Not only computing—also art

JOHN LANSDOWN

A rose by any other name

Computer artist, Tony Longson, who has recently had a most interesting exhibition of computer drawings and sculptures at the Hatfield Polytechnic, has taken me to task for using 'Not quite computing—almost art' as the generic title of these series of notes. He tells me that, bearing in mind the special role the computer can take in creativity, the title is inappropriate. I accept his soft impeachment and from this issue have, without asking the editor's permission, changed the title to the one you now see above.

Longson, who has a Computer Art Bursary provided by the Arts Council and Hatfield Polytechnic, has been examining the visual effect of patterns and arrangements of dots and lines in two and three dimensions, and the exhibition is the result of the studies made over the last two years. He describes his attitude to the works in the exhibition by saying:

Sight is what interests me—in particular the richness of being able to see space—and this is what makes me make things. The constructions I make are like drawings in space. They are made up of simple elements, such as lines and dots on clear sheets of material, which direct the way we see, and perhaps show us new things about the way we can see. Within these main aims there are other areas that interest me; the ambiguity of things that are flat yet appear to be three dimensional, and far more exciting, things which we know are in space which appear to be flat. I also like the distinction between pattern and not pattern; for example, recently I've been trying to spread small dots within a square in order to achieve a kind of 'grainy' surface. It's very difficult. I tried several random processes, but eventually had to determine precisely the pattern of individual dots so that no strong pattern groups were apparent.

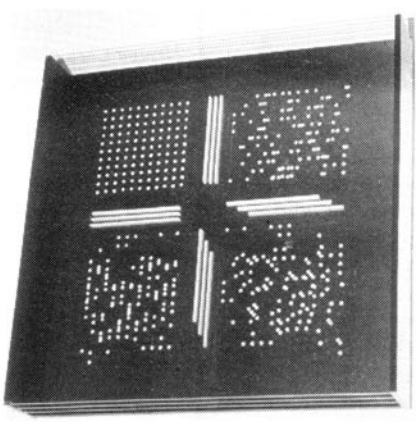
This interest in sight as a motivation stems from the time I studied Fine Art at Reading University. Terry Pope introduced me to his 'extended parallax' glasses which, by increasing the distance between our eyes, dramatically heightens our impression of the space surrounding the objects we are looking at. I went on to build glasses which reduce the distance between our eyes, and was equally impressed with the new reading of space that they offered. It occurred to me then that there were many different possible configurations of two eyes which might provide exciting visual results. However, it was not until I came across computer generated stereo pairs that I realised I had a relatively simple way of checking all the alternatives.

The majority of my work starts on a computer visual display though not as an end in itself, rather as an experiment towards making drawings in three dimensions. My latest sequence of work has been to investigate certain of the thresholds in the way we see. I enjoy visual information that will waver between two states, but never be both at the same time. I wanted to explore information that was highly structured and yet at times seemed to be haphazard. I chose very small white dots as the elements to be seen against a black background. The geometry was to make a perfect matrix of dots within a twenty by twenty square, though as the dots could be on any one of the four separate layers which made up the drawings, that geometry would only be visible from face on. (Because of the diminishing effect of perspective, I made the dots and the matrix slightly larger as a function of their increased distance). Added to this structure, I made the arrangements of dots symmetric about both horizontal and vertical axes (would that be obvious in the piece of work?). The square matrix was the only structuring that I wanted to be apparent in the work. From every other viewpoint the dots themselves had to have this grainy quality, that is, to have no local groupings which would be recognisable as patterns. This, of course, is the most simple explanation of something that has to be seen. The visual response that an object like this solicits is something that cannot easily be described. In the end, the whole is more than the sum of the parts.

To make the work, I've been using a numerically controlled three axis milling machine, which accepts information as co-ordinates on paper tape, and cuts corresponding lines or dots into the component sheets of clear perspex. It provides the necessary accuracy. Ironically mistakes are far easier to detect in visual information that is highly structured.

