Mapping the world

Jeff Davies shows just how good the Arc can be for producing statistical maps and displays.

Several articles have appeared in the Acorn press about producing maps using Draw and other more powerful packages. Nothing has appeared so far, however, on producing the type of maps which one sees in geography and other publications where statistical data has been analysed and presented in map form. These are statistical maps of the type that one encourages GCSE and A level geography students to try to emulate in their own projects. Programs on the PC or Apple Mac like Mapmaker are intended to produce such maps, but at a cost!

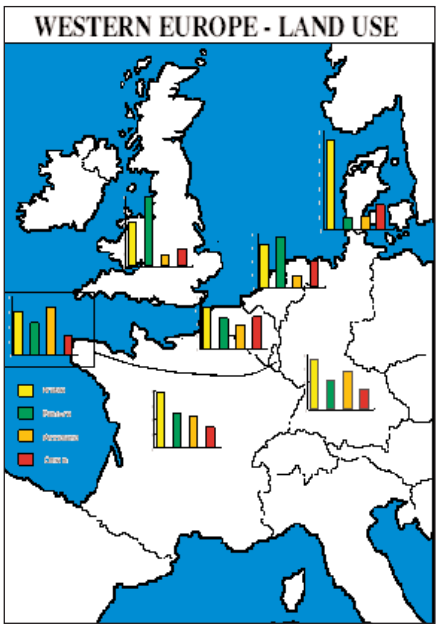


Figure 1.
Bar charts superimposed on scanned image

It is possible to produce statistical maps of publication quality on the Archimedes using quite general software. By using a drawing package (Draw, Vector or ArtWorks) possibly in conjunction with a program which produces statistical diagrams such as bar and pie charts (ChartWell, GraphBox Professional, or, PresenterGTi), it is relatively easy to produce any of the following:

maps which include bar or pie charts in appropriate places;

maps which use proportional symbols such as

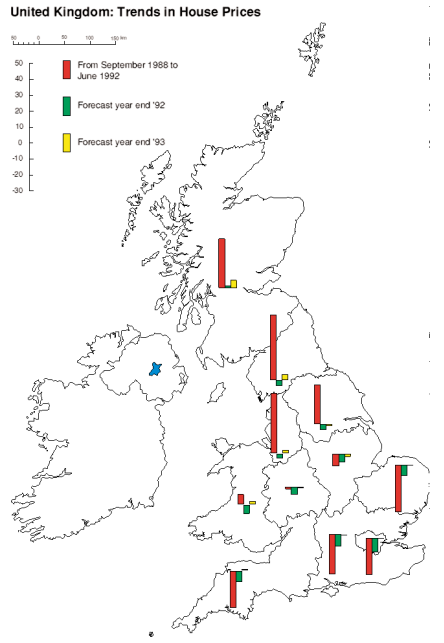


Figure 2.
Using bar charts on a map in Draw format

circles;

choropleth maps (with a CAD package for hatching), and

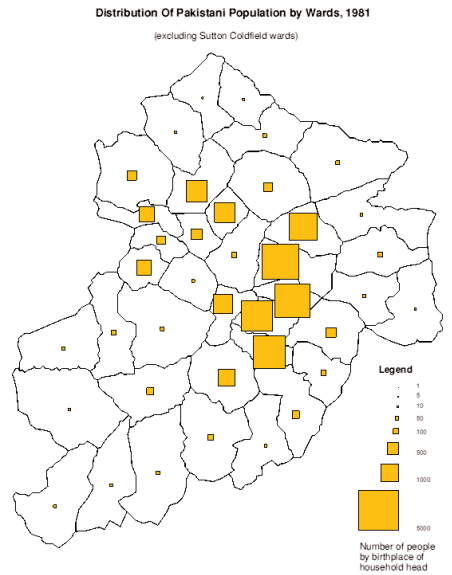


Figure 3.
Using proportional symbols (squares)

flow-line maps.

It is the ease of multi-tasking on the Archimedes

that makes this possible with non-specialist software.

