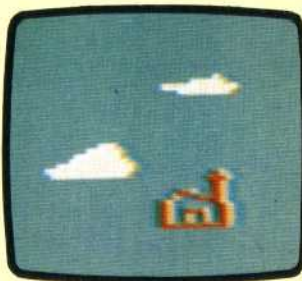


Sprite Graphics



Sprites is the name given to a way of making more realistic and easier to use pictures on your computer system. Originally developed by Texas Instruments, sprite graphics are now available on several home computers, including Texas Instruments TI99/04A, the Commodore 64, Atari Computers and the Sord M5. In conventional graphics,



pictures are built up on a single screen just as you would paint a picture on a sheet of paper. With sprites the computer artist has several 'planes' or layers, each of which can have its own pictures. On some computers with sprite graphics, such as the Sord M5, there can be as many as 32 separate planes. The easiest way to think of



these planes is as sheets of clear plastic. If the sheet 'nearest' to the viewer has a picture of a tree, while the sheet behind it has a picture of a cloud, the cloud will be seen to pass behind the tree as if drifting across the sky.

By putting different elements of the picture on separate 'planes', convincing three-dimensional effects can be created.



Sprite graphics systems have several other advantages too. The character 'drawn' on any one of the planes is called, in computer jargon, an 'object'. Having created an object (a bird, for instance), the computer programmer can forget the details of how the picture was built up. If he wants it to move across the screen, he can specify a speed and a direction.

but less than an eight by eight block of dots. Each pixel can be called up individually and located in the desired position on the screen.

In high resolution graphics two BASIC commands are used for line drawing. MOVE identifies the beginning of a line and DRAW makes the line appear. Each end of a line is identified by a pair of numbers representing the row and column on the screen where the end falls. Rows are usually numbered in order from the top of the screen to the bottom, while columns are numbered from left to right. So the dot in row zero and column zero falls in the top left-hand corner of the screen.

The program below can be run on the Lynx and the BBC Micro. Remember to set your micro into graphics mode. Type this program in exactly as it appears. It can be run on any computer with high resolution graphics by replacing MOVE and DRAW with equivalent commands (see the 'Basic Flavours' box).

```
10 MOVE 100,50
20 DRAW 92,95
30 DRAW 57,125
40 DRAW 100,110
50 DRAW 143,125
60 DRAW 108,95
70 DRAW 100,50
```

When you RUN this program a 'Trinacria' shape will appear on the screen. This shape resembles the island of Sicily. (It is so called because Trinacria is the old Latin name for the island). The program scheme is suitable for drawing any shape consisting of a network of connected lines. The numbers after the DRAW command indicate the row and column position of the point to which the shape is to be extended. It is possible to draw anything on the screen using just these two commands. The only limitation is the resolution of the computer screen and your perseverance, since even a curve must be represented by dots. And MOVE and DRAW give you access to these dots.

The next program gives you an image of a cone by plotting a pattern of circles. As it is written this program will run on the Sinclair Spectrum. Other computers, including the Dragon and the Oric, also possess the CIRCLE command (see the 'Basic Flavours' box).

```
10 FOR K = 2 TO 40
20 CIRCLE 40 + K, 40 + K, K
30 NEXT K
```

These two programs illustrate how a computer can generate graphic displays through commands acting on numbers. However, a digital approach will always fall short in attempting to imitate a continuous flowing process. For this reason there are special hardware devices for designing images. These can be attached to microcomputers and free the artist from the need to enter the thousands of numbers needed for fine images. The digitiser is one such device. The artist draws his design with a special 'pen' and the digitiser translates the movement of the pen into the row and column numbers that the computer accepts.

Basic Flavours



To run on the BBC Micro the program must be preceded by:
5 MODE 0



To run on the Oric the program must be preceded by:
5 HIRES
and line 20 must be replaced by:
20 CURSET 40 + K, 40 + K, 0
25 CIRCLE K, 1

To run on the Dragon the program must be preceded by:
5 PMODE 4, 1 : SCREEN 1, 1 : COLOR 0, 5 :
PCLS
and line 20 must be replaced by:
20 CIRCLE (40 + K, 40 + K), K