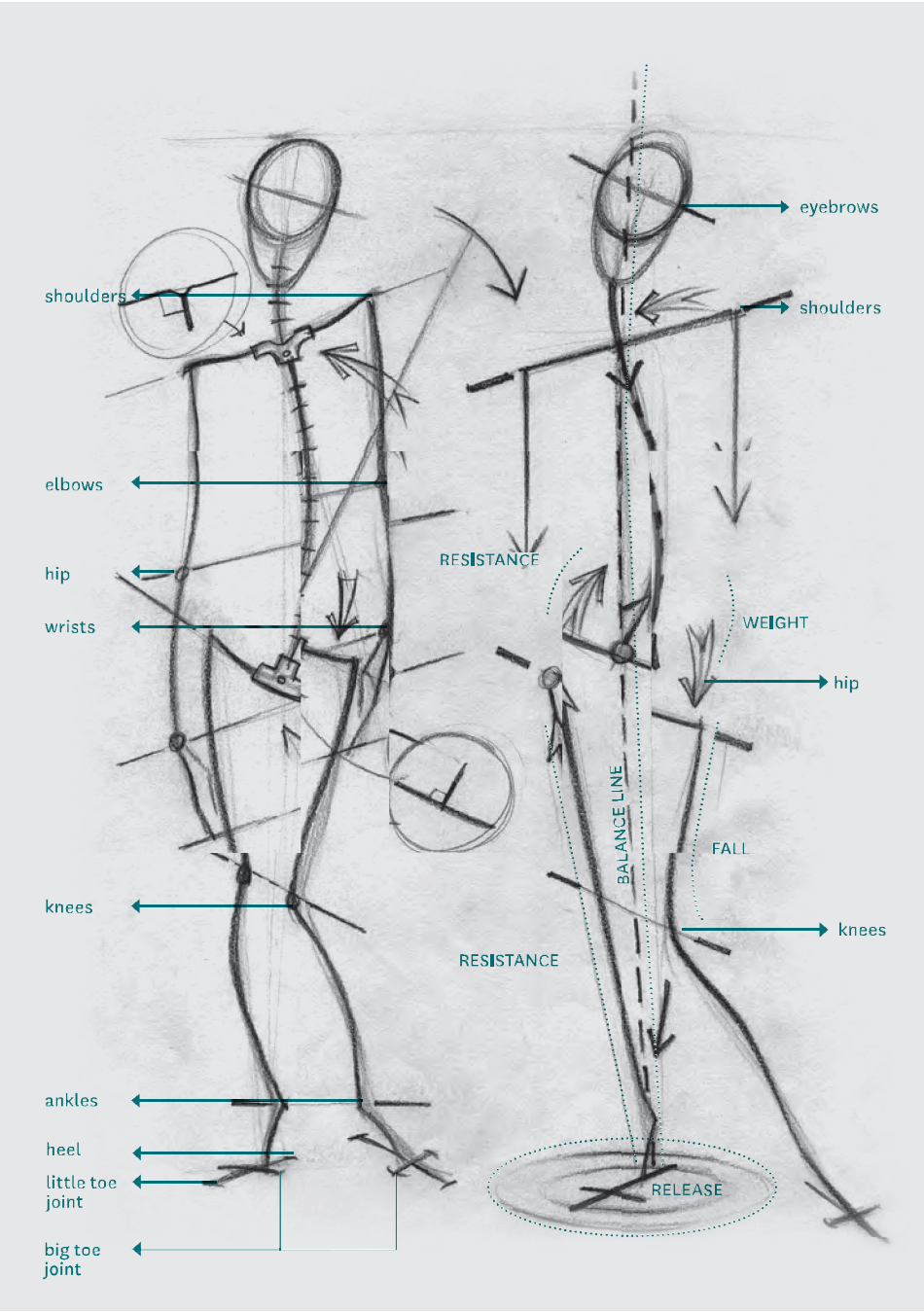
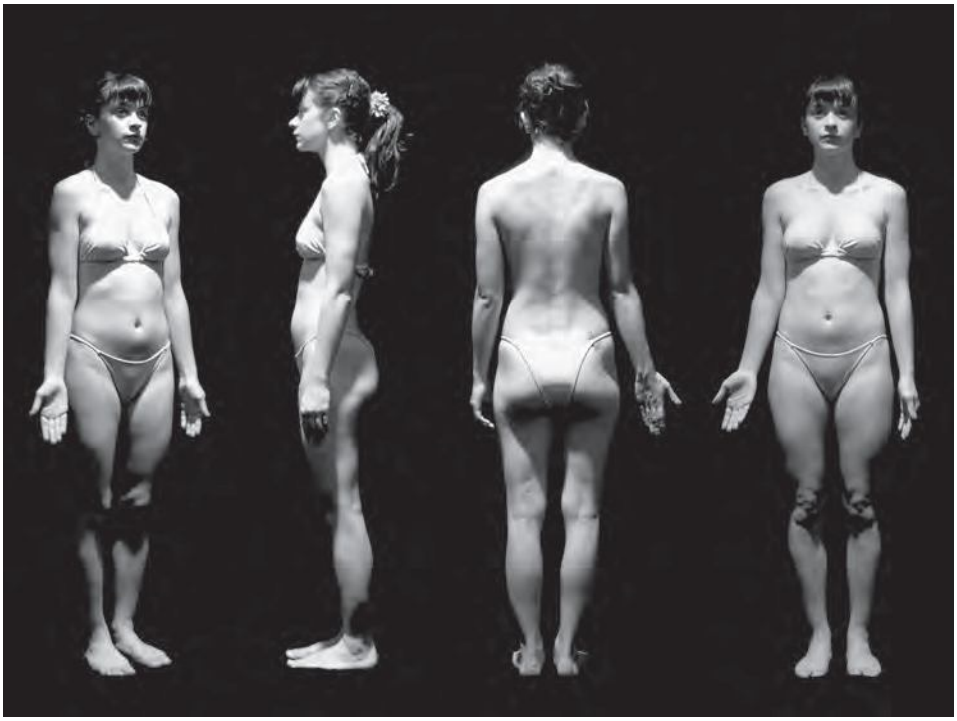


◀ Fig. 3

Foreshortening / Resting position

Draw these lines as fluidly as possible. Focus on expression rather than body shape.

