"But I can't draw!" by Conrad Taylor

EVERY YOUNG CHILD draws pictures, and is encouraged to draw and paint at primary school. But few adults have developed this into a mature skill.

Our education system is at fault here. It is skewed towards a belief that artistic ability is an inborn 'talent' that can't be taught or learned – reinforced by a value system which prizes literacy and numeracy, but not visual thinking.

I think this is a shame. Drawing is an excellent discipline for encouraging us to pay attention to the world around us, to see it afresh and to know it in a more direct and intimate way. Drawing also helps us to develop our visual, spatial reasoning skills – such a useful 'mental toolkit' to add to the more linear style of thinking which language encourages.

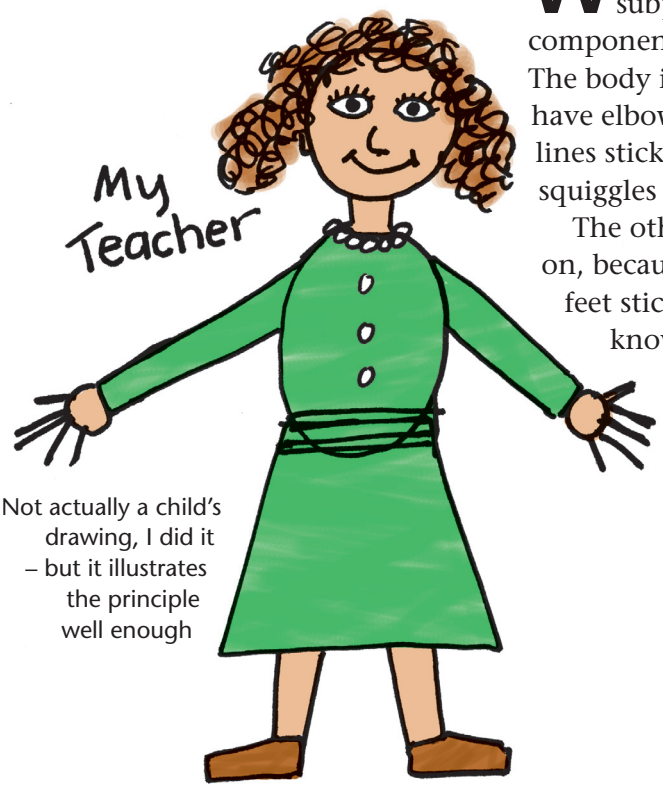
And of course, in the practical matter before us in these training sessions, we have a very good reason for wanting to draw better. To devise a more engaging and memorable educational experience for children, it would be so helpful if we had the confidence to draw (and to help children to draw) tableaux and scenes, wall-friezes, maps, and illustrated booklets and posters.

Tips and directions

In these pages of notes, my aim is to give you practical tips on how to approach drawing projects, so you will be happier with the results. Many of these tips are about using reference images to copy from. This might feel like 'cheating', but don't worry – artists often cheat in just the same way!

Beyond that, I also hope to give you some insight into how to learn to be better at drawing. To be really good takes a lot of observation and a lot of practice, but I am convinced that everyone can learn to be a better artist. And it's such a fun thing to be able to do!

'Iconic' representation, and beyond to reality



Not actually a child's drawing, I did it – but it illustrates the principle well enough

WHEN CHILDREN START TO DRAW, they don't observe the subject – they compile the drawing using a 'kit' of iconic components. Consider the child-like drawing here of the teacher. The body is an oval shape with bits stuck on. The arms don't have elbows. The eyes are ovals with circles in the middle, and lines sticking out to represent the eyelashes. The hair is made of squiggles and the mouth is a curved line.

The other thing to note is that the body parts are shown side-on, because it is so much easier to draw them that way. So, the feet stick out to either side, at 180° to each other, though we know that nobody can stand like that.

The brain in charge, not the eye?

Art educator Betty Edwards in her remarkable book *Drawing on The Right Side of the Brain* suggests that in this rather primitive iconic method of drawing, the young artist thinks: 'I need to put an eye there. I'll draw this symbol for an eye.' Of course, there is always a greater or lesser degree of observation – the careful child makes sure there are five fingers on each hand, not twenty, and maybe the thumb is drawn shorter than the fingers.

