

Foreword

I attended a visualization conference some twenty years ago, with little idea of what I was doing there. I am a painter, and I use computer graphics. I must have been looking for connections, but this was a new field to me. I was aware of special effects in movies, and I knew that animators favoured ants because they were easy to render, but like most people, I took information displays for granted—traffic warnings, air traffic charts, weather systems. I did not think of these as being designed, but I could tell they had become “computerised.”

Here we were, all gathered together: statisticians, academics, ecologists, physicists, chemists, medics, software engineers, artists; with presentations by librarians, armourers, car designers, market analysts. The visuals were eerily beautiful, rolling and rotating 3D meshes like models of galaxies or neurons in the brain. My attention wandered away from what they were supposed to communicate—the librarian needed to know how many readers borrowed simultaneously both Jane Austen and Hemingway. I was looking at them with delight, like a collector of gorgeous medieval maps who does not care whether they represented something real or imaginary. Then I was alerted to cases where it would be life or death: interactive 3D modelling let medical students explore the interior of the heart. Leonardo—anatomist, inventor, engineer—had made detailed drawings of those same ventricles some five hundred years before.

The past twenty years have seen some amazing science and art projects, wonderful art exhibitions in science museums, but it would be a mistake to blur the distinctions. Information design needs to be objective, clean, and articulate. It has to be tested. A “graphic,” such as a desktop icon, logo, or a stop sign, has a job to do. An ambiguous message is no use. Recognition must be instant. An art piece can be vague and linger in the imagination. It may not “represent” anything, but some diagrams—information stripped down to the essentials—have the look of abstract art. The most often-cited visualization masterpiece must be Harry Beck’s 1931 London Underground map, itself derived from electrical circuits. It was an inspired invention, seized on by commuters the moment it was tried out in 1933—despite it misrepresenting the actual positions of the subway lines. Mondrian, a London resident in the early forties, took up the theme in the late Boogie-Woogie paintings.

I should here mention something obvious. When stuck with a difficulty, such as being lost in a city, and then realising where we are, we naturally say, “I see.” Seeing is synonymous with being aware, realising, recognizing. We draw maps in the sand, plumbing diagrams on envelopes. What we want is information we can act on. Apart from the occasional aesthete, we do not need to savour the image itself. More and more we just look, click, and go.

Sometime in the eighties, I began to draw on the computer. The flickering screen was more like a diagram than “art.” I could get a fuzzy “print-out,” but it was nowhere near as detailed and smooth as a photograph. You could play with shapes and colours. You could spin them about and rearrange them at will. I knew how squares and circles came to be “generated” by inputting simple directions. Therefore, I am of the generation who can think of putting information into the processor to get an image. Today, we take the information out. Compared with today’s laptops, those computers were primitive, slow, bulky. It was a bit of a struggle. We did not have Facebook or Wikipedia. I now use a Cintiq, which means I draw directly on the screen, but one advantage back then was that you sensed the affinity with the logic of the program. You knew how to build forms in the right and simplest manner. I recall walking through a park after a session and looking at the trees and seeing the branching command—go up, divide in two, repeat. Computing gave you this after-image, this glimpse of nature’s systems. In fact, representations of the tree were the default 3D modelling demos, and my observation was something of a cliché, but here and there a theoretical conundrum has been resolved in a moment of pattern recognition. One such event took place in 1951 at Kings College, London: Rosalind Franklin looked at a foggy X-ray slide and identified the double helix of DNA. Once “seen,” the problem was solved.

Can we expect an interchange between researchers in labs, information modellers and artists, now that they all use Photoshop? Could we find these connections within the field of abstract art? I have long been an abstract artist—not exclusively. I admire Paul Klee’s “Thinking Eye” method of improvising, of “taking a line for a walk.” In the thirties, anthologies of modern art included photos of bacteria, but we should be wary of the term “abstract” because it implies the artist is attempting to represent something immaterial and distant, to “visualize” an idea perhaps, something less tangible than a bowl of fruit. This is not necessarily the case.

Traditionally, artists have always begun their studies with drawing. You can get an idea of how teaching methods have evolved over the past hundred years by looking at drawing manuals. Here you find, in embryonic form, some of the concepts that inform today’s computer-aided visuals. It is doubly interesting, because much of the explaining is done with drawn illustrations – drawings of hands holding the pencil the correct way, vertiginous lines heading to the vanishing points of perspective. In other words, visualizations of how to visualize. There were fierce arguments about whether children should be disciplined or allowed to express themselves freely, and whether it really was possible to draw what was in front of you without first understanding a good deal about it. Before you drew the chair, you might need to know perspective. Before you drew the model sitting in it you might need to know how the skeleton and muscles fit together. Others argued that this was beside the point: all you needed to do was to look and see what was there, but they did agree on one principle: the trick was not so much in learning to draw as in learning to see.