▼ Fig. 2



Contrapposto

▼ Fig. 4

Structural volumes

After plenty of practice on kinetic structure, when you can see that your stroke is continuous and expressive and that you are correctly interpreting poses and their energy, attitude, proportion and harmony, it is time to add a new element: volume.
However, volume here should not be understood in terms of light and shadow, but in terms of geometry; and not in terms of perception, but in terms of its morphological constitution and the reason for it.
Imagine a transparent sphere with a meridian and an equator seen from exactly in front (1).
We will see two lines, one vertical and one horizontal.
Now, if we lightly rotate the sphere on a vertical axis (2), we will see the vertical straight line become a narrow ellipse that also develops vertically. The ellipse becomes wider as we continue rotating, until it follows the same outline as the sphere, that is, the circumference of the sphere when seen from the side. The same thing will happen to the horizontal line if we rotate on a horizontal axis (3). We will call these two circumferences that go around the sphere the *meridian* –which runs vertically– and the *equator* –which runs horizontally– since their function is similar to the lines of the same name found on a globe.
Now, if we rotate the sphere first in one direction (V) and then in another (H), we get two ellipses (4). After observing this behaviour we can see that by drawing these ellipses we can define:
a | The direction in which these volumes are facing.
b | The viewpoint from which these volumes are observed.
c | The front and back of the object.

One of these takes the object as a reference (a) and corresponds to its location in space, while the other is based around the subject (b) and refers to the place in space where the object is observed. It is important to understand this concept to discern the point of view of the observer and the position of the object, which will help us to conceive of the sheet as a three-dimensional space.

Volumes in perspective

Practice these examples of volumes and planes in perspective to simulate a three-dimensional space on paper. We will not go into more depth on the issue of perspective here, since we will continue to see it in practice throughout the construction of the figure in motion, but the student should learn about it through a book on the subject.
In the case of depth the key is to discern and complement the observer's viewpoint in relation to the position of the observed object. By this I mean that, for example, if a person was hanging upside down from the ceiling we would see them from below, but the view we would get would be a top view (as though we were seeing them from above). Both concepts are complementary and inseparable: the eyes see from one position, but the position of the object is independent of the subject.
It is also necessary to be aware that each volume has a geometric constitution that we must understand so that we can properly draw it in three dimensions.
Draw planes that look as though they are squares, completing their heights and their diagonals; then draw ellipses within these parallelograms (our intelligence will understand the drawing as circumferences within squares, even if our eyes do not tell it that). From these continuous and rounded ellipses, construct cylinders whose more closed or more open ellipses will determine a different perspective; the more circular the ellipse, the shorter the straight lines forming the length of the cylinder, while the most narrow ellipses are connected with the longest straight lines. You will find the same thing in arms and legs: keep this in mind when the time comes to draw them in perspective.