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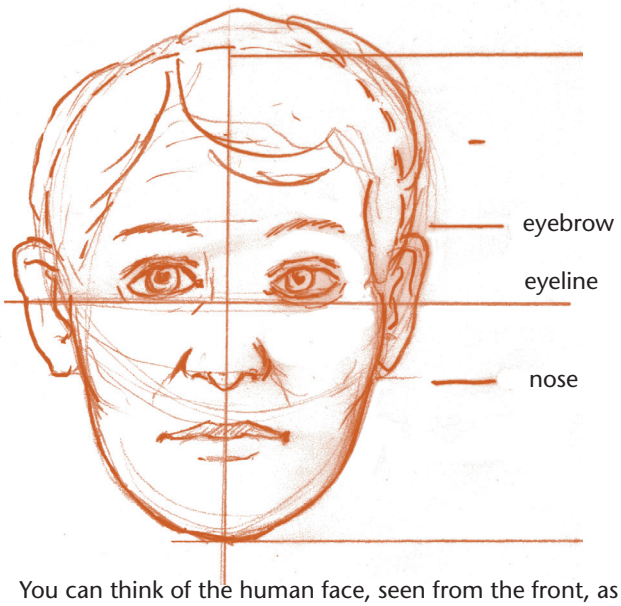
This almost photo-realistic pencil drawing of a typesetting worker was the result of careful observation, particularly of the way the light illuminates Black skin. But this was not observed from life, but drawn using a photograph as reference. And I modified the original image, because when I'd photographed her, Theresa was sitting in front of a very different piece of equipment.

So, this example shows how you can 'cheat' by using a photograph as reference, but still create an image that did not exist before.

YOU COULD SAY that in the child's style of drawing, it is the linguistic, symbolic aspects of the mind that takes charge of the drawing process. On the basis of experimental work done by her neurophysiology colleagues at CalTech where she teaches art, Betty Edwards identifies these mental processes with the left hemisphere of the brain.



You can think of the human face, seen from the front, as a circle (the skull) with an oval (the face) attached. The bottom of the eyes are close to half way from top to bottom. Thirds lines help you to place the eyebrows, nose and ears.

Betty's teaching methods are designed to say 'hands off!' to this bit of the brain, so we can learn to look with fresh eyes at the world, and draw what we actually see in front of us.

Looking, seeing, knowing

I agree with Betty Edwards that if we want to make more realistic representations of people, animals and things, we need to observe more carefully; and her exercise methods, which teach a non-drawer how to draw realistic portraits in a part-time ten-week course, are quite impressive. **But we are not learning to become cameras!**

To draw better, it also helps to learn how people, animals and things are structured, how they are put together. We analyse proportions, learn principles of basic anatomy – and this means that if we need to draw a picture of someone defending himself from a dragon, we don't have to go and roam the streets until we find a warrior and dragon and ask them to pose obligingly for us… we can use what we know to construct them on paper right out of our heads.

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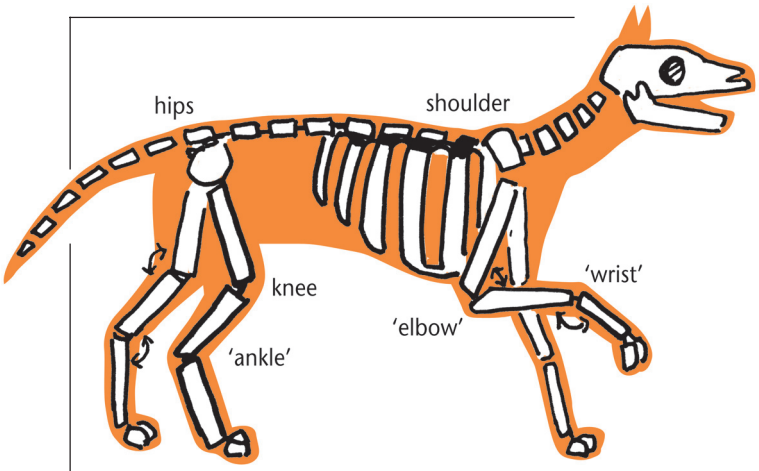

Generic animal (above) shows the skeletal structure of many animals, though actual proportions vary – in a horse, for example, the bones which in a human make up the hand and foot are fused and greatly extended. By playing about with this generic structure you can invent some convincing fabulous beasts, such as this Great Northern Spotted Dragon (*Draco hyperborealis*).

Getting things in perspective

THE ANCIENT WORLD felt no need to use perspective in art. If you look at Persian or Indian mediæval paintings, you'll see that figures meant to be in the distance are shown further up the page. The size at which people were depicted could indicate their relative importance: the Pharaoh was drawn larger than the servants and soldiers.

In Europe, a concern with perspective in drawing was one of the new themes of art in the Renaissance. We see this not only in architectural paintings, but also in how the human form is portrayed. As the clay tablet shown right illustrates,

The science of art?

HOW THE THINGS OF THIS WORLD are put together is a fascinating study, and the discipline of drawing encourages us to pay greater attention to the world. The idea that 'two cultures' of art and science are in conflict may be true for those who work with words… but representational drawing can bring a child closer to appreciating the details and workings of nature and technology.

I remember the day – I must have been nine or ten – when I showed my mother a picture of a cowboy on a horse. Rather than the typical motherly *that's nice dear,* I got a critique of how I'd got the hips of the rider wrong, and so had made him look impossibly flat. Though it was a bit deflating at the time, her criticism did spur me to a more energetic study of human anatomy.

