CHAPTER 11

The drawing lesson: conclusion

Introductory

Having completed the lesson, the question arises as to what to do next. Rome was not built in a day and the students need to revise and develop what they have just learnt first by doing more drawings along the same lines and by incorporating other ideas. This chapter is designed to help this process. It has five parts:

- *The training of memory through practice.*
- *The constancies.*
- *Junctions* and *complex curves.*
- *In front/behind relations as a method of chunking.*
- *Symmetries.*

THE TRAINING OF MEMORY THROUGH PRACTICE

Before taking my leave of my students at the end of the drawing lesson described in the last three chapters, I lead my charges to a different part of the esplanade, select a scene for them and suggest that they make a set of five drawings of it, using what they have learnt so far. The first drawing should take as long as it is necessary to produce an accurate rendering (this can mean up to several hours). The second should take no more than half an hour and the third must be completed within ten minutes. After that the fourth drawing must be from memory and the fifth made using *CLAM*.[1] What is remarkable is that the students find not only that they can follow these instructions, but also that the results they achieve in the shorter times and from memory are astonishingly good. *Figures 1, 2, 3 and 4* show one person's efforts in copying the scene captured in the photograph reproduced in *Figure 5*.

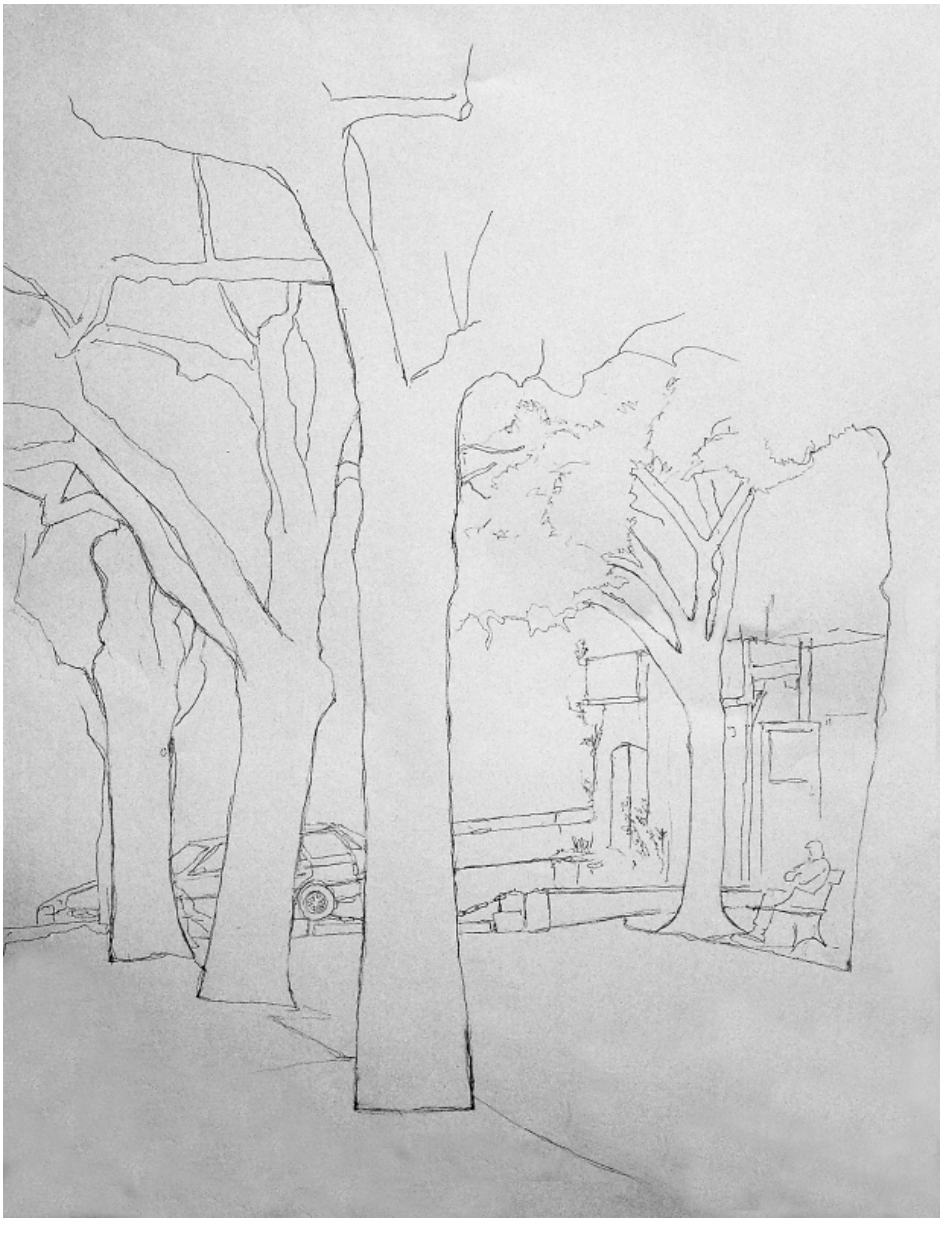

Figure 1 : Esplanade drawing - 3 hours. Unfortunately the bench-mark drawing, showing the student's level of ability before the lesson, is lost. What it showed was that he was very far indeed from being able to produce a drawing of this quality.