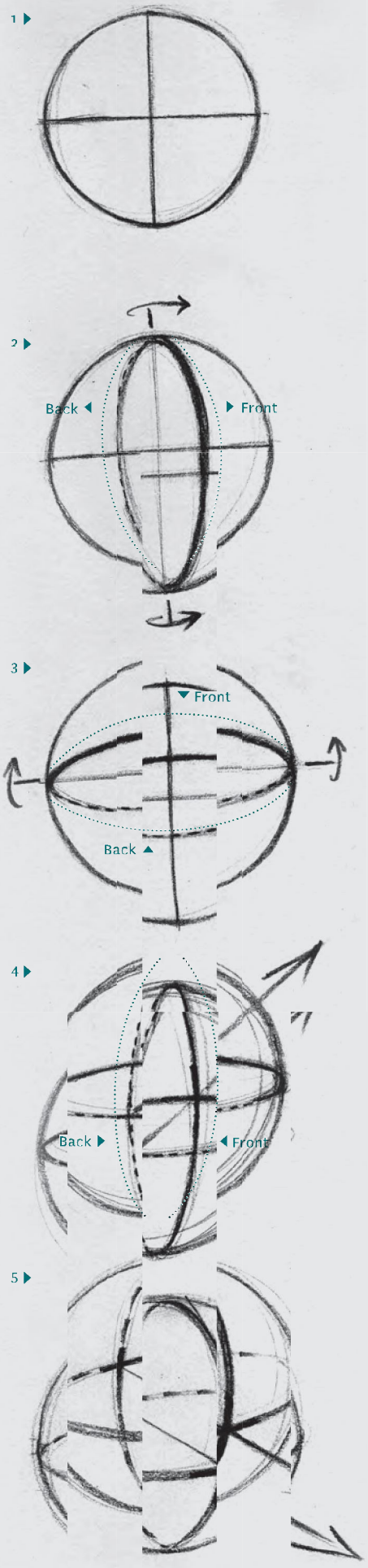
Fig. 13a
Rectangular planes

Fig. 13b
Perspective of circles

Fig. 14
Spheroids in different positions

Fig. 15
Cylinders in different positions

Fig. 12



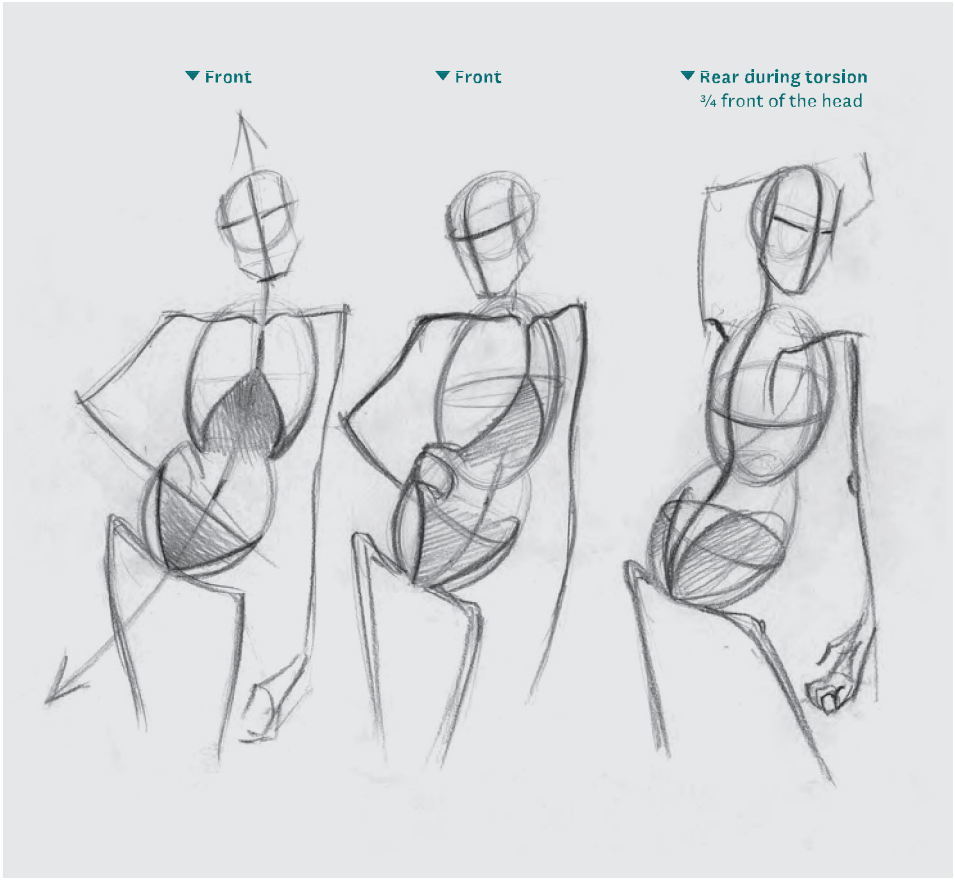


Fig. 30

Meeting of the upper limbs with the thorax

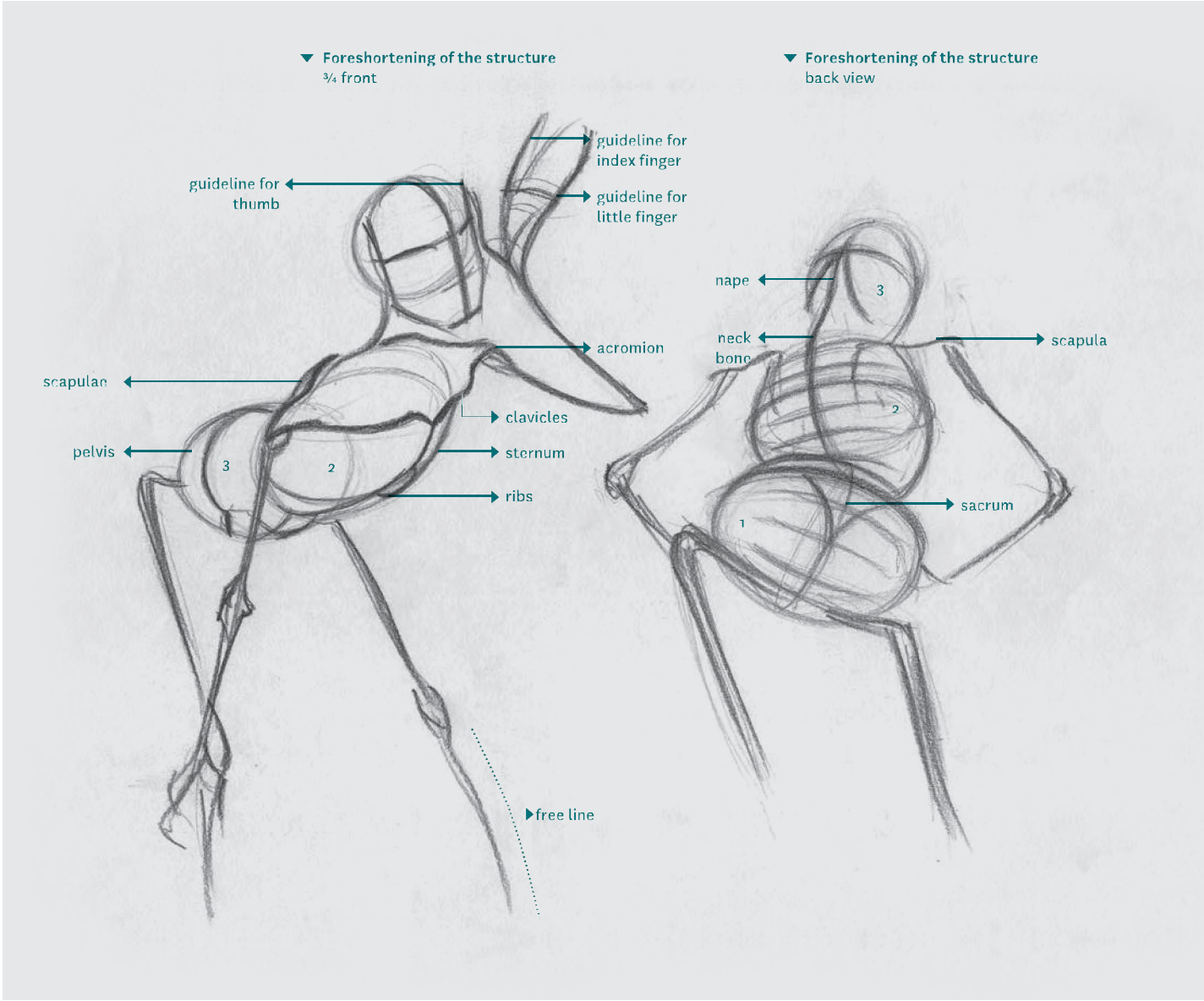
The clavicles meet the thorax at the sternum and can only move upwards. They connect to the shoulder blades at an angle called the *acromion* (Fig. 29-A), from where the arm (humerus) comes out. The shoulder blades connect to the ribcage in a more flexible way and give the impression of floating over it.

