Not only computing – also art

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Nothing new under the sun (or rain either)

One of the surprising things about the graphical representation of data is how long the conventions we currently employ have been in use. Bar charts, pie charts and 'fever' line graphs – the essential features of any business graphics computer package – were, indeed, the invention of one man: the Scot, William Playfair (1759–1823). Playfair first showed his line graphs and bar charts in 1786 when he published his *Commercial and Political Atlas* which contained nearly fifty examples of these. All but one of his charts in this volume were line graphs and he apologised for showing a bar chart which he regarded as '*much inferior in utility*' to those that indicated time on one of the axes. To prevent misinterpretation, he also included the tables of figures on which the charts were based – something that contemporary presenters of data would do well to emulate. He also took great care to point out the difficulties in accurately interpreting the graphics.

It was not until 1805 in the *Statistical Account of The United States of America* that Playfair published his pie charts. These are exactly like those we are used to seeing on computer-created slides although some contain rather more slices than would now be regarded as reasonable. However, unlike many people today, Playfair had reservations about depicting data graphically and knew it was possible to mislead by so doing. '*As to the propriety and justness of representing sums of money, and time, by parts of space, tho' very readily agreed to by most men, yet a few seem to apprehend that there may possibly be some deception in it, of which they are not aware.*' Newspaper and TV graphic designers please note. Some contemporary charts seem designed to mislead – it would, for example, be interesting to discover to what extent the recent stock market panic was exacerbated by the appallingly bad habit of financial journalists of not showing the zero line on their graphs.

By concentrating their 'window' only on the sloping part of the graph, a thoroughly misleading picture of decline can be presented (Figures 1 and 2). (In passing, however, I should stress that I am not one of the people who blame computers for the stock market crash. Two computer-based excuses were prevalent in the 'explanations' of the television pundits: the automatic triggering of selling by some PC-based computer programs when certain thresholds were reached; and/or the fact that computers were able to present information to brokers faster than was previously possible. Neither of these explanations seem nearly as plausible as that of the inherent instability of a market-based economic system.)
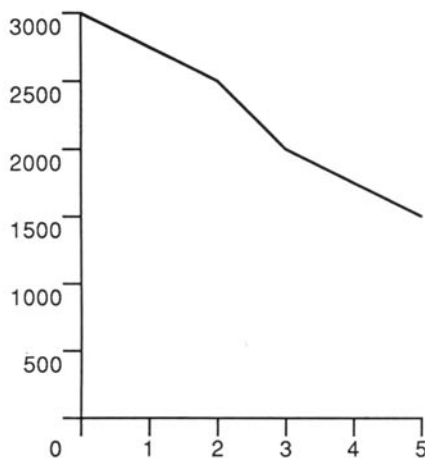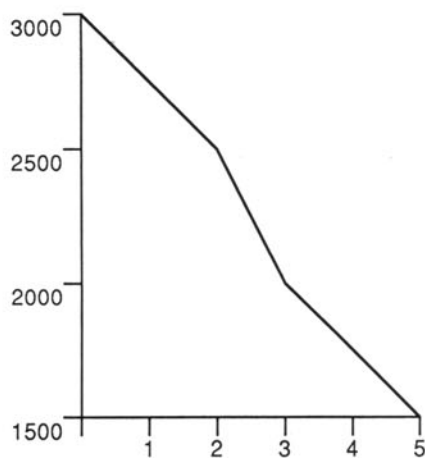

Figure 1

Figure 2

Two excellent books show both Playfair's graphs and current examples of good (and bad) business graphics: Edward R. Tufte's magnificent, *The visual display of quantitative information*, Graphics Press, Cheshire, Conn 1983 and Nigel Holmes's imaginative, *Designers guide to creating charts and diagrams*, Watson-Guptill Publications, New York, 1984. These are essential reading for anyone concerned with the graphical presentation of data.

One other form of graphical data presentation also has a long history, meteorological charts – though I wasn't aware of this until I attended a recent Displays Group Conference on '*The future of graphics software*.' At that meeting, CT Little of the UK Met Office outlined the computing work that goes on in weather forecasting and brought along a weather chart for the same day one hundred years earlier! As you see from Figure 3, the chart for Friday 28 October 1887 is not very different from those we show now and I fancy that anyone able to understand such information in Victorian times would have little difficulty in understanding today's graphics.

Where did we go wrong?