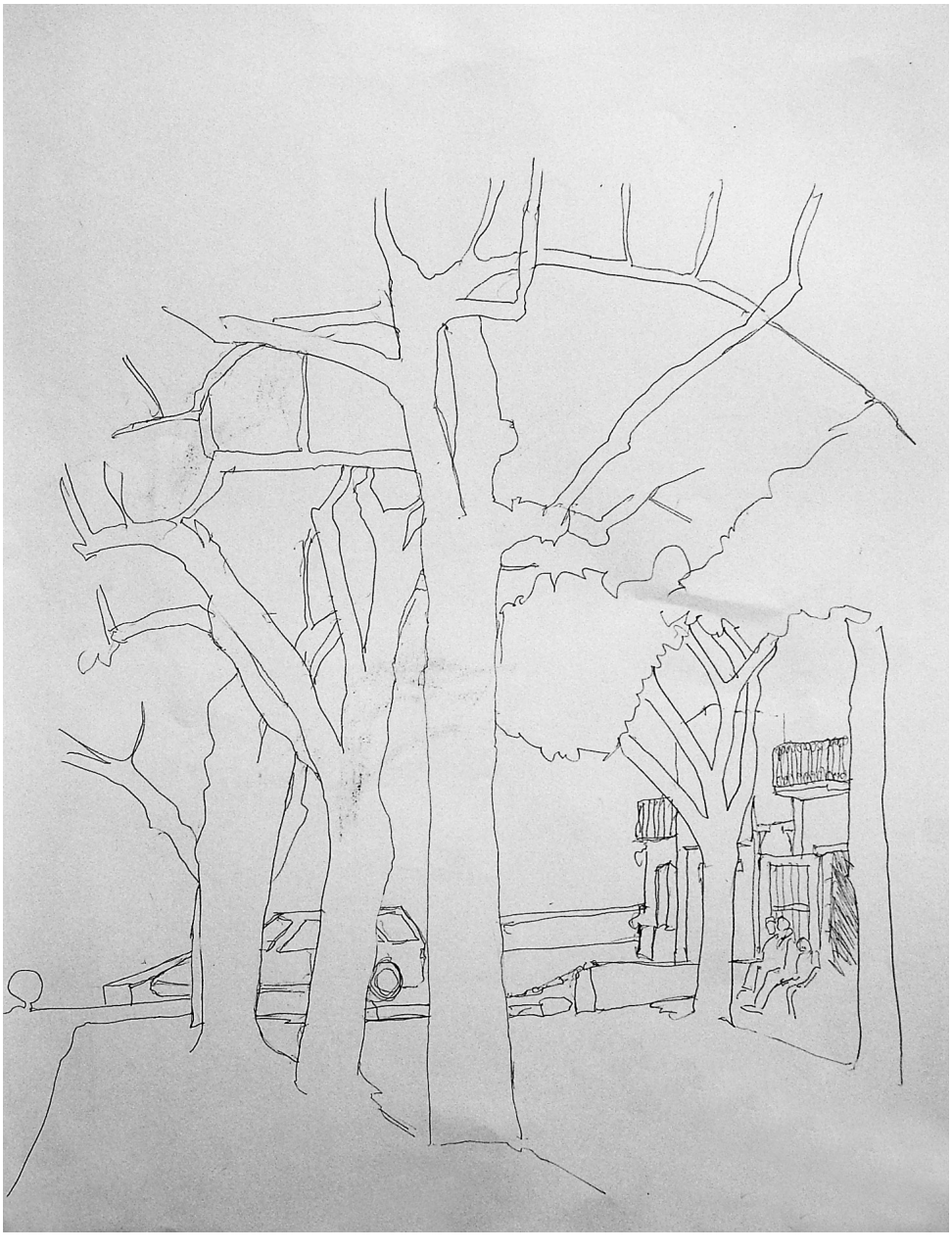

Figure 2 : Esplanade drawing - 30 minutes. Notice that, even when only allowed 1/6th of the time, the student was able to fill in a lot more detail - For example with respect to the tree branches and the house frontage.

