Not quite computing - almost art

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Making arrangements

The other day artist Duncan Smith came to a Computer Arts Society meeting with an interesting problem in combinatorial computing which had arisen in his attempts to arrange fifteen rectangles on a canvas in accordance with certain rules. Although the problem he posed was set in terms of painting, I think it best explained in architectural terms. Image an eccentric millionaire with a passion for mathematics (Dr Matrix?) who wishes you to design him a single storey house having 15 rooms with the following specification.

1 Rooms can have only one door in any wall and each room should have a different layout of doors.
2 There should be four rooms with one door each.
3 Six rooms should have two doors each.
4 Four rooms should have three doors each.
5 One room should have four doors.

The questions which arise then are: can a house be designed to meet this specification and, if so, how many different designs are there?

Well, it is certainly possible to design with this specification and Figures 1 and 2 (opposite) show two possibilities, one with an internal courtyard of one unit square (there are other designs having a courtyard of two squares). Duncan Smith had already discovered over sixty variations but, doing this by hand, he found it a tedious process particularly as it was becoming more and more difficult to discover new solutions. He wondered therefore whether there was a computer method of generating further designs. No-one at the meeting was able to suggest an efficient algorithm for doing this nor were we able to find a way of deciding how many solutions there would be, although Alan Sutcliffe made a preliminary analysis which suggests that there may be many hundreds. Some of us thought that existing arrangement programs such as CORRELAP, which work from an association matrix and seem appropriate, would soon be overwhelmed by the problem.

Has any reader a good idea on how to proceed? I warn anyone tackling the problem that it is addictive and, once you start on it, you'll find yourself sketching layouts at all spare moments. A good computer method would save everyone a lot of time.

Stanley Gill

Everyone in the computing community is saddened by the recent loss of Stanley Gill and founder members of the Computer Arts Society particularly so. It was Professor Gill at the IFIP Edinburgh Congress in 1968 who suggested the formation of a society to encourage the use of computers in the arts and gave us a lot of help to get it started.

Whilst he wasn't an active member of the CAS, he was always interested in and aware of its activities and gave them considerable moral support. He was instrumental in sorting out an early financial problem we developed and which could have scuttled us after our first exhibition. His own interest in computer art arose from some early work he had done in computer music.

Appropriate forms

Because so many people have attempted computer plotter-graphics as an art form the quality of work varies tremendously. Almost everyone who has access to a plotter seems to have tried to exploit its art potential, generally by programming it to produce families of Lissajous figures. Whilst these are sometimes very striking they seem to derive more from thinking of the computer as an analogue rather than a digital machine. There are, however, some artists who have greatly advanced the subject by finding images and methods appropriate to the medium and, in doing so, have produced drawings of incredible beauty and interest.

One such is Manfred Mohr, a German artist who lives and works in Paris. He has had many one-man and group exhibitions all over the world and has won prizes for his computer graphics at the 10th Biennale, Ljubljana and at San Francisco. Two of his works shown here (Cover and Figure 3) illustrate his interest in repeating and overlapping simple forms. Note that, in general, curves (expensive in computer and plotter time) are not drawn but suggested, and how all the drawings create interest by simple but appropriate means. Manfred says of his work. *'The dialogue with the computer implies that results and their visual expression have to be judged under completely new aspects. It is evident that one should not create single forms and judge them by a traditional and subjective aesthetic, but build up sets of forms where the basic parameters are relationships between forms with no aesthetic value associated to any particular form in the set.'*

He draws our attention to a quotation by Abraham Moles. 'The machine doesn't think, it teaches us to think.' Amen to that!

Figure 3