Structural foreshortening

› **foreshortening of the structure**
¾ front

› **foreshortening of the structure**
back view

Fig. 31



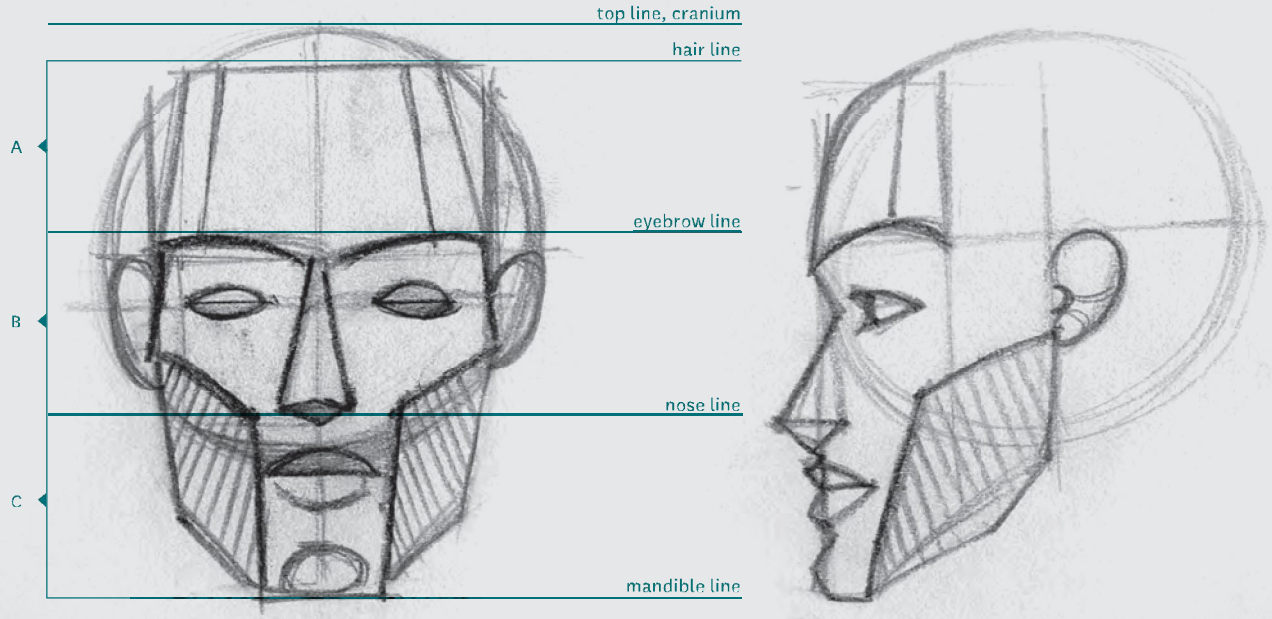


Fig. 48 ▲

Main volumes

3 | If we turn the sphere a little on its vertical axis, we see that the meridian line becomes an ellipse, as we saw earlier. The new element is that on the opposite side to which it turned (or at least from our viewpoint) an ellipse taking the same shape but of half the size appears, making up the side of the head: the temples or parietal areas. If the sphere rotates, the ellipse widens until it turns into a circle in its profile view.

4 | If the head only turns upwards, what changes is the equator line. The limit of the forehead is the edge of the cranium, and the lines marking out the forehead, eyebrows and nose arch in accordance with the curve of the equatorial ellipse.

5 | We now combine the two rotations to achieve a three-quarter profile view.

6 | If to this structure we add half a square to the bottom part we get the mandible line; this line will be parallel to the eyebrow line and will have the same curvature.

The result is a structural mask of the face, divided into three equal parts:

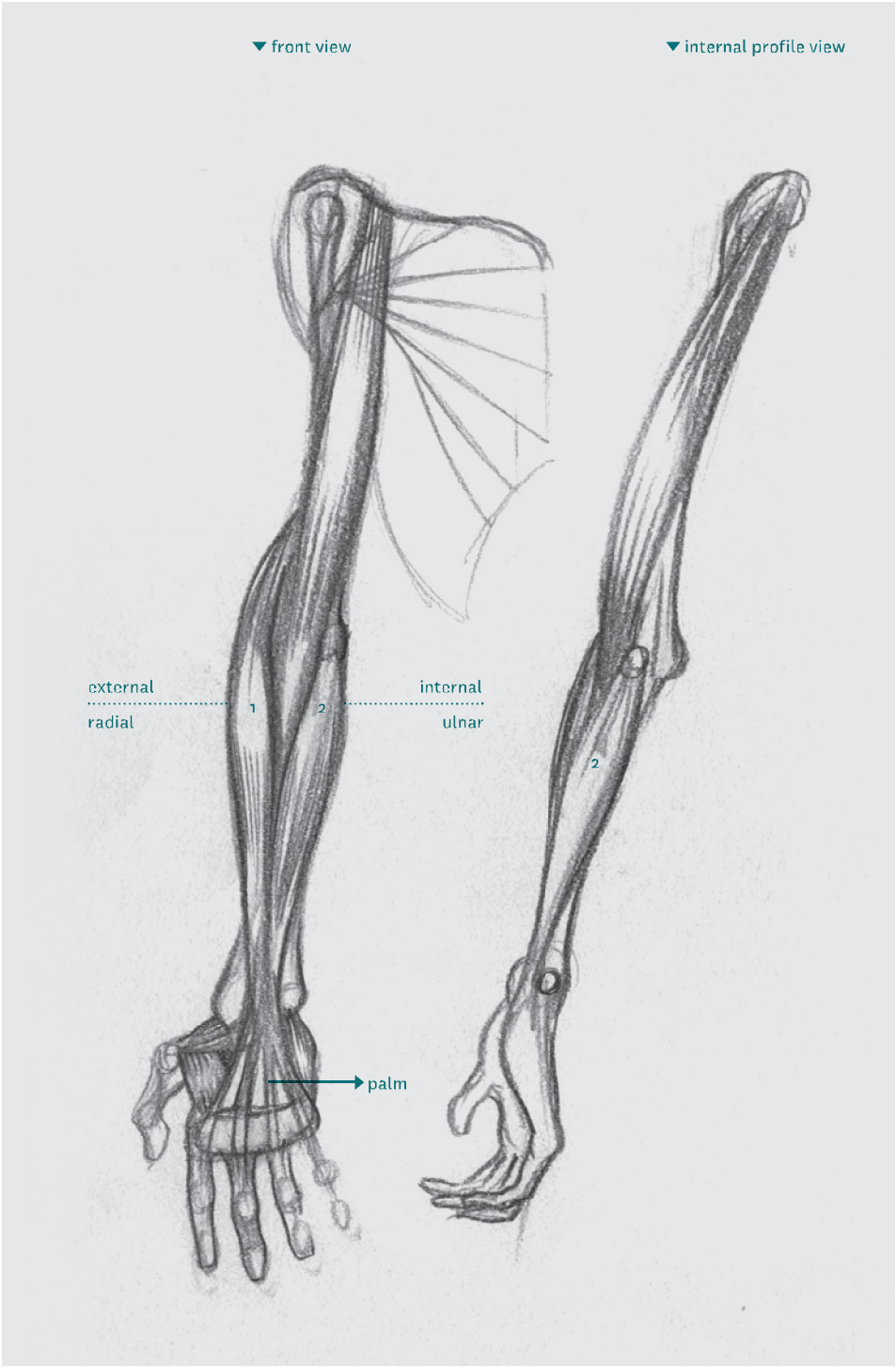
A = Forehead.
B = Eyes-nose.
C = Mandible.

Parts which will move in the same manner as in the cases of the sphere.

Search for photos where you can find what you have seen in the book; mark them at the height of the eyebrows and draw the axis of symmetry in the face: you'll see that they match the parameters that I have written about and drawn here. This will help you understand the perspective of cranial volume with the inclusion of the planes of the face. Do not worry about defining facial features yet; only draw them geometrically. You will look at them in detail later; remember that progressing step by step will avoid unnecessary frustrations.

Fig. 140 ▸

Arms



The forearms are very complex and I have therefore simplified them into just three bundles: radials, palmars and extensors.