Obviously, the essential first requirement is a base map which can be imported into your

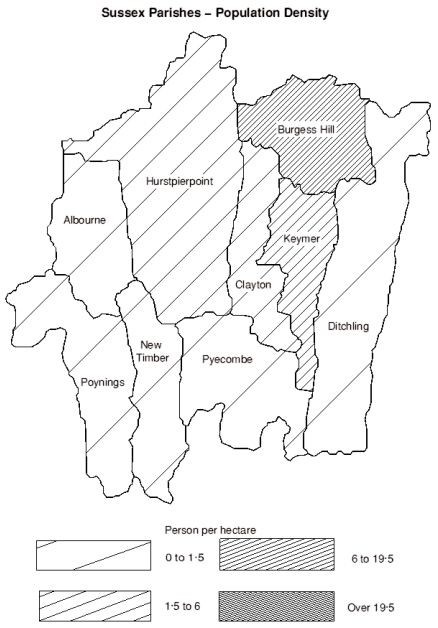


Figure 4.
Example of a choropleth map using cross-

drawing package - an outline, preferably with the area units being objects which can be filled with a colour or shading pattern. The drawing package also needs to be able to import diagrams from your graphs and charts program.

THE BASE MAP

It is possible to scan a map and import the image into a drawing program where you can add charts etc., but the outline of such a pixel-based image will be messy (as can be seen in figure 1), and cannot be edited within the program, e.g. by filling areas with colour. An outline produced by a line-art program is much neater and is also editable.

Base maps can be bought from various sources, but on some such maps countries are not separate fillable objects, which would preclude the production of certain types of map.

BAR AND PIE CHARTS ON MAPS

The first example was produced in an A-level practical class using a scanned image imported into Draw on the Archimedes, and Chartwell running concurrently. Most of the work was done by students, though I have tidied up the final version. The U.K. house prices map (figure 2) was produced using a base map from Pyramid Computer Services, Draw, and PresenterGTi running concurrently.

Bar charts were saved directly from the graphs and charts program into a Draw window. Making sure that all the bars have the same scale can be a problem. After dragging them onto the Draw window containing the map, they all need to be scaled down by the same amount using Magnify.

PROPORTIONAL SYMBOLS

The example shown in figure 3 was produced for a project on racial segregation in Birmingham. The base map was again pre-drawn. Draw was used to produce the symbols, locking to a grid to produce squares of the required size - length of side proportional to the square root of the quantity represented.

The use of squares is not usual for this type of

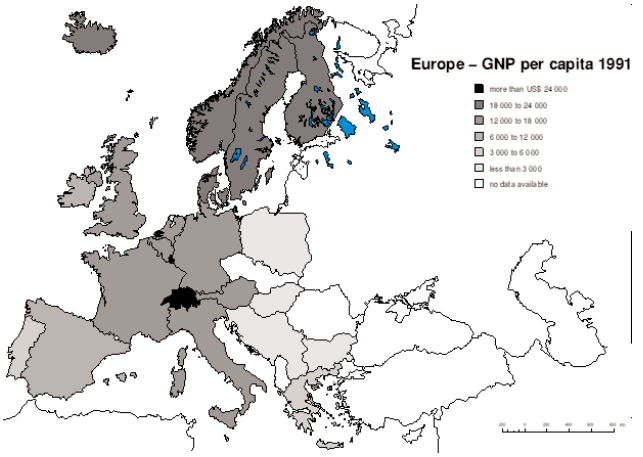


Figure 5.
Choropleth map using shaded areas

map, but producing circles of exact radius was more difficult. A CAD program called CADet is now available which will do this, however.

CHOROPLETH MAPS

The maps shown in figures 4 and 5 were produced using base maps created in Draw (Europe base map from Pyramid Computer Services), and CADet for the Sussex map.

As the name implies, CADet is not a full, professional CAD package, but does contain the features required for these maps. The base map was put into CADet and the parishes and legend boxes filled with hatching patterns (angle and distance between lines can be specified, and other patterns can be chosen or designed if