This tale also illustrates the encouragement that a child artist gets from living in a home environment where drawing is a natural form of expression; my bedroom was decorated with my mother's amateur illustrations. Now that she has retired from teaching, she amuses herself in quite a serious way with painting and drawing. My father, who I think hadn't drawn anything since he was a young draughtsman, has also taken up art in retirement. It's never too late to learn.

This artist from Nippur was no fool. He drew the king and officials larger than the working class, and drew everyone side-on to avoid problems of 'foreshortening'.

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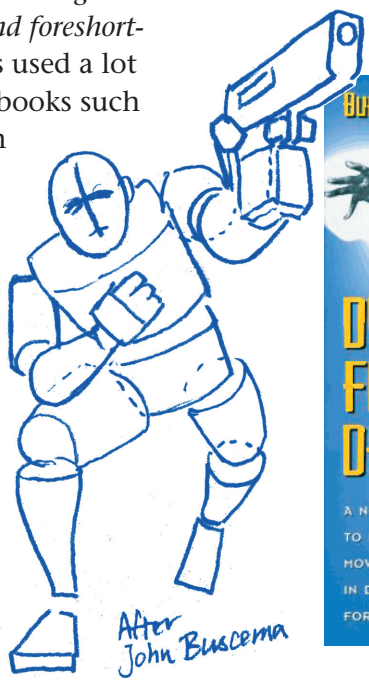
in much ancient art the forms of people and animals were always drawn from the side, because that way artists could work with the known proportions of limbs. As soon as you try to draw a horse head-on, or show a person with an arm raised towards the viewer, you hit the 'foreshortening' problem, which is the need to modify the proportions of body parts according to laws of perspective.

How did artists like Holbein, Vermeer or Michaelangelo solve the problem of foreshortening? Partly by applied geometry, partly through a new interest in painting 'from life', and partly by cheating with various optical gadgets.

Boxing with superheroes

Here's how the geometric method works. If you construct your drawing as a rough sketch, you can imagine each section of each limb – upper arm, lower arm, each joint of the finger – encased in a box or a cylinder. When drawing that container lightly in pencil, you slope its sides according to rules of perspective, and this will guide you as you draw the limb inside the box, suitably foreshortened and in perspective.

This method is still in vogue and much used by illustrators. An influential modern exponent is Burne Hogarth, the author and illustrator of *Dynamic Figure Drawing: A new approach to drawing the moving figure in deep space and foreshortening*. This 'box' approach is used a lot by the illustrators of comic-books such as Spiderman and Superman and Conan the Barbarian, because these artists value the ability to draw their superhuman actors in action poses and from unusual angles of view.



The sketch on the left is modelled on an illustration in 'How to Draw Comics the Marvel Way' by Stan Lee and John Buscema. At Marvel Comics, John was the drawing talent behind Spiderman and Conan the Barbarian.

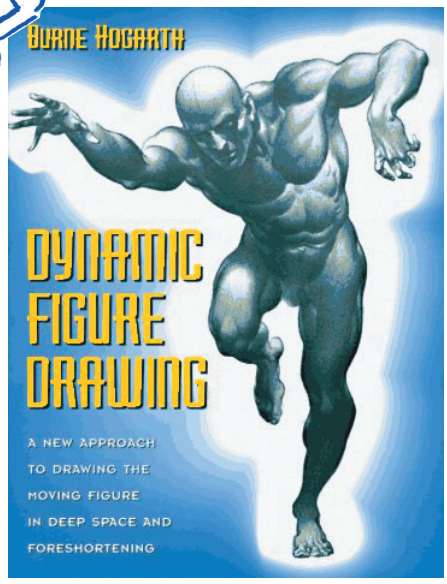
Drawing from Life (and artificial life)

LIFE CLASS is a very tough discipline. The model takes up a pose, and you have to try to transfer that onto paper. Life drawing is an essential part of an art school education, and of course you can ask your model to strike exactly the pose you need for your great work of art.

But when it comes to *real*-life drawing, you're going to have difficulty finding someone willing to be your model. That is when you would be greatly helped by having some sort of printed visual reference – a photograph, another drawing perhaps – to copy from.

Yes, I said copy! It may be a dirty word in school education, but artists down the ages have always managed to turn their work in on time by copying. Nor is copying contrary to the aim of learning how to draw, so long as you copy 'mindfully' – by which I mean that you pay attention to what you can learn by observing the details of what you are copying. It's a kind of meta-consciousness…

In a sense, life drawing is just a classy kind of copying activity – a very difficult one, with unaided eye and hand. So, in the 16th and 17th centuries, artists tried to make their work easier – by 'cheating'.



