CHAPTER 21

Deformations: Muscles, fat and clothes

(*This chapter is not finished. Many of the "Figures" required for illustrating the text have not been made. Producing them will require at least one photo session with a model, and I am putting this off until the book is accepted for publication. The text below consists of the "Introductory" as it will be and a short description to the four sections that I have planned*)

Introductory

The purpose of muscles is to articulate bones. As a result, in addition to overlaying the bones, they also overlay also the junctions between them. Consequently, the bones are mostly obscured from view. It is therefore particularly important to know where the ***bones*** *can be seen to be having an effect on the shape of the surface (as at the ankles, wrists, pelvis protrusions) and this will be the first subject tackled in this chapter.*

The second subject is ***ligaments, tendons and muscles****, with particular attention being paid to* ***muscles*** *because of the importance of their effect on what we see when looking at a naked human body.*

The third subject is ***body fat****, which effect matters in two ways: first, by its thickness and how this effects the visibility of what lies underneath and, second, by its mass and the way that the fatty layers deform, whether due to gravity or to other forces impinging upon it. This section will include breasts the size of which is largely determined by fat content.*

The last subject will be ***clothes****, which obscure even more of the underlying anatomy but whose surface form is nevertheless affected by it in many ways. A number of simple guiding principles can help artists to indicate these interactions and their effect on appearances.*

Completing the chapter will be a number of illustrations showing how comparison between similar view of body parts will help sensitise viewers to their characteristics.

Visibility of bones

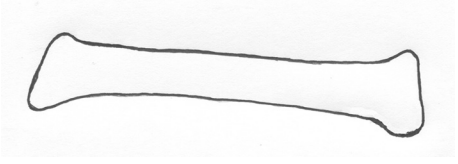

Figure 1 : A typical bone shape with a long shaft and swellings at both ends where it is attached to juxtaposed bones by means of ligaments and to muscles by means of tendons.

If we feel around our own body, we find that most of it is soft or spongy to the touch. This is because most of the time what we will be sensing will be a combination muscle and fat. However, on occasion, we will come across a region that feels hard. This occurs where the some part of a bone within its casing of ligament is near the surface (usually at one of its two extremities). Such parts can be related to parts of the skeleton and therefore provide useful guides to the information provided in the previous chapter. *Figures 2, 3, 4, 5* and *6* illustrate this with particular emphasis on the visible parts of the pelvis and the rib cage.

Ligaments, tendons and muscles

Without ligaments the ***bones*** joined by them would fall apart. Without ***tendons*** they could not be articulated. Without ***muscles*** no action would be possible for it is they that enable the articulation of the bones. To do this they have to be able, either they ***pull*** two bones joined at one end by ligaments towards one another, or ***push*** them away from one another. The pullers are called "*flexors*" and the pushers, "*extensors*".

But nothing would work if muscles pulled or pushed in opposite directions. Accordingly, they also need the capacity for ***relaxing***. From the artists point of view all this is important because muscles vary in shape and degree of firmness when they are under tension as compared with when they are relaxed. Tense muscles are firm and their shape reflects the different degrees of tension required for the activity in which they are engaged. Relaxed muscles are flaccid and can be deformed by the forces of gravity. All muscles vary a great deal with different body types and with different degrees of tension. Figures *7,8,9,10,* and *11* illustrate this.

Body fat

There are two kinds of body fat: that which surrounds internal organs and is invisible to us and that which lies beneath the skin and influences appearances in various ways. Thus:

- Where the subcutaneous fat is thinly distributed, it has the effect of smoothing off appearances, sometimes making it more difficult to see junctions where different muscle systems interlock, etc.
- Where the layer of fat is thicker, it can have a much more pronounced influence on appearances, partly because it takes on its own form and partly because it can be more radically deformed by the forces of gravity and other kinds of external pressure. Figures *11,12,13, 14* and *15* illustrate this.