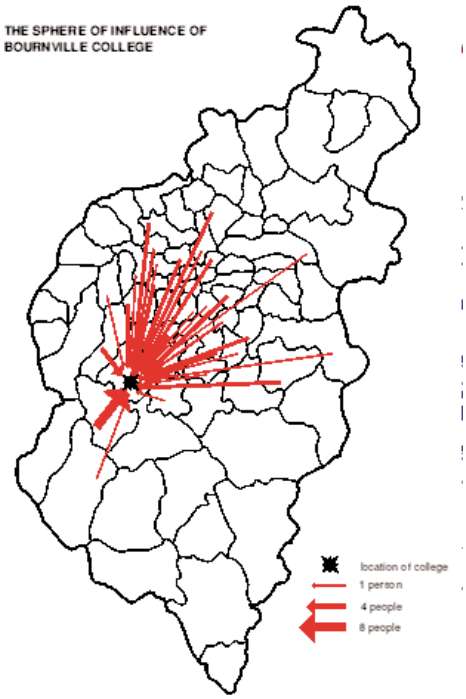


Figure 6.
Flow diagram with straight lines

desired). The map was saved as a Draw file and put back into Draw for the addition of text, as CADet uses its own fonts.

Contrast the hatched patterns of the Sussex map with the grey scales of the Europe map. Hatched patterns evidently have the potential for producing clearer results, especially when data falls into a large number of classes. I find that grey scales are often more difficult to distinguish from each other.

The use of hatching in this way, especially with lines all running in the same direction, avoiding dot patterns and cross-hatching, is somewhat purist and old fashioned, but I prefer it

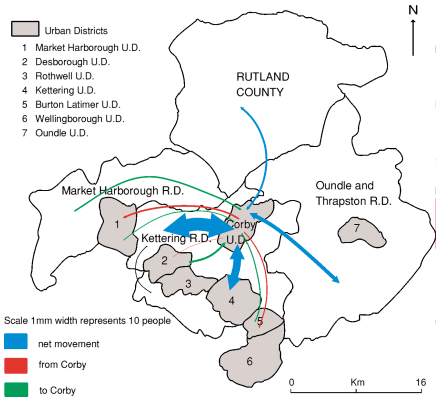


Figure 7.
Flow diagram using curved lines

because it has a clearer relationship with the sequence of data classes.

An alternative way of producing hatching patterns is to use masks, as described in a recent article in RISC User (RISC User 6:5). However, as also described in that article, these will not allow adjacent areas to be filled with a pattern. The exception is Vector s masks (not the pseudo masks). However, those are a special feature of that program and will not go into programs like Impression, for example. (See also Hatchback from 4Mation reviewed in this issue - Ed.)

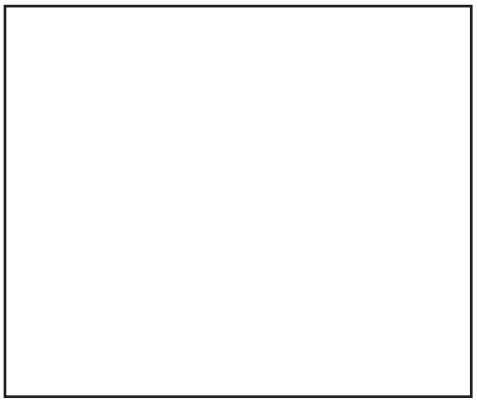
FLOW LINES

The first example of flow line maps (figure 6) was produced in Draw by a GCSE student for his coursework, using a base map of Birmingham postcode areas drawn by me. The second example (figure 7) is based on an examination question. It was produced by students in an A-level practical class, using a pre-drawn base map.

Draw enables the width and end-shape of lines to be specified by the user so that flow lines are easy to draw, though it is not possible to achieve all conceivable effects properly, such as joining lines or dashed lines. In the latter case an arrow will appear at every dash, though a white dashed line without an end arrow can be superimposed on a solid line to create the desired effect.

These maps can be incorporated in DTP documents, or printed separately for inclusion in students projects, in colour if you have a suitable printer. Colour is a great advantage when different colours are significant, as in one of the flow-line examples.

Thanks to Andrew Ktoris and Daniel Mills, students at Bournville College of Further Education, and Pyramid Computer Services, 16 Borough Crescent, Stourbridge, West Midlands, DY8 3UT, tel. 0384 396739.



caption

Software referred to:

ArtWorks - Computer Concepts (0442 63933)
CADet - Minerva Software (0392 437756)
ChartWell - RISC Developments (0727 840303)
GraphBox Professional - Minerva (0392 437756)
PresenterGTI - Lingenuity (098 685 477)
Vector - 4Mation (0271 35353)