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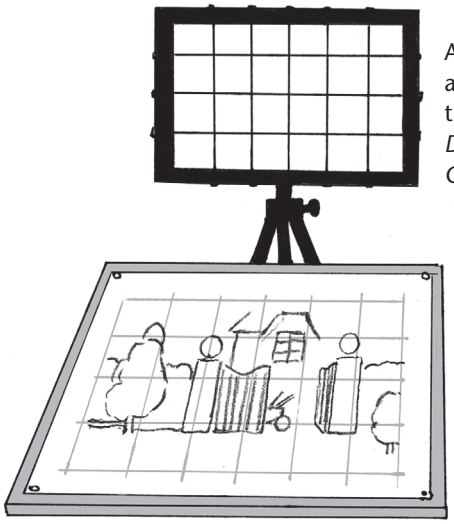
How to be a clever copy-cat

ARTIFICIAL AIDS for the artist have taken many forms. Perhaps you have seen Peter Greenaway's film *The Draughtsman's Contract*, in which the artist played by Anthony Higgins sights though a metal frame with a wire grid



A drawing aid as featured in the film *The Draughtsman's Contract*.

to help him to transfer his view of the landscape accurately to a sheet of paper on which he had already drawn a lightly pencilled grid.

Some artists also experimented with the use of a lens to project an image – perhaps of an artist's model – onto a sheet of paper mounted on the wall of a small, dark room. The Latin name for a small room is 'camera' and we are still using the word today. It is thought that Vermeer painted his extraordinarily life-like interior scenes with the aid of just such a *camera lucida*.

The 17th-century English scientist Robert Hooke devised a portable camera (*see above right*). He thought it could be useful on voyages of exploration, to help explorers draw a pictorial record of the coastal features they were passing.

Good old-fashioned tracing

If you want to copy a map or drawing and you don't need to change the size while doing so, a straightforward way of doing so without using any fancy equipment is to **trace** it. Any thin paper that you can see through adequately will do.

Illustration from Robert Hooke's paper delivered to the Royal Society on 19 December 1694, in which he described *An instrument of use to take the draught or picture of any thing*. It doesn't look particularly comfortable!

'Typo' paper is not as translucent as true tracing paper but has a better surface for taking pencil or ink. To trace, just follow the contours of the original outlines on the upper surface of the tracing sheet.

The trouble with tracing is that you end up with a copy on a paper surface that's not good for illustration work, so the next step is to transfer your tracing onto a sheet of suitable material.

First turn the trace-sheet over and use a very soft, rather blunt pencil (like a 4B) to rub a dark coating of graphite on the back of all the trace lines. Then turn the trace sheet right way up, place it on your good paper and hold it down with clips or tape so it won't slip. Go over the lines one final time, pushing hard enough to get graphite to come off the lower side and transfer the lines onto the paper.

This is a time-consuming process but you can cut out the stage of blacking the back of the sheet if you have a carbon transfer sheet to slide between tracing and good paper before going over the lines to transfer them. I make my own by sprinkling pencil powder from a lead-sharpener (I use clutch pencils) onto a sheet of tracing paper, then smear it all

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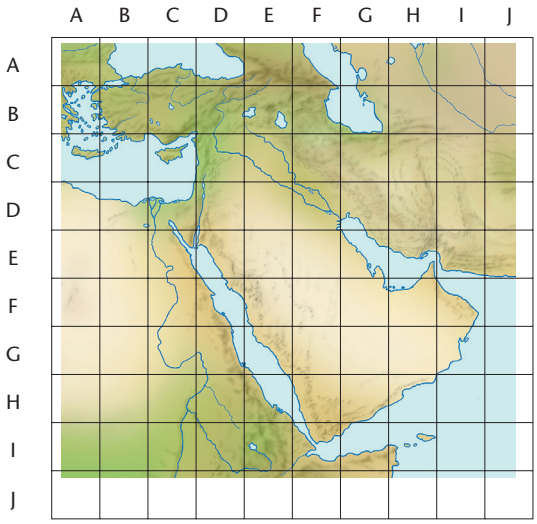
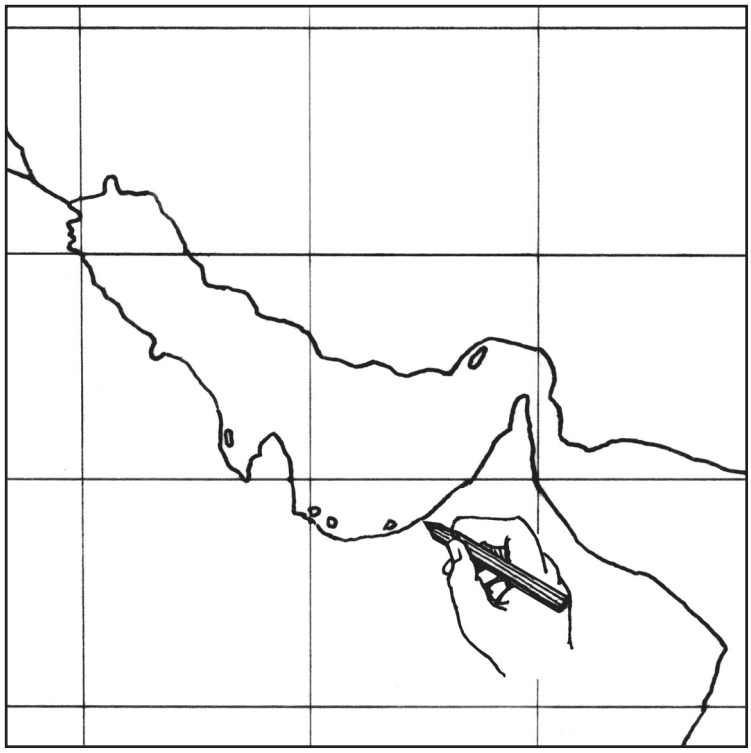


