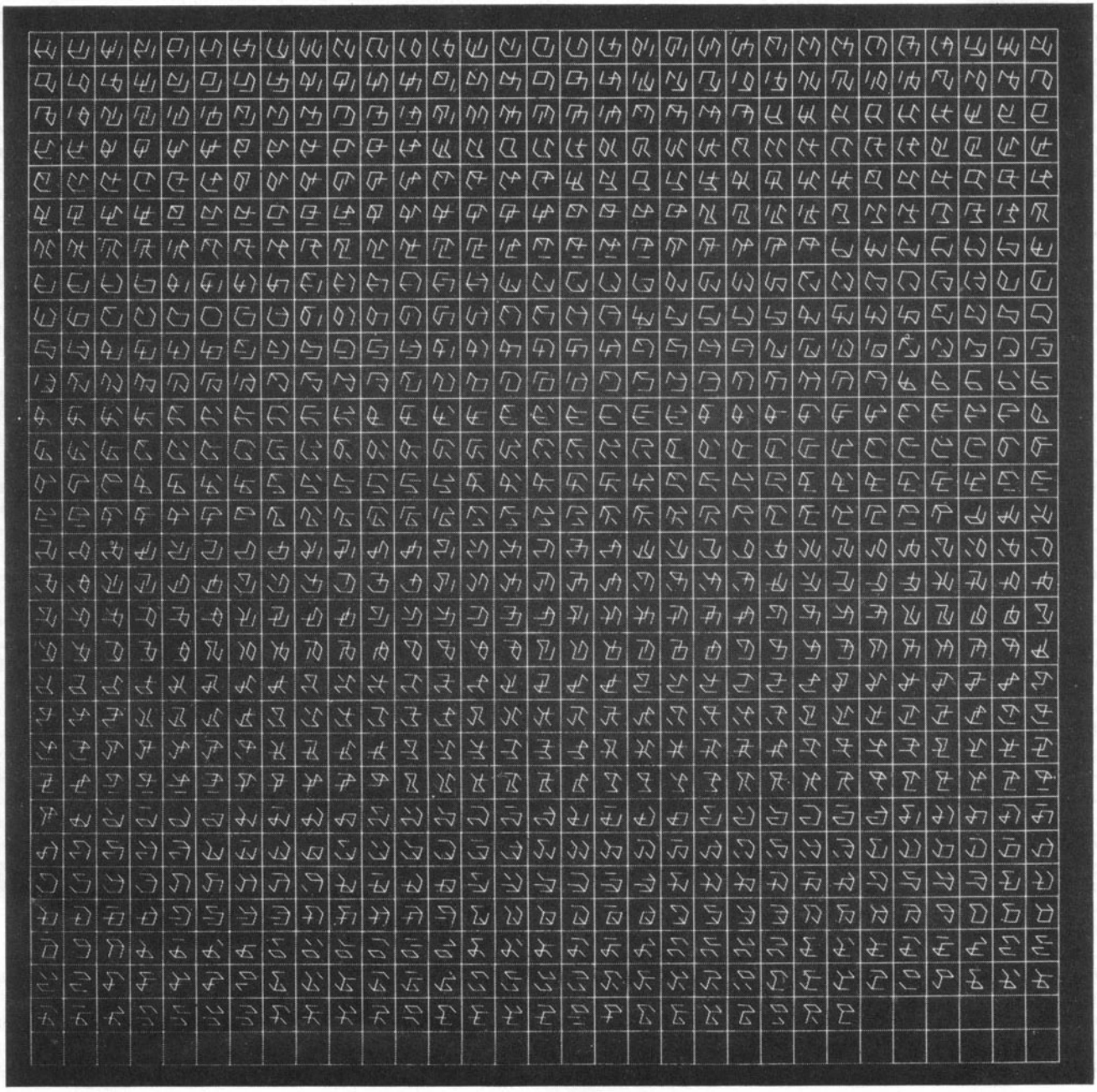


Not quite computing—almost art

JOHN LANSDOWN

Mixing it

As attentive readers of this series will be aware (please take notes, I may ask questions later) new computer usage in the creative and performing arts is growing almost as rapidly as usage in business and science generally and every day interesting new areas of application are arising. For example, many large theatres now use computers to help in controlling and programming stage lighting and the new National Theatre on the South Bank will have a very complex computer set-up not only to deal with the stage lighting but also the movement of scenery!