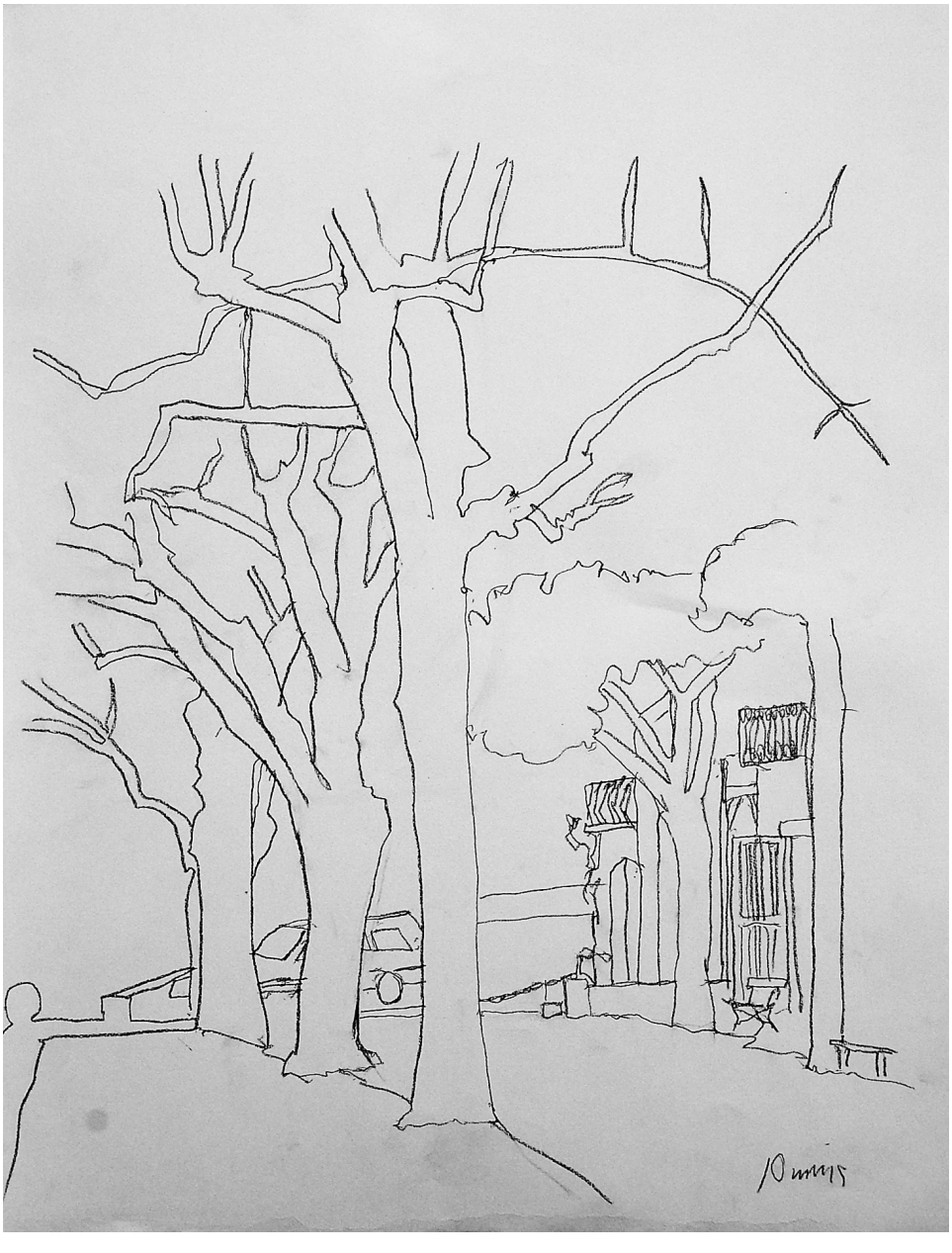

Figure 3 : Esplanade drawing - 10 minutes. Notice that, despite the shortness of the time taken, very little detail has been lost Notice also the progressively free mark making.