The source map has been covered with a grid of regular squares. The surface onto which the map is to be copied & enlarged is also marked out with squares. It is then surprisingly easy to estimate the places where the key outlines cross the gridlines to transfer the design from the original to the copy.



over the tracing paper with a cotton pad dampened with lighter-fuel.

Tracing with a light-box

A less laborious way of tracing an image is to illuminate it from behind. Then you can trace the image directly onto any paper good enough for continuing the project.

However, this method is no help to you if the original can't have light shone through it, perhaps because it is on thick card or bound into a book. It's also hard to use the lighbox method if there is printing on the back of the original. But if you can get a photocopy made from the difficult original, you could then use a lightbox to trace it.

You can buy a commercial lightbox at the better photographic and graphic-arts stores, or you could improvise your own. Don't use thin window-glass, though, or you will be creating an accident waiting to happen when somebody presses on the glass too hard.

At a pinch, you can tape your original to a window and tape the copy sheet on top, and so make use of a window as a makeshift lightbox (but not at night, of course).

Copying and enlarging with a grid

A photocopier can also be used to make a copy that is larger or smaller than the original. But what if no photocopier is available – or if the size of the required copy is much, much bigger than a copier can make? This is where the old reliable grid method comes in handy.

First take the original image, and draw a grid of lines across it to divide the area into squares. If the image is too precious to mark in this way, you can draw lines on an acetate overlay instead, or make a photocopy and mark that instead.

Suppose, for example, you want to make a huge copy of a map to for the wall. Mark the wall or some poster-paper mounted on it with a similar but larger pattern of squares. Then all you need to concentrate on is drawing in the lines of the coast, rivers *etc*. so they cross these squares just as on the original, focussing on one square at a time.

I first used this method as a teenager, to make myself a 10× large scale copy of an Ordnance Survey map of a favourite walking area around Glen Trool in the Southern Uplands of Scotland. It helped that OS maps already have a grid!

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Projection tracing

IF YOU HAVE a collection of images on 35mm slides, and access to a slide projector, you can project the image onto a sheet of paper taped to the wall and draw around the outline. It's a method used by some of the Asian artists who produce one-off movie billboards, and when the Scottish academic Malcolm Caldwell was assassinated in Cambodia I used this method to prepare a large airbrush portrait of him for the memorial meeting held by his friends and colleagues back in London. More happily, here's a sketch of an Indonesian friend which I produced this way at about the same time (*see right*).

Similar to the slide projector, but harder to find, is a projector for opaque prints and objects called an **epidiascope**. Perhaps the hi-tech equivalent of projection tracing would employ a data projector linked to a computer, projecting onto the drawing surface either a scanned image, or one captured with a digital camera!

Finding ready-made images for reference or re-use

THE ULTIMATE CHEAT, of course, is to find a picture from a magazine or book and use that. You could photocopy or scan it and use it as it is, or use it as a form of reference for your own drawing, in which case you are not cheating but working in an honourable tradition…

There is a special category of artwork called **clip art** or sometimes **copyright-free art**. In fact such collections are not free of all copyright protection, but the publisher grants a special 'waiver' to the purchaser of the book, allowing you to use illustrations quite legally (as they are, or modified) in your own projects.

Before you get too excited at this prospect of free art, I should warn you that most clip-art collections are aimed at the business communication market. You'll find many images of smart white people in suits at meetings, but not many that represent life in the community. There are some rare exceptions such as the drawings of Petra Röhr-Rouendaal (*left*).

From *Where there is no artist – development drawings and how to use them* by Petra Röhr-Rouendaal.

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The potential of clip-art on disk

Increasingly, people prepare visual aids for teaching using a computer, either to make printed materials or presentation slide-shows. You also get electronic clip-art installed with Microsoft Office, Corel Draw and other programs.