Clothes

Clothes are made of different materials each with their own properties and are fitted to the bodies of the people wearing them in a variety of ways. When drawing clothed figures from observation, it is well worth considering the relative influence on appearances of:

- The properties of the materials (thin, thick, flexible, inflexible, etc.).
- The design in terms of the degree to which it takes on its own shape
- The degree to which it is in contact with by the body underneath and, consequently, takes its form.
- The influence of gravity.

Just as it is useful when drawing unclothed bodies to seek out the hard places which indicate where the bones are influencing surface appearances, so it is useful when drawing clothed people to feel where the material of which the clothes are made touches the body and where it doesn't, and to consider why. When they are available a number of images will illustrate this

Comparison

As emphasised throughout the text of this book, ***comparison*** between similar but different things (***near symmetries***) provides the best way of learning to see in new ways. The chapter will finished with a number of composite photos, somewhat on the lines of the two figures which follow.

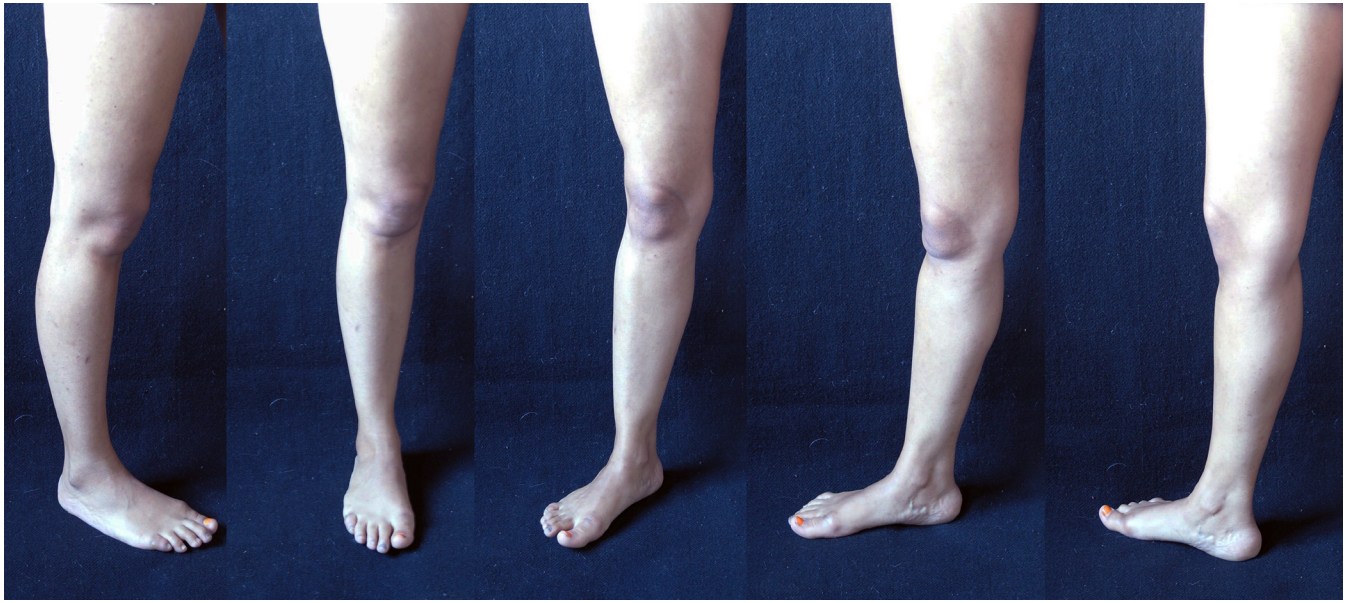

Figure ? : Five view of a young woman's leg.

As reiterated in many places, comparison is one of the most powerful learning tools. Here is a composite photograph showing the leg of a young woman in five positions. Take any section of the left hand side contour and compare it with the four analogous contours and you will be sensitised to the subtleties of each. For example, you could take: (a) the thigh above the knee, (b) the section that relates to the knee, (c) the leg below the knee and above the ankle, (d) the ankle, and (e) the foot. Then do the same with the right hand side contour. It hardly need adding that a greater number of positions would enable a greater degree of sensitisation or that if, instead of using photographs, you could use a live model, a slow rotation of the arm or the viewing position while looking at any section of it would enable sensitisation to its characteristics.