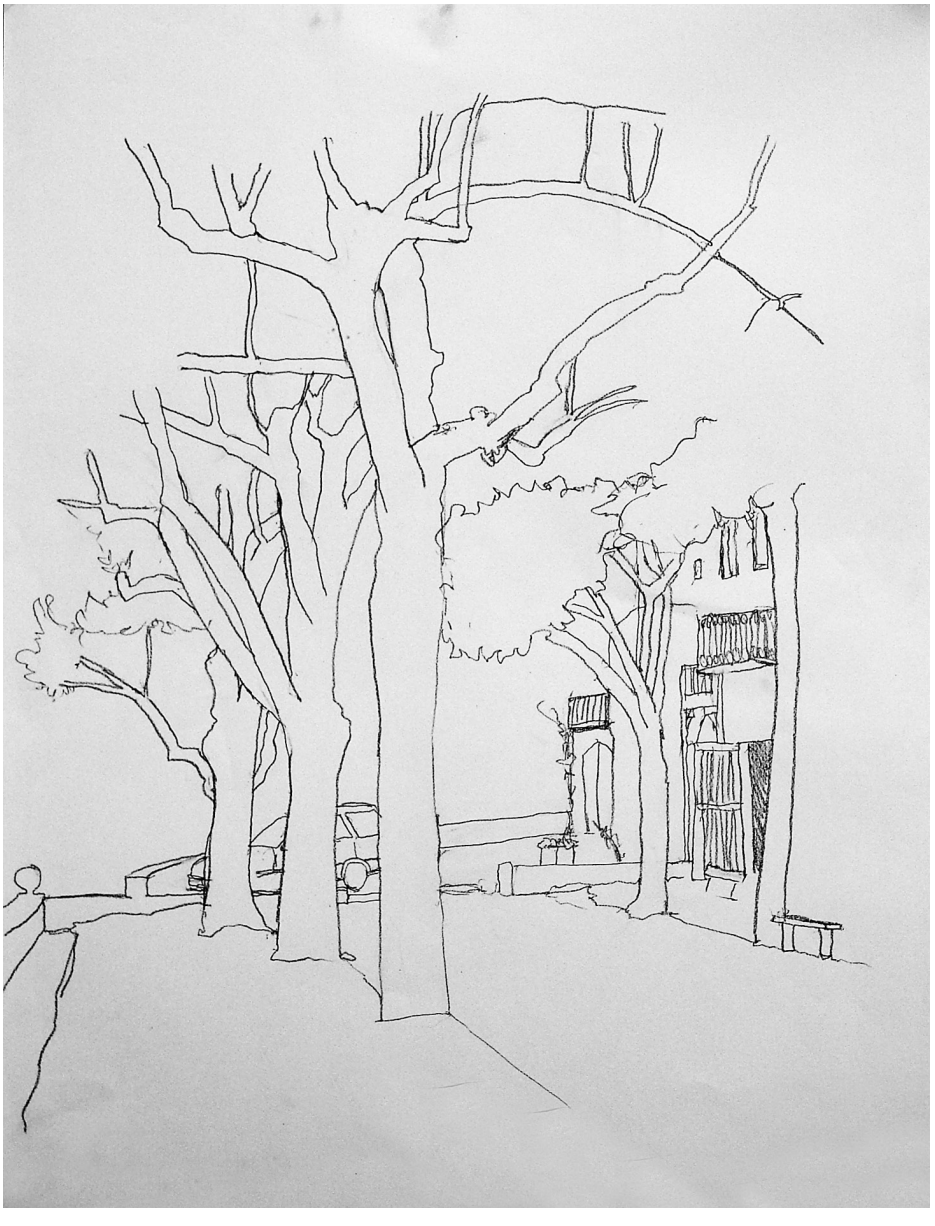

Figure 4 : Esplanade drawing - From memory. Although this was an exceptionally well remembered scene (which is why I made a photo of it), virtually everyone astonishes themselves and others by how much they can recall.

Figure 5 : Photograph of Esplanade. This photograph was taken both in a different year and at a different time of year, when the leaves covered more of the branches. Every effort was made to find the same viewpoint.

Before submitting himself to the drawing lesson, the student who did these drawings had poor drawing skills. The level of performance illustrated was achieved as a result of the three hour lesson described in the previous chapter plus a total of around *four hours* follow up time. The student concerned took the lesson very seriously and has every reason to feel encouraged. Obviously, not all the students perform as well as this, but what is remarkable is how many of them are not far behind. There are hardly any that do not pleasantly surprise themselves. I wonder whether Lecoq de Boisbaudran, Delacroix, Degas and/or Rodin would have been surprised?

However, no matter how remarkable the early progress, there are various subjects that need to be re-emphasised and some that need to be introduced. Below are some of these.

THE CONSTANCIES

The purpose of this short section is to provide a brief reminder of a subject that was introduced in *Chapter 3* and mentioned in various other parts of the book.[2] It is the ever-occurring transformations relative to the structure of visual input known as the "*constancies*". Although these eye/brain generated phenomena provide artists with great opportunities, they also cause many difficulties.

One of the underlying reasons why they are so troublesome is that the visual analysis necessary for drawing from observation depends on *analytic-looking systems* which can only focus on one small portion of a scene at a time. An inevitable consequence of this piecemeal way of doing things is that all visual analysis involves *taking things out of context.*

As explained in the *Introduction* to this book, once something is picked out from its surroundings, the next task of the eye/brain is to give it meaning. This essential step in visual processing requires the use of the *recognition systems* which depend on perceiving *similarities* between objects that provide different information to the eyes on different occasions. The problem that evolution has solved is that the images of two views of the same object are extremely unlikely to be the *same size, the same orientation* or *the same shape,* and are never the same with respect to all three combined. To overcome this problem the eye/brain systems artificially transforms the object in a number of ways. Amongst these are three that cause particular difficulties for artists when drawing from observation.

