serendipity

Not only computing – also art

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What's the object?

Some year's ago, in company with a dozen or so others, I was invited to Sweden to take part in a seminar to discuss the interesting question, 'Is the computer a tool?'. At this gathering I frequently crossed swords with a famous American professor of computer science who seemed irritated and surprised that anyone should argue with his pronouncements. Sometimes our exchanges became quite heated and, I fear, caused our kind hosts embarrassment. The arguments gave me little pleasure because, in general, I admire the gentleman's work but, on this occasion, he seemed frequently to be talking nonsense and I felt impelled to tell him so.

Matters came to a head when, in one session, we were examining some historical woodworking tools. On seeing these, and to prove his point, the professor waxed lyrical about their inevitability of form and their expressive fitness for purpose. These objects, he claimed, had not been designed but had evolved into this form through the centuries and were at this point exactly what they should be. So much so, that what they are could be judged from their appearance alone. (He made his statements with the air of one who *knew*. They were not opinions to be discussed. They were facts which should not be contradicted.)

I took an entirely different viewpoint. Whilst accepting that the objects were beautiful and fit for their purpose, I claimed that these attributes could only be judged by knowing first what their purpose was. Indeed, a knowledge of their purpose was essential if we were to make any sense of their appearance at all. What they are to be used for is, then, as much a part of their *definition* as is shape or material of construction. I pointed out – to his evident disgust that anyone should lower the tone of discussion by introducing such mundane matters – that whole television series had been built on exactly this premise. Experts taking part in such programs are shown historical objects and are asked to identify them. Almost invariably they cannot do so even though the objects that they are asked to judge are often beautiful and have evolved over the centuries. Only when they are told what they were used for, it is clear that their appearance is 'exactly as it should be'. The problem arises because what we see is conditioned by what we know. Indeed, there is ample evidence that knowing something about an object affects not only how we see it, but also how we *look* at it too! (The eye scans a scene differently according to the content of prior knowledge about what is to be expected. This is an effect which can be measured.)

Context, then, is everything – as Figures 1a and 1b illustrate. The object in the centre is the same in both cases but it is impossible to say with certainty whether it is the letter 'B' or the number '13'. This is because we are not looking at either 'B' or '13' but a *symbol* which signifies different things according to context. Similarly, it seemed to me, that the tools we were looking at were symbols which signified a great deal but that it was impossible to know what without understanding their context. The great service that the semiologists have done for us is to show pretty conclusively that most things are signs and that signs and symbols are, in general, arbitrary. (It would, for instance, be fruitless to waste time considering whether the word 'dog' is a good one for the little four-legged creature I can see running around in the park.) We make sense of the arbitrariness of words by learning how to relate the sign to what it signifies and we can only make sense of objects in the same way.

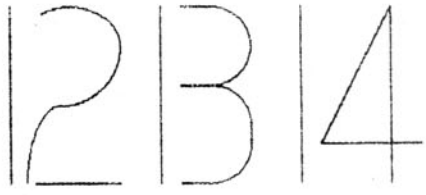

Figure 1a)

Figure 1b)

If only I had known then about Jean Baudrillard's little 1968 book, *Les Systeme des Objets*, I could have cited it as evidence for the point of view that objects (and tools) have to be seen in a much wider context than we were considering them there. Unfortunately I didn't find out about that seminal work until a little later and, my French being rudimentary, it took me a long time to get even a simple understanding of it. I was reminded of the work recently when reading an article called, 'Knowledge in an Open Prison' by Eilean Hooper-Greenhill (*New Statesman*, 13 Feb 1987, pages 21–22). Looking at the role of museums – the 'open prisons' – the author discusses Baudrillard's insightful classification of objects and says,

'. . . And once discrete objects are formed into a group, these complex classifications mutate and expand – an object may be fixed in relation to one category but arbitrary in relation to another. So any object, any artefact, is always caught in a powerful, fluctuating movement of possibilities and potentialities – a flow of meanings that is also socially disruptive. Until, that is, it ends up in a museum. For there objects are confined, incarcerated, placed in a permanent, fixed relation to one another. Thus pinned and classified, their individual histories and identities are lost.'