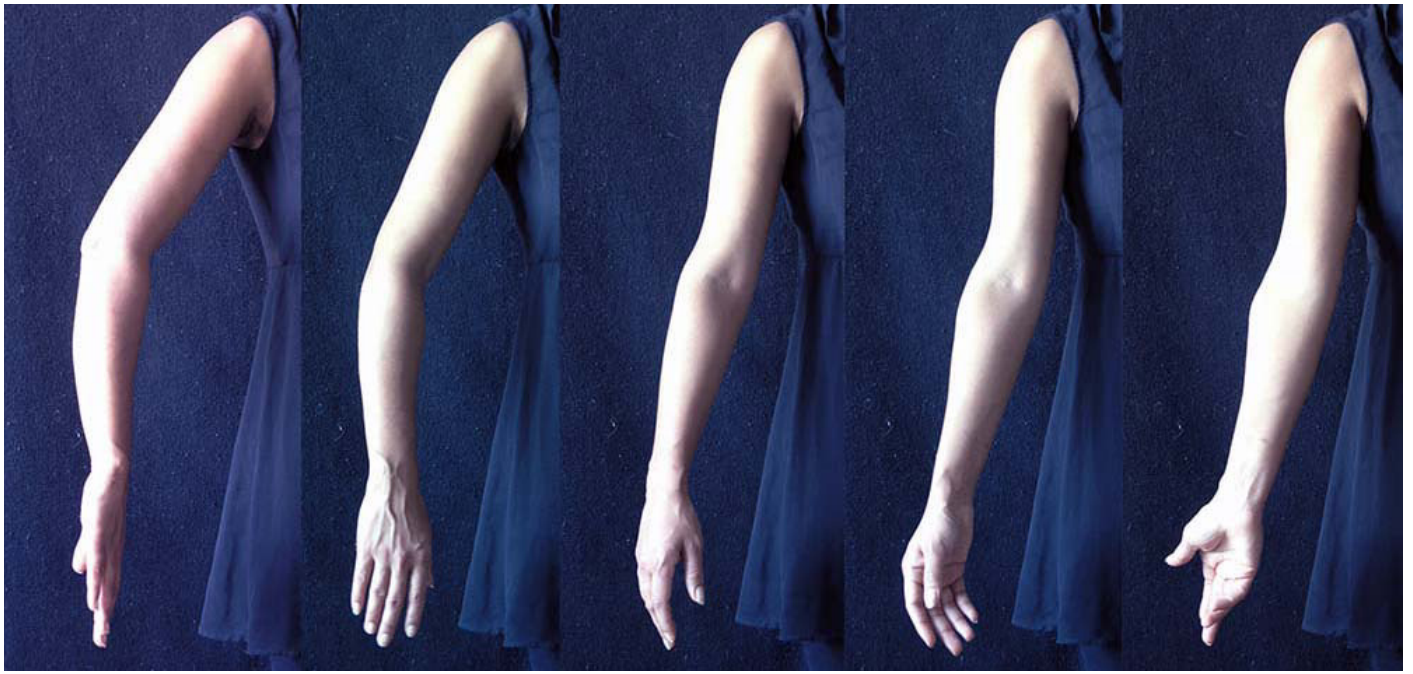

Figure ? : Five view of a young woman's arm.

The same set up as in Figure 21, except that composite photograph shows the young woman's arm in five positions, instead of her leg. As before, take any section of the left hand side contour and compare it with the four analogous contours and you will be sensitised to the subtleties of each. For example, you could take: (a) the section between her shoulder and her forearm, (b) the section between the elbow and the hand (c) a section that includes the elbow, etc? It hardly need adding that a greater number of positions would enable a greater degree of sensitisation or that if, instead of using photographs, you could use a live model, a slow rotation of the arm or the viewing position while looking at any section of it would

On the next pages, I plan to have images which illustrate points made in this chapter and the previous one....