2 Also in "*What Scientists can Learn from Artists*", *Chapters 13, 14* and *15*.

Thus, they:

- *Expand or contract it.*
- *Rotate its axis of symmetry.*
- *Normalise its shape.*

All three of these operations occur whenever we look at anything with a view to drawing it from observation, including sections of the contours of objects and lines representing them. This means that, unless something is done to counteract this tendency, we will make mistakes every time we produce a line.

Luckily there is a relatively simple way of minimizing the problem, namely to regularly cross reference with the context. Absolutely nothing is more important to good drawing practice than *keeping context in mind* at all times.

JUNCTIONS AND COMPLEX CURVES

Figure 6 : Three types of line junction

This section is used to draw attention to the fact that an analysis of the ways in which lines meet, or fail to meet in drawings from observation can provide important information as to whether the artist is *keeping context in mind*. This can be useful to the artists themselves and also to teachers for it provides them with an easy way of identifying the location of errors that need attention. The reason is that the nature of the junctions between lines is a useful indicator as to whether the lines that meet have been considered in relation to one another or separately. If the latter, there is a high probability that mistakes have been made.

Figure 6 illustrates two frequently occurring junction types. The lines to the left *cross* one another, those in the middle have *a gap between them* while those on the right *meet cleanly*. If ever I am faced with a student drawing in which lines that represent either a change in direction within a contour or a junction due to an in front/behind relationship fail to meet cleanly, I immediately suspect that the person concerned may have been analysing the two components separately. If so the chances are high that he or she will have fallen foul of the influence of *size-constancy* and/or *orientation-constancy:* Each component will have been analysed independently such that the line lengths will come out too equal and the orientations rotated in the direction of the vertical or the horizontal. In many years of teaching, I have hardly ever come across sloppily joined lines that have not been associated with significant errors.

In contrast, when the lines meet exactly, it is very likely to be a consequence of the artist paying special attention to the way things fit together. When this happens, as on the right hand side of *Figure 6*, the chances of finding significant mistakes are commensurately reduced.

End points of lines in drawings

Figure 7 : Two complex curves which differ with respect to the manner in which the end points are drawn

Figure 7 consists of two drawings of different complex curves. In the one on the left, the line tails off at both ends whereas, in the one on the right, the line ends abruptly, having been emphasised by an almost imperceptible extra downward pressure on the tip of the drawing instrument. Many years of experience has

taught me that, if ever I see a line drawn in the former manner, I can be fairly sure that the person drawing it was concentrating too much attention on the analysis of curvature and neglecting to focus on end points and how they relate to their context. Accordingly, I will not be surprised if such lines are associated with a combination of *relative-length* and *orientation errors*. Actually, I would be astonished if such errors were not in evidence and would find it normal if they were quite large.

Both of the above phenomena indicate a vagueness of observation concerning events at the all-important intersections between separate features. In the feel-based drawing lesson, great importance is attached to *getting a feeling for* the length of each line relative to its predecessor. This can only be done if the feeling is based on the total distance between the two end points of both the lines being compared. Likewise, if the task is to get a feeling for the angle at the junction between two lines, the meeting point will be given special importance. In both cases the extra concentration of attention will be reflected in an increase in pressure on the point of the drawing instrument.

In summary, whenever endpoints are emphasised, it is a sign that the artist was considering how they fit into their context, in which case large errors are less likely. Perhaps the two most important bits of advice that can be given to people when drawing-from-observation are to make sure to get a feeling for the full lengths of any two stretches of contour being compared and to concentrate on *how things fit together,* not least in terms of *in front/behind relations*.

Analysing complex curves

In seeking explanations for the common occurrence of poorly observed contours of natural objects two candidates suggest themselves. The first, which concerns the problems faced by the eye/brain when analysing *complex curves*, goes a long way to explaining the second, which relates to one of the *leitmotivs* of this book, namely the potentially *pernicious consequences of skill*.

The fact that both curvature-analysis and line-production systems have to be trained means that there must be a time when they were either untrained or only partly trained. When this is the case, or when they have been inappropriately trained, these systems can cause all sorts of problems for artists engaged in drawing from observation. It is for this reason that the points made below concerning the analysis of complex curves are usually included in the main body of the feeling-based drawing lesson, when the opportunity arises for analysing the very subtle complex curvatures that characterise the contours of the tree used in it.