Arms

We have already seen the muscles belonging to the humerus –that is, the biceps and triceps– along with the back muscles. We will now complete this information with the three muscles groups of the forearm:

1 | External muscles (these are outwards when the palm of the hand faces upwards and the thumb outwards), or radial muscles, since they are located around the radius. In the drawing they pass through the wrist and go on to the fingers, but this is only a synthesis, as the drawing of the forearm is very complex and does not give us much information. Draw them so they cover the two spheres that we have created for this purpose (see page 42), the large one for the elbow and the large one for the wrist. (RADIUS) **(Fig. 140)**

2 | Internal muscles (in the same hand position) or palmars, since they serve to flex the fingers for gripping. They are located around the ulna and, as we did with the radial muscles, we simplify them by having them go to the palm, but this time for a better reason, as these muscles pass it. The small sphere of the elbow is linked to the small sphere of the wrist.

3 | Rear muscles, or the finger extensors, which start at one side of the elbow and continue to the knuckles, and from there to the fingers.

Note that in this hand position, these muscles remain straight and parallel, but when the wrist bends or rotates relative to the elbow these muscles also twist. **(Fig. 140)**

▼ E. Female

› **Cranium** no variation
› **Shoulders, thorax, abdomen and hips** narrow

› Elevation of hip height

▼ F. Female

› **Cranium** no variation
› **Thorax block** narrower

› **Abdominal block** wide

› **Hips** wider
› Variation of hip height

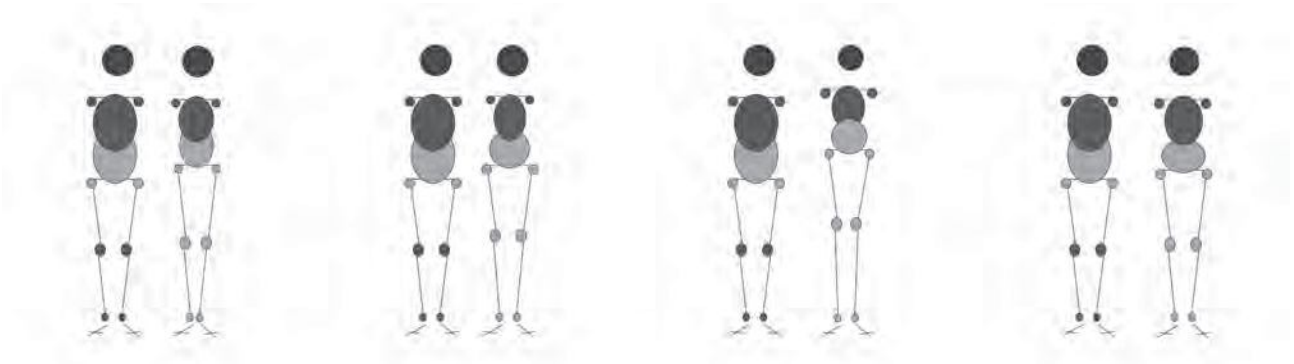
▼ G. Female

› **Cranium** smaller
› **Thorax block** small
› **Hombros** no variation
› **Abdominal block** smaller but wide
› **Hips** narrow
› Large increase in hip height