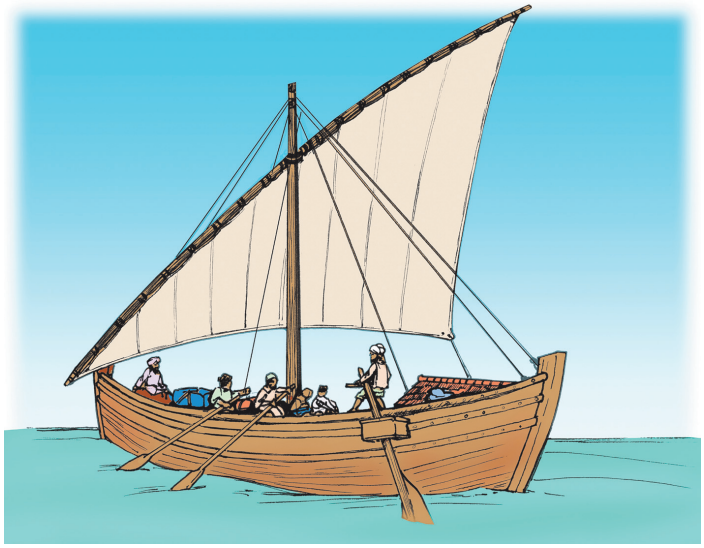
In my opinion, these collections often use an over-glamourised and American style of illustration technique, and as with many printed art collections they don't represent life in the community in all its diversity of ages, races, cultures and life-styles.

CD-ROM is now an inexpensive way to distribute large amounts of electronic art and photography, and most computers now have a CD drive built in, so CD is a useful potential way to distribute clip art. Barriers to doing this are more about problems of finding out the user's needs, the subject research and the artist's time and remuneration than any technical difficulties!

Other visual reference

Perhaps it helps if I give some idea of the kind of reference books I keep on my shelves to help with drawing projects:

- **Figure Reference Manual** – packed with reference photos of poses both clothed and otherwise. Some of the poses have been shot simultaneously with 24 cameras ranged around the subject: 8 angles × 3 heights.



Partly informed by watching foxes play in the snow by moonlight, this drawing was also aided by reference to *The Illustrated Encyclopædia of Animals*. I drew this by hand but added shading using the computer.

- **Anatomy books** – I have several of these. My favourites are by medical illustrator Louise Gordon.
- **Animal and bird books** – because I've always been interested in nature. *The illustrated encyclopædia of animals* helped me in several recent projects requiring a lion and a red fox.
- **Atlases** – because I do a lot of map art, I have many atlases including historical ones, plus one made up of satellite images from space.
- **Objects, buildings and technology** – I don't have enough of these. While working recently on artwork on the mediæval Islamic world I've referred to the Taschen series of architectural guides, and poked around the 2nd-hand bookshops in Greenwich to try to find clues to what the ships of the period looked like.
- **The Internet** – not on my bookshelf of course, but I thought I should add this… The Google search engine has helped me to find reconstructions of the Yossi Ada shipwreck, pyramids at Meroë and various other subjects.

It's extraordinarily difficult to get evidence of what the mediæval Arab trading ship in the Eastern Mediterranean would have looked like, but what evidence I could find went into this drawing.

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A step-by-step guide to preparing drawings for reproduction

I STARTED DRAWING in black and white media as a child – with plain pencils and pens – mostly because they were cheaper. Later I learned that high-contrast black and white artwork done with pen and ink made better originals for posters, leaflets & magazines printed on a litho press or a stencil duplicator, or copied on a photocopier.

So now, when I draw for reproduction, I generally create an image that relies heavily on expressive outlines. These can be shaded or coloured as a later stage if the method of reproduction allows.

Prepare with pencil

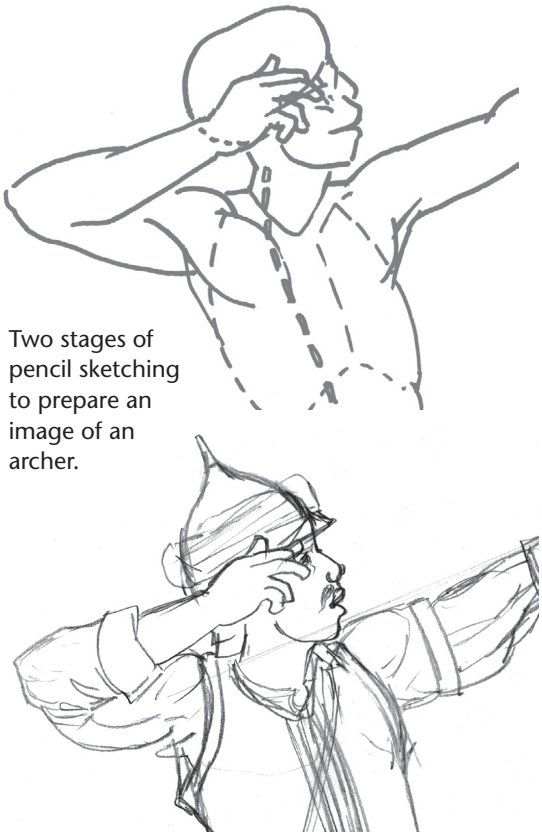
You have to be extraordinarily skilled and confident to draw with pen or brush without preparation. Usually I lay down a pencil sketch first, using light strokes of a soft pencil. I may do several rough sketches in series, copying each one by tracing over a light-box, improving the image at each step. But your final pencil version should be on a good surface such as cartridge paper or Bristol board that will hold a sharp ink line.