As some of the most exciting and experimental music is being created for the pop and rock scene it is not surprising that the potential of the computer is being explored there too. Some groups have already been experimenting with computers connected to synthesisers for live performance but the most promising area of application seems to be in the computerisation of sound mixing in recording studios. As recently as ten years ago, sound mixing was a comparatively simple real-time process of blending and balancing inputs from a number of microphones distributed around the studio, but with the advent of multi-track recording and the astonishing array of electronic instruments now used, the mixing engineer has become as important a member of a group as the drummer or bass guitarist.

Most pop records are not recorded in single takes with all the instrumentalists playing together in the manner of, say, a string quartet. On the contrary, because of the problems of sound balancing, specialised treatment used and, dare one say it, the skills of some performers, the sounds are built up layer by layer on tape recorders capable of simultaneously playing back 8, 16, 24 or even 32 separate tracks. In this way each part of the work can be carefully and correctly prepared and recorded—sometimes by just one or two instrumentalists: indeed it is not unknown for the rhythmic backing to be recorded in one studio, the lead instrumental work in another and the vocal in yet another, all at different times! When all the tracks are correctly recorded, the busy and expensive instrumentalists or vocalists can go home and the mixing engineer can take over. He will then mix and blend the sounds down from the many tracks to two (or four, for quadraphonic records), adding fades, reverberation, equalisation or other treatments.

This is clearly a complex and error-prone process—particularly if as many as 32 tracks are used—and requires a prodigious memory and considerable dexterity in manipulating faders and switches. To aid the mixing engineer in this process, a number of firms now offer mixing desks controlled by computer. These allow the mixing engineer to record the settings of switches and faders as he goes, recovering by backtracking to an agreed point in the event of mistakes and, although the idea is not yet universally accepted, it seems likely that, just as the multi-million pound pop industry has boosted developments in musical instrument design and recording and sound-reproduction techniques, so too it might give impetus to further developments in the mini- and micro-computer field.

Hard times

With the continued recession it is inevitable that fewer and fewer opportunities will arise for computer artists (who rely on the generosity of those who donate them computer time) to pursue their work. Recently a number of artists—some of whom have been mentioned in previous articles in this series—have lost their sources of computer usage. If anyone has spare computer time, particularly with graphics facilities, which they can donate to these workers I would be glad to pass on their offers.

More Mohr

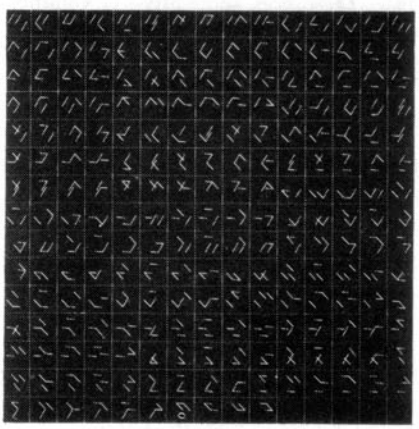
Manfred Mohr continues to delight by presenting striking and beautiful examples of computer graphics. In the summer of 1975 he showed a new series of drawings called *Cubic Limit*, two of which are reproduced here (Figure 1 and Figure 2). In this series, Manfred starts with a perspective view of a cube and progressively deletes various edges; first just one, then two, then three and so on, showing all the arrangements of each configuration. One of the concepts he wishes to explore is: at what point in the deletion sequence for a given orientation does the illusion of the cube disappear? Where is the point when the three dimensions collapse into two? He suggests that this point, if it exists, could be called a *catastrophe point* after René Thom's Catastrophe Theory.

He points out *'my experiments indicated an enormous discrepancy in the perception of sequences of different rotated incomplete cubes drawn on paper and the same sequences shown in an animated film'.* It appears that the brain retains the illusion of three dimensions longer when the sequences are shown one after another rather than simultaneously. In addition, the illusion is enhanced when the angular momentum during rotation is steady. If the increments are not equal during rotation, then perception of the cube becomes very difficult indeed. It is not yet clear that there is a point at which the change becomes apparent: it is likely to be a fuzzy range differing from person to person. With some orientations in motion pictures as few as three lines still retain the illusion.

Although *Cubic limit* is an interesting exercise in analysis of perception, Manfred says *'my work is as much motivated by compositional needs as by analytic requirements. It is in just this interplay of analytic and aesthetic considerations that one approaches new areas of visual and intellectual exploration'.*

Figure 1 opposite

Figure 2 below



BSI LIST AVAILABLE

The Standards Committee of the Society would like to inform members that copies of the British Standards Institution sectional list of British standards covering office machines and data processing can be obtained from Society headquarters free of charge. Any member wishing to obtain a copy should send a large sae to Pauline Walters, BCS, 29 Portland Place, W1N 4HU.