Today teachers tend to encourage the student’s individual creativity, rather than strive for uniformity and accuracy. Drawing, generally, is not seen as an examination subject – except in China. Ideas about drawing, about what else drawing might be, how it might include video and performance for example, are in flux. The precision drawing necessary in aeronautics and architectural fly-throughs is necessarily computer strict. Educators are left speculating how drawing should be taught. Forget about pencil and paper, the still life and the posed model. Have the cameraphone and iPad finger-painting taken their place? Have smart phones made us smarter? Because we speed dial and know all the icons? Whatever the answer, if we want to work in this field—as artists or as information designers—we should probably

still be able to draw a table. That would not have been much of an attainment a hundred years ago. Art students then had to copy geometric figures pinned to the classroom wall, copy approved drawings by the masters, draw simple still life objects in correct perspective. They would study plants and animals. They would learn to draw from memory. There are samples of students' memory drawings—bell-towers, fire engines, clocks—whose virtuosity would stun today's tutors, but that previous generation would probably be as shocked by what we can draw with our gadgets.

It would be impossible to provide a comprehensive how to draw book today with the scope of those publications. "Nature" meant botany, animal studies, and landscape scenery. Much of what we know of our universe—from the very small to the very large—we know second or third hand through TV documentaries. Direct observation is not an option.

I recall another lucky encounter at a conference. This time an astronomy conference. I just gasp in awe when I look at a Hubble photo of a tiny fraction of the night sky, clouds of luminous gas, millions of galaxies. I assume I am looking at a photo, where what is "out there" more or less corresponds with what I am looking at. Not so. I am looking at a sophisticated simulation, a visualization. The data for these images is processed and edited; the colour is cosmetic. Asked what would I see were I suspended amidst these unimaginably distant galaxies, my astronomer colleague looked perplexed. Do not take these literally. It would be like looking at a paper map of the Atlantic Ocean and thinking that was the same as the miles of turbulent sea. It is just a way of representing something unknowable, massaged until it looks like something familiar.

Therefore, I would sidestep these questions of whether we need to draw, whether we have become so much better than previous generations at understanding the world around us, better at making serviceable information boards, and better at making art works that embrace the insights of science. For the most part, I am skeptical about progress and technology, but I feel we should do all we can to follow our curiosity and see where it leads. I like the ambition of this remarkable book, and following some of its hints, we can afford a little humility as a species. Yes, we navigate with GPS, we Skype, we shop on the Web, but what of the birds that migrate across continents? Do we dismiss that as blind instinct, or do we respect it as visual thinking? I was intrigued to learn that experiments have shown that pigeons—which do not migrate—have differentiated vision, in that they navigate with the left eye and find food to peck with the right eye. Pigeons "were found to be at least as good as humans at memorising and categorising visual images. At the time, this seemed bizarre because pigeons appeared to be so inept at other tests, but when it was later realised that pigeons rely on visual maps to navigate... it made perfect sense" (Birkhead, 2012, p. 184).

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James Faure-Walker (born London 1948, St Martin's 1966-70, RCA 1970-72) has been incorporating computer graphics in his painting since 1988. In 1998, he won the "Golden Plotter" at Computerkunst, Gladbeck, Germany. He was one of five English artists commissioned to produce a print for the 2010 South African World Cup. He has eleven works in the collection of the Victoria and Albert Museum, and his work was featured in "Digital Pioneers" there. One-person exhibitions include Galerie Wolf Lieser, Berlin (2003); Galerie der Gegenwart, Wiesbaden, Germany (2000, 2001); Colville Place Gallery, London (1998, 2000); the Whitworth, Manchester (1985). Group exhibitions include "Imaging by Numbers," Block Museum, Illinois, USA (2008); Siggraph, USA (eight times 1995 -2007); John Moores, Liverpool (1982, 2002); DAM Gallery (2003, 2005, 2009), Bloomberg Space, London (2005); Digital Salon, New York (2001); Serpentine Summer Show (1982); Hayward Annual, London (1979). He co-founded Artscribe magazine in 1976, and edited it for eight years. His writings have appeared in *Studio International*, *Modern Painters*, *Mute*, *Computer Generated Imaging*, *Wired*, *Garageland*, and catalogues for the Tate (Patrick Heron), Barbican, Computerkunst, Siggraph. His 2006 book, *Painting the Digital River: How an Artist Learned to Love the Computer*, Prentice Hall (USA) won a New England Book Award. In 2013, he won the Royal Watercolour Society Award. He is Reader in Painting and the Computer at CCW Graduate School, Chelsea, University of the Arts.

REFERENCE

Birkhead, T. (2012). *Bird sense: What it's like to be a bird*. London: Bloomsbury. ISBN 978408820131