One of the lovely things about pencil is that if you're not sure of where a line should go you can make several rough attempts using almost no pressure at all, and then mark a firmer line along the one which seems best.

A first-class eraser is one of your best friends in this process. Don't use rubber ones; white plastic erasers such as those from Mars or Staedtler are much cleaner. I slice mine in half diagonally to give a sharp detailed erasing edge.

Inking the lines

When I was younger and had a steadier hand, my favourite inking tool would be a N°. 5 or N°. 7 Kolinsky sable brush – in the making of which a Siberian mammal has to be sacrificed in the name of art, I'm afraid. You use it with 'Indian' ink (or *encre de Chine,* as the French more accurately call it).



Two stages of pencil sketching to prepare an image of an archer.

This springy brush in the right hands can make a transition from a stroke 2–3 millimetres wide to a line as fine as an individual hair (quite literally), giving a lively and expressive quality to lines. But it is a skill acquired only after much practice, and takes time and care to do.

These days I am more than happy to experiment with fibre-tipped and roller-ball pens, pigment pens and other new-fangled devices. Fibre and nylon points give a slightly more expressive line than metal or ceramic roller-balls can. You'll also want to evaluate the various inks used in disposable pens – some can take several minutes to dry properly, which increases the risk of smudging.

My usual practice is to ink lightly over the pencilled lines, let the ink dry and the use a plastic eraser to clear all of the pencilling out of the way before going on. The outermost lines are often built up by going over them several times, as I like to use strong outlines of varying width to give a sense of volume to the major masses of the figure.

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Adding shade and colour, by hand or by computer

FINISHED OUTLINE ARTWORK like the completed archer below may also have some internal lines added to show texture (his hair, stockings), the lines of drapery (folds in his shirt and turban), and even a little shading.

In the past, I often went much further, adding shading marks with a fine pen – by hatching (diagonal lines) or stippling (small dots). Or I would apply adhesive-backed shading films such as Letratone, which was pre-printed with tint patterns of small dots ideal for printed reproduction and copying.

But these days, I'm more likely to stop working on my drawing when it reaches its simple outline form, and any further shading or colouring work, if required, will be done in the computer.

The computer also helps in other ways when I work with drawings. For example I don't worry as much about stray lines and mistakes any more: they are easy to edit out. By the way, I should have said that it's a good idea to draw larger than the final reproduction size of your image if you can, because as it is reduced for printing your mistakes will get smaller too! (Cartoonists often work at twice the final size they images will be printed.)

As for the actual magic tricks that I use to edit, shade and colourise my drawings in the computer, space doesn't permit me go into them in detail here. I'll just tell you that Adobe Photoshop is the software I use, and I usually apply the shading or colouring on a second 'layer', almost like an acetate overlay, with the blending options of the colourisation layer set to 'multiply' so it behaves as if transparent.

Finally, I flatten the image to a single layer, and save a copy in an appropriate file format such as TIFF ready to put into my publishing project. (Again, I have to spare you the technical details of this.)

The finished archer project, inked in with Kolinsky sable brush and ink, plus various fineliner pens…

…and given colour and shading using the computer.

Other ways the computer can help

I deliberately wrote this paper not making the assumption that the reader has access to a computer, so I've told you about a number of handicraft tricks for tracing and copying images. But if you do have a computer and a scanner, you can use it to enlarge and reduce images and to cut them out from a document for use elsewhere.

Another thing you could try, which could save you a lot of work tracking down reference images, is to get friends or classroom students to 'strike a pose' and take a photo with a digital camera if you have one. This can then be printed out and traced over as the basis for a drawing, or projected onto a wall for tracing if you have a data projector.

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The computer as a drawing tool in its own right