▼ H. Female

› **Cranium** no variation
› **Thorax block** small

› **Abdominal block** small and flattened
› **Hips** no variation



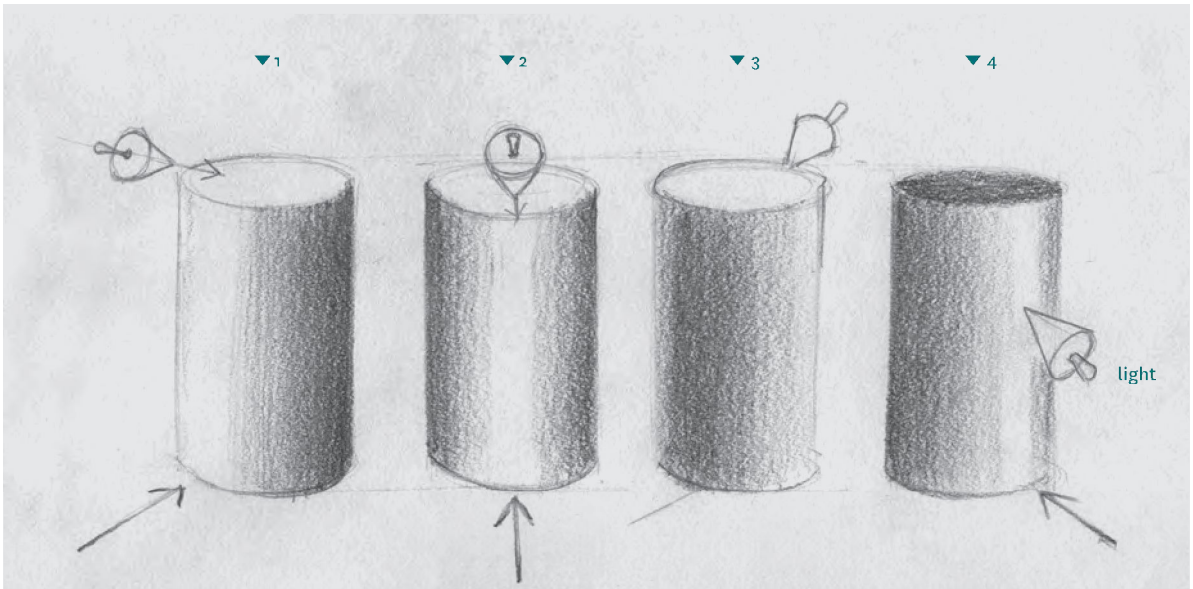


Fig. 165

Cylinders

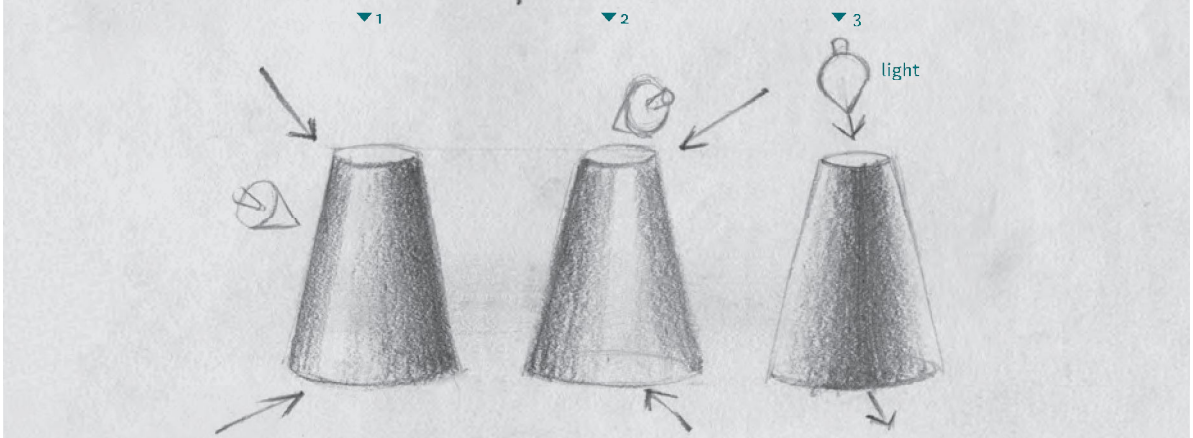


Fig. 166

Truncated cones

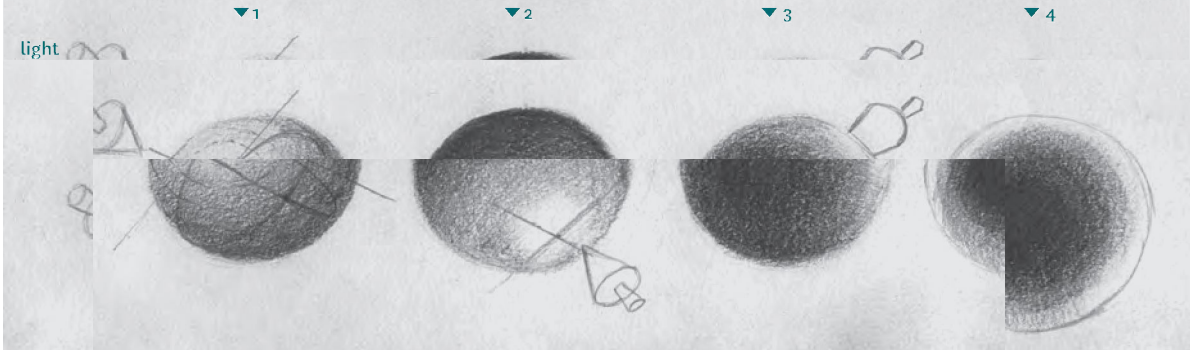


Fig. 167

Spheres

Examples for creating chiaroscuro in regular volumes

CUBES

1 | Single light source from above. Zenithal light over the cube: maximum light on the horizontal face and the equivalent level of brightness in shadows on the vertical faces. This is because the light strikes the horizontal surface at 90°, that is, perpendicularly; when this happens the luminosity level is maximum.

2 | Single light source from above, from the viewer's left to right and from above to below (backlighting). Backlighting parallel to face B directed horizontally. No light reaches face C. Face B is tangentially exposed to light and we can see a low level of brightness; however, the light continues to touch the horizontal surface of face A, but not perpendicularly, so the brightness is less than in the previous case.

3 | Light from below to above, from right to left and from front to back.

PYRAMIDS

1 | Back left, side.

2 | Back, left side.

3 | Front, right, above.

CYLINDERS

1 | Light from the right, in front and above.

2 | Light from the front and above.

3 | From the back (backlighting), right and above.

4 | From below, right and from the front.

TRUNCATED CONES

1 | From above, left, front.

2 | From above, right, front.

3 | From behind, above (frontal backlighting).

SPHERES

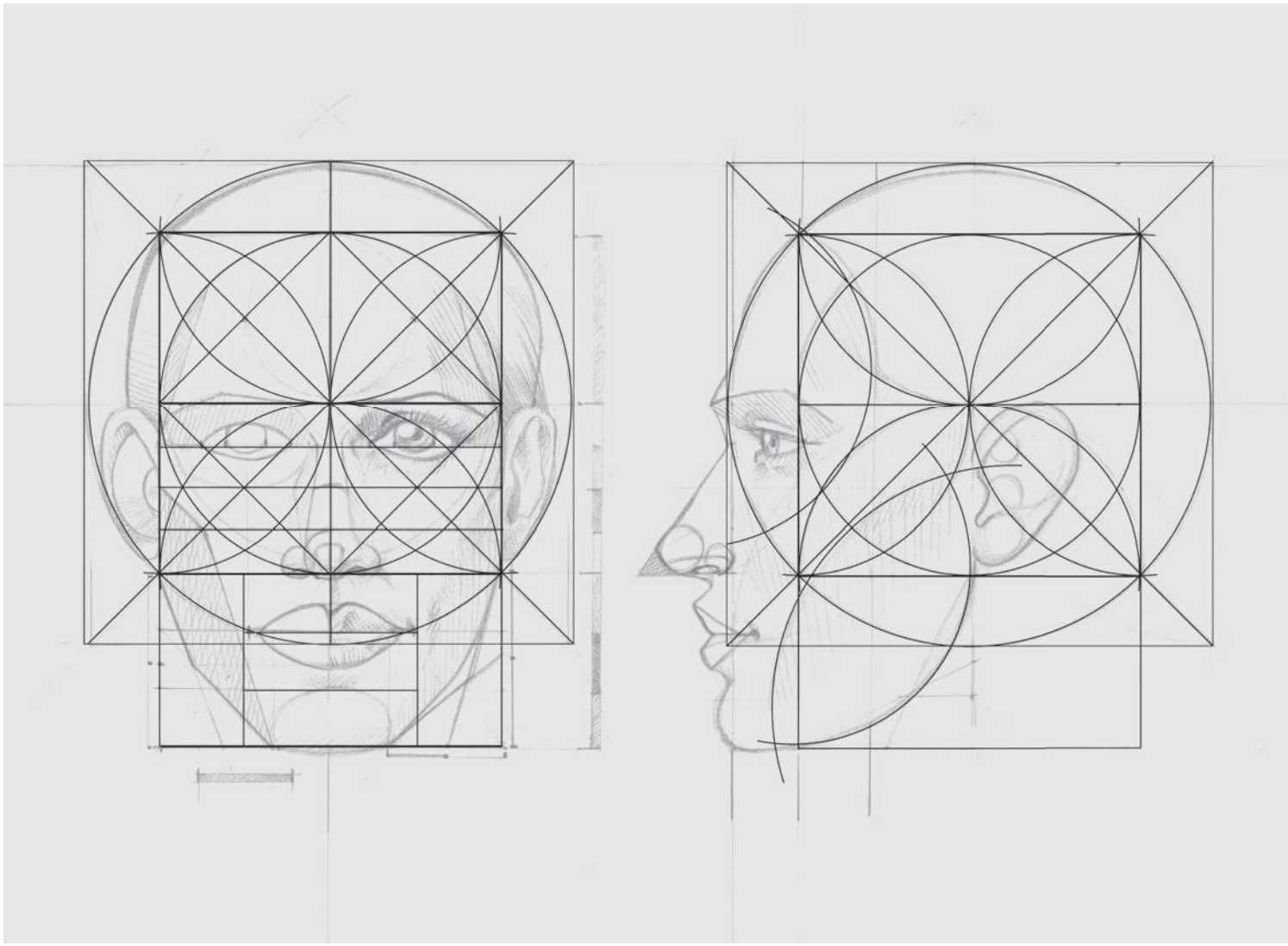
1 | From above, front left.