The first step in the process by which the eye/brain analyses a complex curve is to decide upon its limits. As just suggested, this requires that it be taken out of its context. The next step is to create a characterization of the curve in memory such that it is capable of being transformed into a set of instructions to the group of interacting muscles which control the body, arm and hand movements that guide line-production. The precise nature of these can only be a matter of speculation, but a moment's thought will make it evident that they must be almost unbelievably complex. Consequently, it should be no surprise that untrained people have difficulty in generating them. Their only option is to find a way of reducing the complexity. Not infrequently, complete beginners resort to the use of straight lines as the best generalisation that they can manage. Slightly more advanced beginners will produce simple curves joining the two end points (often with sausage like results) and, in doing so, raise the level of description by one notch. As skills increase, the complexity of the curvature produced augments. However, the highest levels of accurately observed complexity are only reached by a small number of people. This is why the great draughtsmen of history are still admired for the fact that the curvatures displayed in their drawings stand up to detailed expert analysis.[3] Their mastery is particularly evident in drawings of the human form. Lesser mortals leave us with lines of much less subtlety which, to a greater or lesser extent, ride roughshod over anatomical facts. But, whatever the degree of refinement achieved, all necessarily reflect action-coded generalisations deriving from visual analysis.

IN FRONT/BEHIND RELATIONS AS AN AID TO CHUNKING

Figure 8 repeats the photograph of the young woman from *Chapter 5, Figure 2,* but this time lots of arrows have been added, pointing to various parts of her anatomy. Many of these (shown by white arrows) point to *in front/behind relations* which can be compared to those provided in the feel-based drawing lesson (*Chapter 8, Figure 1*) by the junctions between the tree trunk, which is in front, and the top and bottom of the wall and parts of the house, all of which are behind.

However, in the case of the young woman the in front/behind relations are almost all provided by different parts of the same object. A number of obvious examples are arrowed. They include the places where:

