz, Examples of My Visual Numerical Art, *Leonardo* **10,** 39 (1977).
2. J. L. Diaz with M. MacMasters, Linear Structural Patterns Based on an Array of Numbers Derived from the Double-Entry Multiplication Table, *Leonardo* **10,** 215 (1977).