2 | From below, front, right.

3 | Backlit from above.

4 | Frontal backlighting.

Cubes and pyramids have a uniform value, without the gradients seen in cones, cylinders and spheres. For these, the light (sun in the example and therefore parallel rays) has a different angle of incidence at each point where it touches the surface. On a flat surface, each point receives light at the same angle. In the cylinder, each of the straight lines that make up the curved surface has a variable angle of incidence, so they form linear gradients, whereas all the points on the sphere have different angles of incidence, hence the radial gradient.



▲ Fig. 174

Having studied the complexity of the body as a kinetic structure, bone synthesis, muscle anatomy, styling and proportional variation and finally chiaroscuro, the time has come to begin the study and representation of the human head of the figure.

The head in itself has an equal or greater complexity than the rest of the body. Although the issue of movement does not play as much of a role since it is a structure with virtually no joints (except the mandible), the features, location and volumes are very complex, delicate and expressive in themselves.
But what adds to the difficulty of representing the face and head is human brain's highly specialized ability to recognize the smallest morphological variations of the delicate composition that is the human face, a structure that has always been used as the primary means of communicating emotions and thoughts.
This greatly influences the frustration that beginners experience with the drawing of the face, with the slightest error being perceived as grotesque or monstrous.
Therefore, do not become demoralized if when trying to draw the face you do not achieve any apparent results. You must understand that this step may be the hardest and we must be patient and follow the building steps methodically.
Do not try to proceed to the detail of the features if you have not first geometrically structured the position and shape of the base volumes and planes.
Frustration will be overcome with the perseverance of methodical practice. From practice comes mastery, and from that comes results.

Proportions of the face

The face is a structure that can be divided into three horizontal segments:

› The two upper ones are the halves of the square placed into the circle that until now represented the cranium.
› The third, this time outside the circle and the same size as the other two segments, is the lower part of the face (mandible).

From this we will obtain, from top to bottom, four important dividing lines: the start of the scalp, the eyebrow line, the line of the base of the nose and the mandible line.
The vertical limits of these lines are the left and right sides of square inside the cranial circle, and the median or vertical height will be the face's symmetrical axis. We therefore have three sections: forehead, eyes and mandible.

STYLING OF SHAPES ON THE FACE

Styling, as mentioned previously, is the process by which a natural form is idealized. This process can be carried out based on a formal synthesis, varying levels of iconic information (that is, drawing) and descriptive information through different graphic, visual and technical resources. In this case, we begin with a realistic* representation to reach an abstraction** of the motif that is more refined and subtle.

But you can also idealize the motif to be represented by leaving the information of the object represented *constant* and working on the configuration, size, position and density of the form, as well as on its technical expression.

It is also possible to combine formal synthesis with the idealization of the form, and in fact most representations oscillate between both processes. **(Fig. 194)**

1 | Highly figurative eye in which values, proportions and details are represented.
2 | Styling through size, expression in a modulated line.
3 | Same as 2 but also with removal of features.
4 | Greater subtraction of features.
5 | Geometrical and regularized synthesis expressed through planes.
6 | Styling by varying size (width) and synthesis of features.
7 and 8 | Geometrization and variation of size expressed respectively through a modulated line and uniform plane.
9 | Similar to 4 but with exaggeration of size.
10 | Same as 5 but with variation of width.
11 | Change of position, geometrization of shape, regularization of line and plane.
12 | Change of the geometric structural configuration from circle to triangle.
13 | Same as 12 but with a rectangular configuration and a regularized but modulated line, as with the plane.
14 | Subtraction and geometrization of features expressed through uniform planes.
15 | Same as 1 but with subtraction of values.
16 | Geometrization and representation through synthesis of planes.

Fig. 194 ▲

* We use the term realism here to refer to figurative-naturalistic representation, that is interpretation based on an approximation of the real object that "formally sets out the anatomical and/or psychological characteristic features of the model." These are concepts used by Professor César Sondereguer as classifications in the work *Estética de nuestra América precolombina*, though they are also applicable to other forms of artistic expression.

** Visual abstraction, like any formal synthesis, the product of a particular morphological concept departing from naturalism. Sondereguer, C. and Punta, *C. Amerindia: Introducción a la Etnohistoria y las Artes Visuales precolombinas*. Ed. Corregidor. Buenos Aires, 1999.