The sculptures that arise from this process are remarkable in that the information they convey is so different and unexpected depending on the angle of view. QUARTER 5 (Figure 1) is a typical work. Measuring about 600mm × 600mm and consisting of three sheets of transparent plastic on a black ground, the dots are arranged in what, from some viewpoints, is a random layout. However, as one's viewpoint changes, various orderings appear. From the particular viewpoint in the figure, we see that the top left hand quadrant is ordered in a 11 × 11 square matrix of dots, whereas the other quadrants exhibit irregular patterns; the top right hand showing a horizontal bias and the lower left a vertical one. From another viewpoint a different pattern of orderings would arise. The nine rods which divide the sculpture into quadrants also appear in different guises, sometimes flat, sometimes in front of the surface, sometimes behind and the whole work is a model of the way in which Man, in the form of sculptor and spectator, and Machine, in the form of computer and numerically-controlled miller, can co-operate to produce an exciting and thought-provoking work of art.

Figure 1



Now you see it—now you don't

Arising from the description of Manfred Mohr's 'Cubic Limit' I gave in the March 1976 issue of the Bulletin, I have received a short paper from David Piggins, Associate Professor in Psychology at the University of Guelph, Ontario, Canada, which comments on the perceptual phenomena evoked by similar drawings of outline cubes. He points out that these cubes have two fundamental properties. Firstly, that they give an impression of depth so that they look three dimensional; and secondly, that as one looks at them, they appear to reverse themselves so that, at one moment, one plane of the cube appears to be nearest and, at the next, it appears furthest away.

This reversal effect was apparently first recognised by a Swiss geologist, Necker who, in 1832, described the phenomena which he observed in the outline form of various crystals and, since then, the cubes have been known as Necker Cubes. Piggins has shown in one of his studies that the phenomenon is still apparent with as little as 12 per cent of the cube drawn and this is empirically confirmed by Mohr's experience. The whole paper is extremely interesting and I have asked the author's permission to reprint it in a forthcoming issue of *PAGE*, the Bulletin of the Computer Arts Society, so that it can have as wide as possible circulation among artists working in this field.