What are we to make of all this apparent lack of progress in graphical presentation? Is it that those in the Eighteenth and Nineteenth centuries got it right and were able to deduce the fundamental graphics forms that will suit us all for ever? Or is it that our current designers are not thinking deeply enough about what is needed for the Twenty-First century – which is all too rapidly coming up on us? Despite the enormous increase in the use of graphics to show complex information, the only widespread graphical modes of data presentation that have come out of the Twentieth century seem to be Chernoff faces (which have never fulfilled their early promise) and the pre-war work of
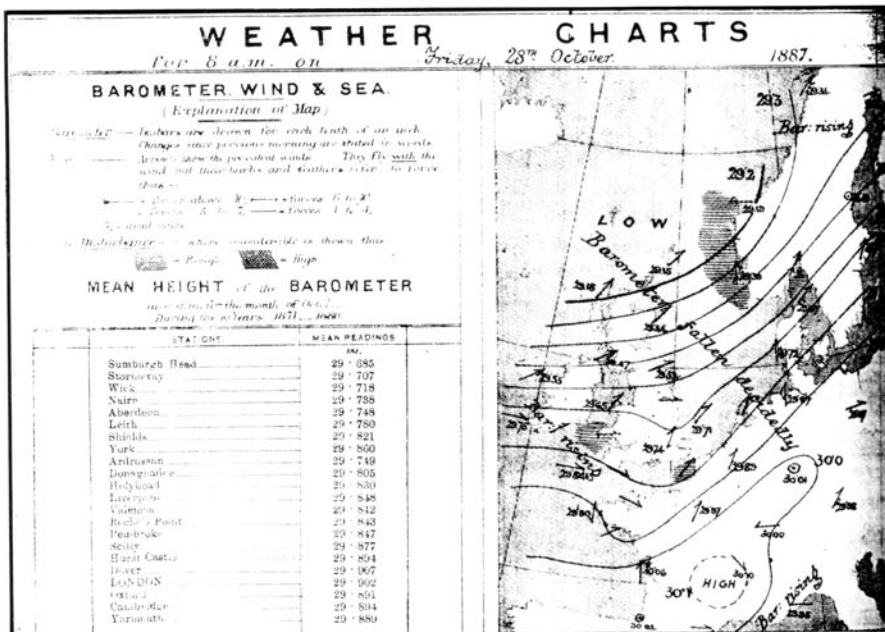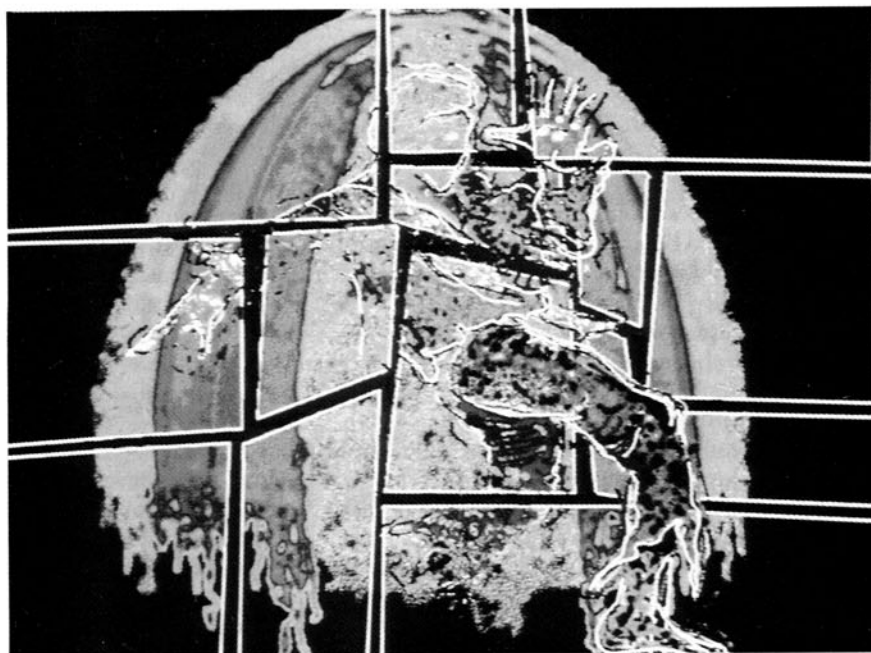
Figure 3

Otto Neurath (1882–1945) of the Isotype Institute. The latter's expressive graphical treatments had a great influence on me when I was a child – and later: I used to pour over *Modern man in the making*, and *Basic by Isotype* as well as one which I think was called *The two commonwealths*. My copies of these have long disappeared and I've recently searched second-hand bookshops for them in vain. The way Neurath used multiple icon-like figures to represent numbers seems to me to have direct relevance to current computer graphics' needs. His work should certainly be much more widely known to those whose job it is to convey pictorial information.

The electronic sketchbook

Simon Gibbs of Wolverhampton has sent me some examples of his work with a paint system. Simon uses a mixture of figurative and non-figurative motifs (Figures 4 and 5) which should really be seen in colour to judge their full effect. As with so many other artists who use computers, he finds it possible to work quickly with their aid in order to produce a series of related works – some of which are finished items, others being notes for further explorations.

This idea of using the computer as an electronic sketchbook is growing more and more common as simple paint systems become obtainable for even the cheapest of computers. They allow the preparation of quick and well-finished sketches comparable to the notebook drawings of artists of the past and it is easy to become seduced into using a paint system as one's only medium. Indeed, in order not to lose completely the manual drawing skills I so laboriously built up during my youth, I have, from time to time, to force myself out into the streets and fields with a sketchbook of the conventional kind.

Figure 4

Figure 5