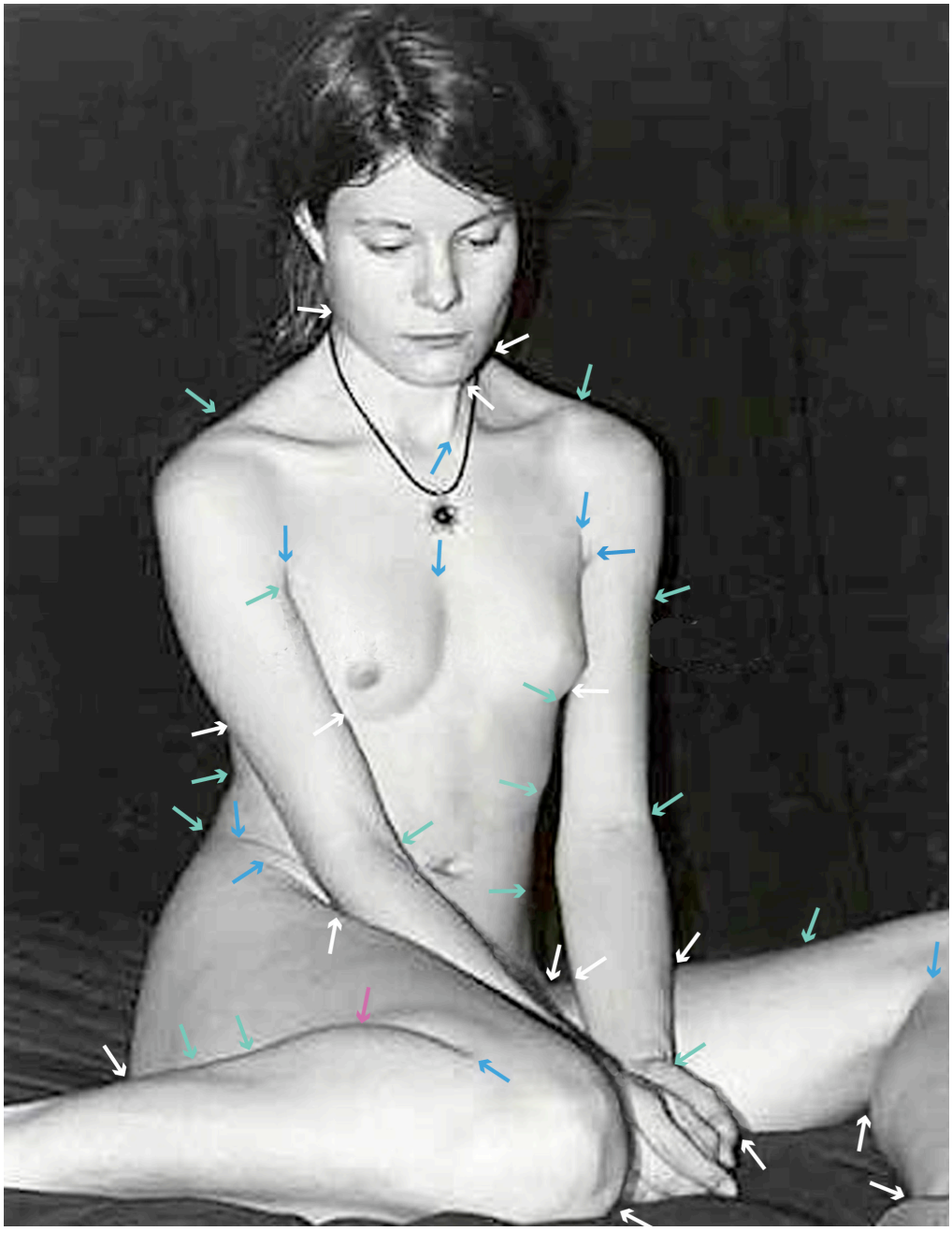

Figure 8 : Chunking using in front/behind relations and junction points.

- The left side arm[4] is in front of both the left side breast and the navel.
- Both sides of the right side arm are in front of the thigh.
- The left side thigh is in front of the arm.
- The left side lower leg is in front of the lower part of the buttocks.
- The right side breast is in front of the right side arm and the left side arm is in front of the left side breast.
- The jaw is in front of the neck.

There are also less obvious examples such as where:

- The subtle shadow on the left-side thigh cut into the left side leg (pink arrow).

As well as the in front/behind relations, there are many places where two anatomical features meet causing a change of direction in the contour line (indicated by the blue-green arrows). Some of these are quite easy to see (as where the right side forearm meets the right side upper arm). Others are much more subtle (as at the top of the left side buttock). In addition to these we have various places where contours comes to an end (indicated by blue arrows). Notice that this seldom if ever happens abruptly.

But this is not all. There are two other factors to mention. Firstly, there is the influence on appearances of the drape upon which the model is sitting, for the fact that this obscures parts of her body provides a number of potentially useful in front/behind relations. And, secondly, there are a number of points at which the body is cut by one or other of the borders of the photograph. From the visual point of view it is as if the young woman is being seen through a window, the frame-edges of which obscure parts of her body, thereby producing several very useful in front/behind relationships and straight edge measurement guides (not arrowed, but surely quite evident). For example, the right side frame-edge from the bottom right hand corner of the image upwards to the point that the top of the right knee cuts across it. Likewise, the bottom edge of the image-frame leftward from the same corner, first across to the point at which the bottom of the knee of the left had side leg almost touches it, then further to where a crease in the drape creates an arrow like shape pointing down to the image-frame and finally, along to the bottom left hand corner of the image-frame.

In conclusion, it is worth pointing out that, since the photographer wanted

4 This and all other positional descriptions refer to *left* and *right* as perceived by the viewer.

to concentrate attention on the young woman's body, he has placed the her on a fairly uniform black background. If he had chosen a more varied background there would have been more in front/behind relations. For example, these could have been provided wherever the model's body obscures: the edges of a piece of furniture; the corner of a room, the junction where a wall abuts the floor, parts of patterns, textures, other people, animals, trees, pathways, any feature of land, town or seascapes, etc.. However, even without these to help, it was easy to produce a lot of arrows indicating significant in front behind relations and changes of direction in the contour of the young woman's body and quite a few others could have been added.

As a result, if we circumnavigate the external contour of the young woman's body with our eyes, paying special attention to the stretches of it that lie between neighbouring arrows, we realise that we have found a way of dividing up an extremely long and complex curve into short stretches of relatively simple curves. In doing so we have broken up our analytic activity into much more manageable chunks.

The main two advantages this "*chunking*" procedure are:

- That it enables us to avoid presenting ourselves with degrees of complexity that are more than our eye/brain's can cope with in one go.
- That it provides an abundance of relativities of a kind that give the eye/brain the best chance of making appropriate use of the power of comparative looking, its most effective tool in the quest for accuracy in drawings from observation.

However, we must not forget that advantages often have a flip side. In the case of chunking is that it brings with it the ever present risk, exacerbated by the influence of the constancies of size, orientation and shape, of losing sight of the whole picture. This is why we need to follow the procedure recommended in the feel-based drawing lesson, namely to cross-reference the end points and orientations of every line we produce with those of the lines that have preceded it. In particular, we will find that it is particularly important to give special attention to the first drawn linear relationships with a view to ensuring that they are as accurate as possible. If we do, we will provide ourselves with a growing body of reliable cross-references and we will find that, as these accumulate, the easier the whole process will become. We will also discover that the more we practice along these lines, the more rapid it will become. Nor will the extra speed be achieved at the expense of accuracy.