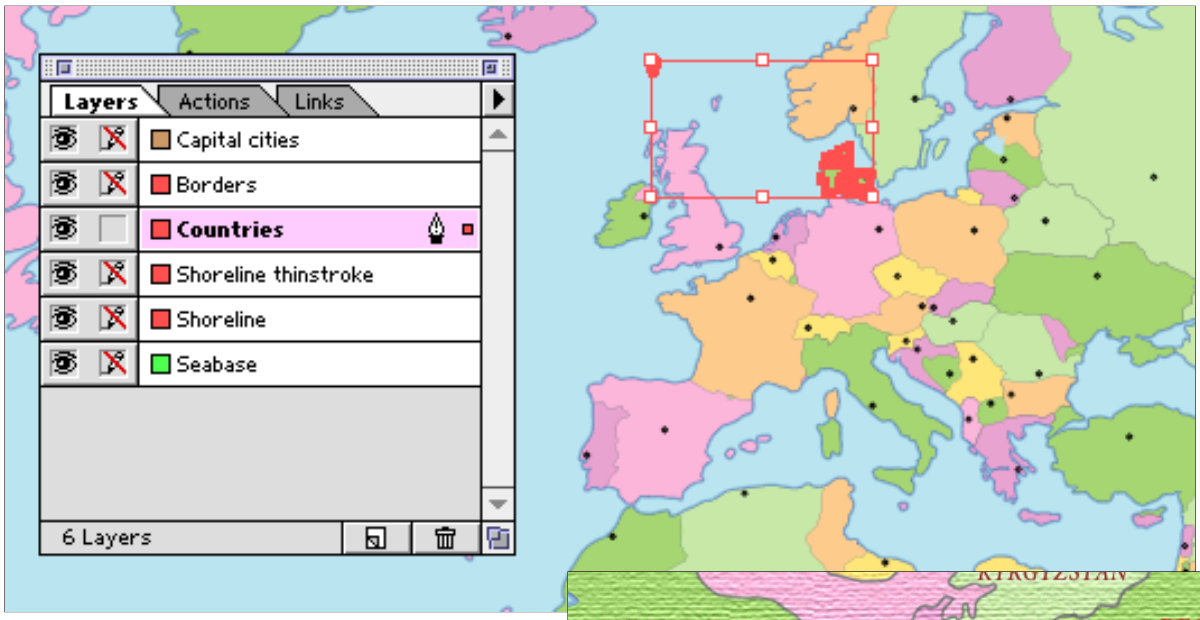
FOR THE MOST PART this paper has been about images drawn with hand-held media such as pens and pencils, though they may be produced or finished in a 'computer-assisted' fashion. But I should mention that software also exists for creating drawings made up not of pixels sampled from a scanned original, but as lines and curves and geometric shapes – what is known as 'vector art'.

Early drawing software was somewhat clunky, but modern versions of Adobe Illustrator or Corel Draw are excellent tools in skilled hands. A great advantage of vector art is that it has no particular resolution, so can be printed very large indeed without becoming all pixellated. Another advantage is that these pictures are made up of 'objects' which can have their colour attributes edited at any time. I have exploited both of these features of vector art in various mapping projects.

Vector drawing software is excellent for producing flowcharts, diagrams, and various kinds of icon, logo or symbol. If an organisation asks a designer to make a logo for them, it will usually be done in this sort of software.

Another intriguing possibility is to make simple outline symbols available as characters in a font for the computer. They can be drawn in vector illustration software to start with, then copied into a font-editing program to make PostScript or TrueType fonts for installation in the computer. Then you can use them in any program in the computer, such as Word or PowerPoint.

Here are some examples of symbols from the fonts **Webdings** and **Carta**:



During 2002, I undertook a project to create a series of country maps for the PTEP project of the Institute of Ismaili Studies, for use in a PowerPoint presentation. To make the project 'future-proof' and re-usable, I started by creating a resolution-independent vector art map of the world, using Adobe Illustrator (see **above**). You'll note that various layers of the map can be switched on or off, and that each country is an object (note how selecting Denmark also picks up the Faroe Islands).

Right, a small regional map generated in less than 25 minutes from the data in the main source map.

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Some suggested books*

Betty Edwards — *The New Drawing on the Right Side of the Brain.* (Revised 20th anniversary edition of *Drawing on the Right Side of the Brain.*) HarperCollins 2001; ISBN: 0007116454.

Louise Gordon — *Anatomy and Figure Drawing.* B.T. Batsford, 1988. ISBN: 0-7134-58771

Louise Gordon — *Drawing the Human Head.* B.T. Batsford, 1977. ISBN: 0-7134-02377

Nicola Harford and **Nicola Baird** — *How to Make and Use Visual Aids.* VSO Books. Published by Heinemann Educational Publishers 1997. ISBN 0-435-92317-X.

Petra Rörh-Rouendaal — *Where there is no artist – Development drawings and how to use them.* Intermediate Technology Publications, 1997. ISBN 1-85339-391-6.

Burne Hogarth — *Dynamic Figure Drawing: A New Approach to Drawing the Moving Figure in Deep Space and Foreshortening.* Paperback edition Watson-Guptill Publications, September 1996 – ISBN: 0823015777

Stan Lee and **John Buscema** — *How to Draw Comics the Marvel Way.* A Fireside Book, published by Simon & Schuster, New York 1978. ISBN 0-671-53077-1.

'**Maddocks**' (Peter Maddocks) — *How to Draw Cartoons – a book for the budding cartoonist by a cartoonist.* Michael O'Mara Books Limited, London, 1991. ISBN 1-85479-078-1

* Note, I didn't call this page 'some suggested reading'… because the pictures are more important than the text – right?

This paper is illustrated with Conrad's pictures except Petra's drawing on page 7 and the Mesopotamian image from 1500 BCE on page 3. The drawings were scanned and processed in Adobe Photoshop, and the paper was pulled together in Adobe PageMaker, on an Apple Macintosh PowerPC G4 computer. Print-outs were made on a Tektronix 740P PostScript laser printer.

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