Figure 2

Figure 3 Program HIJ

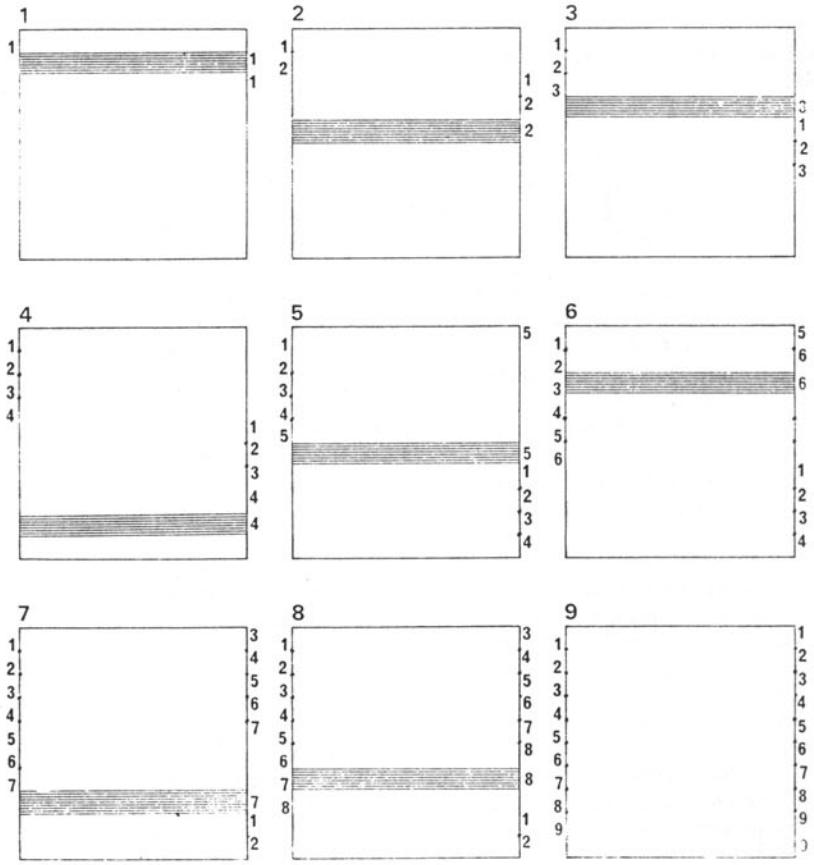
Figure 4 People

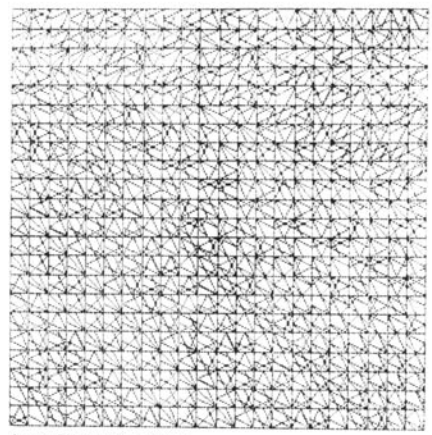
O Canada

I am writing these notes during the Olympics fortnight so that Canada is well to the forefront of my mind, particularly when I hear that the computer which deals with the scoring was programmed to reject as impossible a gymnastic score of ten—even though this remarkable score was achieved on four or five occasions. It is a relief to hear the TV commentators refer to this as an error in instructing the computer rather than, as would have been the case four years ago, an example of the stupidity of computers! In addition to this and the paper from Professor Piggins, I have just received two further reminders of the existence of that country. The first, a notice to say that the 1977 IFIP Congress takes place next August in Toronto, and the second, a catalogue from one of their leading computer artists, Jacques Palumbo, who is a Professor of Design at the Montreal Institute of Graphic Arts.

The catalogue refers to an exhibition Palumbo had during May this year at an art gallery in Burnaby, British Columbia in which he showed various paintings and drawings, all of which were composed or executed with computer aid. Nine of the paintings—which he calls Matrix-Aquagrams—form a related series and are shown in detail in the catalogue. Essentially they show the development of a progressive process wherein two horizontal bands of watercolour are added to a square ground measuring 336mm × 336mm. The surface of the first band increases arithmetically from one tenth to nine-tenths of the total area as it moves regularly within the ground, and a second band situated alternatively above and below the first has a constant surface that receives from one to nine layers of water colour. In addition, an algorithm determines another element which controls the final arrangements of the painting. The process is demonstrated diagrammatically in Figure 2. For technical reasons it is not possible to reproduce an illustration of the paintings but, to give a flavour of his graphics work, I show in Figure 3, another of Palumbo's drawings, Program HIJ.

Canada produces some extremely exciting computer art by such artists as Palumbo, Mezei and Burtnyk, and I trust the IFIP organisers will make sure that work by these, and computer-composers such as Stirling Beckwith, will be given a prominent airing at the Congress.





Jacques PALUMBO Programme HIJ

Improving your image

Papers are now being invited for a conference being held in Munich during March 1977 on the subject of digitised image processing. This subject, which impinges on the consciousness of most of us as a by-product of space technology, is interesting a number of artists: indeed Tony Longson, mentioned above, is seeking to develop some of the ideas.

Waldemar Cordeiro, a Brazilian artist who died in 1973, was particularly concerned with the artistic potential of digital image processing and published

a number of works using these techniques (Figure 4). Had he lived, I am sure he would have contributed a stimulating paper to the conference and it is to be hoped that other artists will submit in his place. The conference is, of course, mainly concerned with processing of x-ray and microscope pictures, television and radar pictures, and methods for digitising, storing, manipulating and displaying pictures.