SYMMETRIES

Earlier, much has been made of *same/difference judgements*. I used the example of how the comparison between a mug with a handle and one without a handle called the attention of young children to something that they would normally overlook. Comparisons between any two objects that are *similar* in most respects but nevertheless *different* in some will do the same, not just for children, but for all of us. Luckily such *near-symmetries* abound in nature: They can be found everywhere we look. With respect to the photograph of the young woman in *Figure 8* these include the two eyes, the two sides of the nose, the two sides of the mouth, the two sides of the face, the two shoulders, the two collarbones, the two sides of the necklace as divided by the pendant, the two arms (and the two sides of each arm) and many more. Even when it can be argued that symmetry is minimal or nonexistent, across-body or across-body-part comparisons of this kind will be revealing.

In the scene used for the drawing lesson (*Chapter 8, Figure 1*), the two sides of the tree trunk can be considered as near symmetries. However, if an attempt is made to compare them from top to bottom, the large number of differences between will be too much for the eye/brain to take in at one time. In contrast, when looked at in *segments* (for example, the stretches of trunk between the wall top and bottom or between the wall bottom and the tree base on both sides of the tree)[5] provide a manageable task. Such comparisons between more restricted chunks of contour help us to see the complex curvatures of both of the edges concerned more clearly.

Fortunately, the nude woman and the tree examples fit into a universal pattern. Every single object can be given an axis of approximate symmetry. Indeed, this is one of the first things the eye/brain does when it prepares to analyse any object.[6] But this automatic process operates at a subconscious level. Artists, when drawing-from-observation, need to make it as conscious as possible. Almost anywhere they look, it will be possible to find near-symmetries just by comparing one side of more or less any object to the other. If we do, we will have our attention drawn automatically to features that we would otherwise have overlooked. Even on the rare occasions that we are confronted with an object with a shape that provides true symmetries, we can expect to learn much about its form from analy-

5 In other words, the comparison between line 1 and line 8 or between line 2 and line 6 in *Figure 4, Chapter 9.*.

6 *"What Scientists can Learn from Artists", Chapter 7.*

sis of its context, whether by making comparisons of in front/behind relations or the characteristics of the surfaces of the object where they abut the symmetrical shapes in question.[7]

Some people might argue that some of the "*near symmetries*" mentioned are too far from being symmetries to justify using this word to refer to them. Perhaps they are right, particularly as the only really important thing is to find information-revealing comparisons and more or less any two sections of contour will perform this function. However, since the more similar they are, the more helpful they will be, the search for symmetries provides a particularly useful strategy.

USES OF MEMORY

In this book I have been emphasising the importance of ***memory training*** as a means of increasing the rapidity of information pick-up and, consequently, of faster line output that loses nothing in terms of ***accuracy***. A key part of the method advocated is the training of the "*Feel System*" which, besides its benefits in terms of speed and its usefulness in terms of ***memory training***, has the important advantage of providing a link between ***line-output*** and the ***emotions*** and, thereby to ***personal expression***.

However, there is another role that *memory* can play. I can think of no better way of summing this up than by reiterating the words of Edgar Degas quoted in the last chapter, "*It is always very well to copy what you see, but much better to draw what only the memory sees. Then you get a transformation, in which imagination works hand in hand with the memory and you reproduce only what has particularly struck you.*"

But, as Degas was well aware, *memory* has to be laid down and, for this purpose, he clearly believed that rigorous studies provide the best approach to discovering the uniqueness of the subject, whatsoever it may be. This belief in the value of studies is clear from his assertion that, "*I must impress on myself that I know nothing at all, for it is the only way to progress*".

In summary, it is clear from the above quotations that Degas believed in using rigorous analysis to deepen his understanding of his subject matter so that subsequently he would be able to use the *memory* of what he had learnt as the basis for imaginative transformations. Degas was not alone in this belief which correspond closely to the ideas of Horace Lecoq Boisbaudran, the influential

7 For more on "symmetries ", consult the sections on them in the *Glossary*.

19th century teacher, from whom he, along with many of his influential contemporaries, presumably got them. It is also a belief that is given support by the findings of the experiments that underpin so much of what is written in this book.

Implications

This chapter has been a mixture of recapping and elaborating upon some of the ideas presented in the drawing lesson. It also introduces subjects that will be much more fully explored in "Drawing with Knowledge", the next book in this series, which is dedicated to extending our knowledge of ways in which constancies of layout and structure enshrined in the rules of linear perspective and anatomy can be used as aids to looking. Also missing are the subjects of shadows, shading, space, light and harmony. As explained in the Preface, these will be dealt with in the two books which concentrate on surfaces rather than contours and in particular in "Painting with Colour" which, despite it title, has much to say about monochromatic drawings.