There would be no point in taking this little trip down memory lane – particularly as it makes me unhappy to think that I probably made the Professor's trip less enjoyable than it should have been – except that lately I've been looking at the role that artificial intelligence might play in systems for designers. It struck me that, in computer graphics and CAD, we also treat objects in this museum-like way – concentrating largely on their

surface features and forgetting the wider context in which they exist. When humans design, they are aware of these contextual matters. If computers are to play a larger part in the design process, they too must be supplied with this sort of knowledge. Representing it in a form that computers can 'understand' and humans can check is going to prove a daunting task.

In glorious black and white

At St Martin's College of Art, where I teach a part-time course in computer graphics for experienced graphics designers, a group of Macintoshes is in constant use. These are networked to a laser printer which, at 300 dots per inch, gives output of a quality close to that demanded by graphics artists. Probably the main use is by those who want to make use of display lettering (which can easily be stretched and squashed to suit the needs of the moment.) Others use the black and white paint system, Macpaint, to make sketches and diagrams. Figure 2 shows one such sketch by Karen Durant.

Another of my students, but this time from the Royal College of Art, Mike King, used the St Martin's Pluto and Nimbus system to create a program called, 'Sculptor'. This was devised to test some ideas he had on computer interaction for artists and helps to make drawings assembled from large numbers of shaded and overlapping spheres – a method first suggested by O'Rourke and Badler of the University of Pennsylvania. One of Mike's drawings, 'Man Seated', won a prize in this year's Baillie Gifford Technology competition (It's the second time he's landed an award in this event.) Figure 3 shows the results of a development of the Sculptor program to make automatically contoured drawings from the spherical basis.

The first prize of £600 in the Baillie Gifford competition was awarded to Richard Wright, an Artist in Residence at Middlesex Polytechnic. This was given for one of his 'Molecule' series of drawings done at the IBM Scientific Centre at Winchester. Oliver Harrison of St Martin's School of Art won a prize of £200 for his slide, 'Futurama'. The other prize of £200 went to Mike King. More than 70 excellent slides were received and the judges had enormous difficulties in deciding on the winners. I hope to show the prize-winning efforts in a future issue.

Figure 2

Funny, you don't look a day over 150

I hear that, as part of the 1991 Babbage Bicentenary, attempts are going to be made to construct a working version of Babbage's Analytical Engine. My colleague, Mike Stapleton, has suggested – and I agree with him – that the real value of this exercise will only be realised if we try to use all of today's technologies to achieve the result. (After all, we don't want to answer Japan's Fifth Generation with our own Zeroth Generation Project.) Accordingly, we propose that the Analytical Engine be described by formal specification methods, automatically translated into computer numerically controlled machine instructions for cutting the parts, and then assembled by robots. *That* would be a project worthy of Babbage himself.

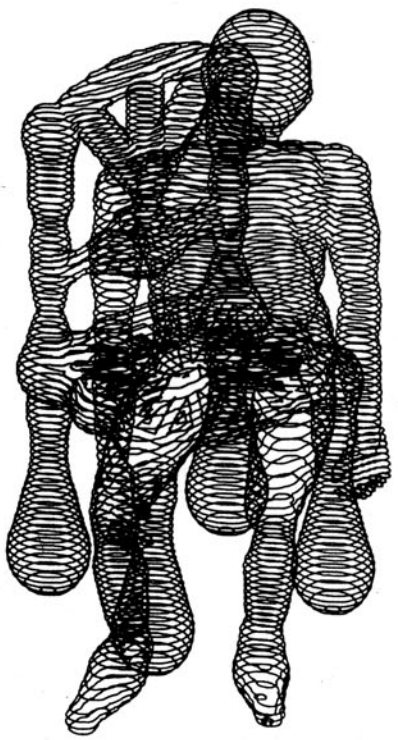

Figure 3