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Fig. 210 ▸

Traction + gravity

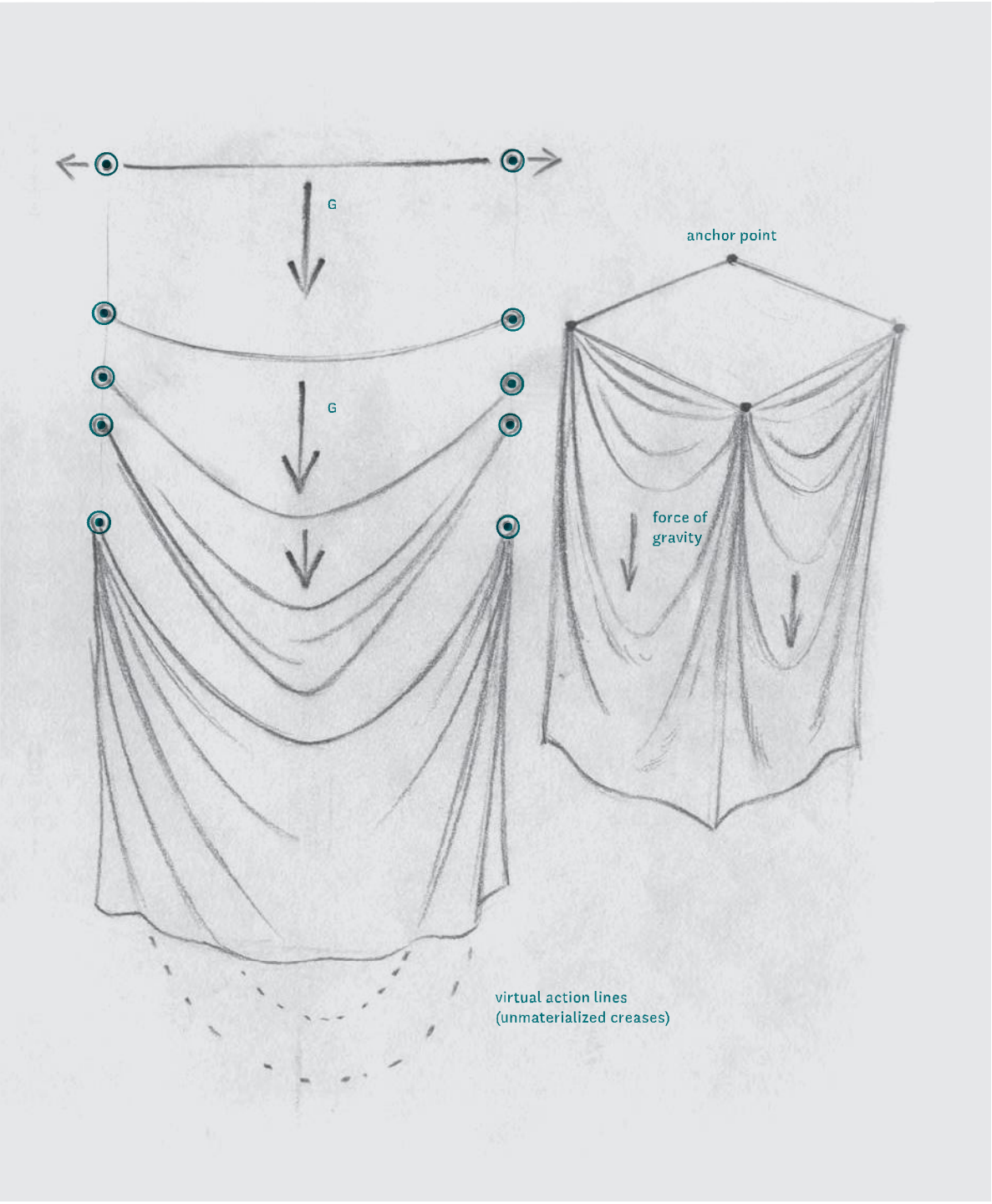


Fig. 211 ▸

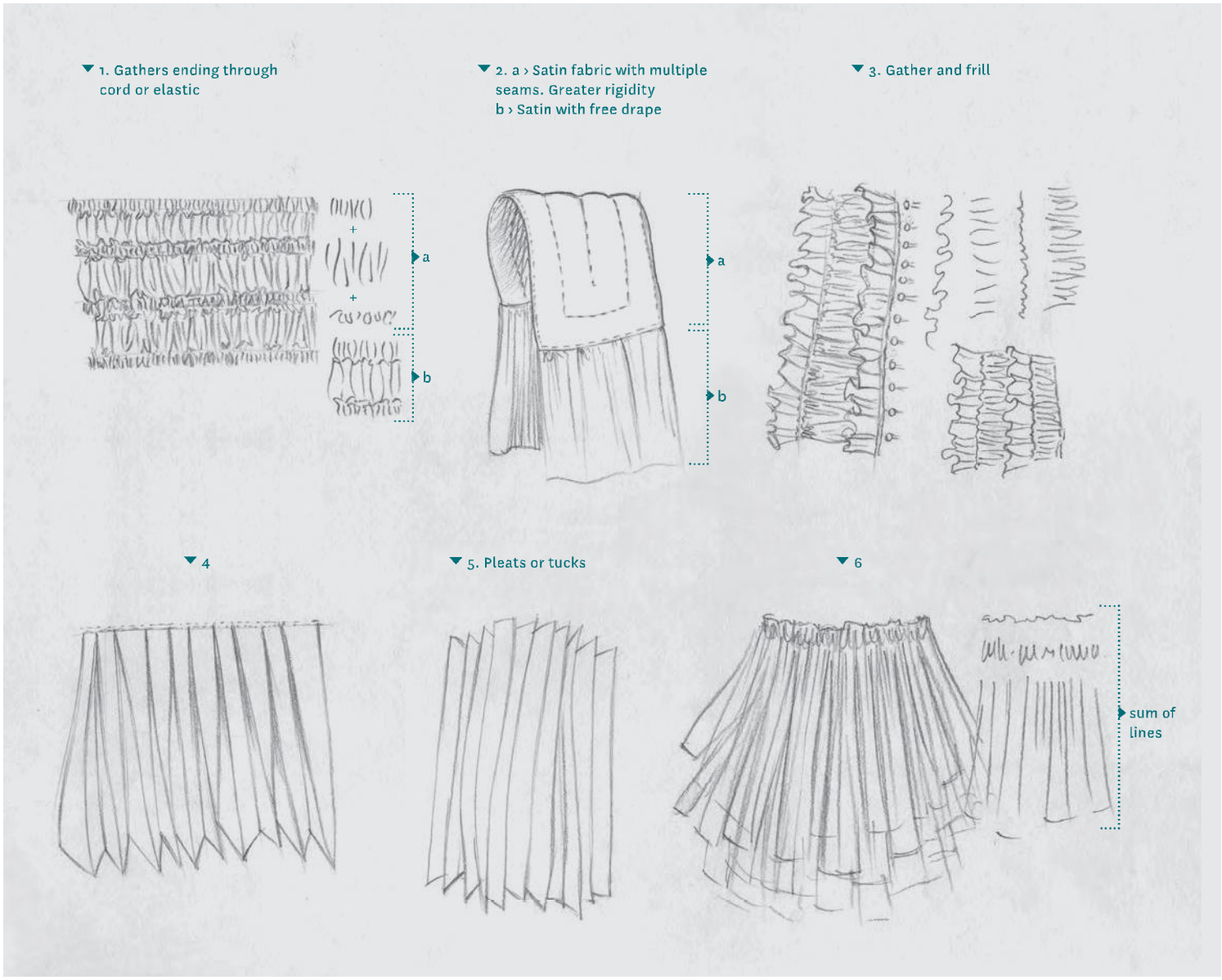
Traction and gravity

› Anchor point

› Force

Traction plus gravity

This combination generally occurs when the material behaves as a bridge between two anchor points between which there is not a particularly high level of tension. The same straight line that appeared through traction now curves due to the disappearance of traction as the dominant force and the appearance of the force of gravity, forming an upward parabola caused by the hanging fabric.



▲ Fig. 219

1 | Gathers through cord or elastic.
Note the agglomeration of strokes at the parts that represent the elastic.

2 | Panels ending in a pleat. Continuous lines with very little variation denote a structure based on the folding of the fabric. At the top the drawing denotes a fabric structured through seams, and the arcs suggest a filling between the seams (is it padding, material, or something else?); it is clear that it is a rigid form. **(Fig. 219/2-a)** Conversely, at the bottom the same fabric behaves in a completely different way, showing its structural weakness in the lines of the frills. **(Fig. 219/2-b)**.

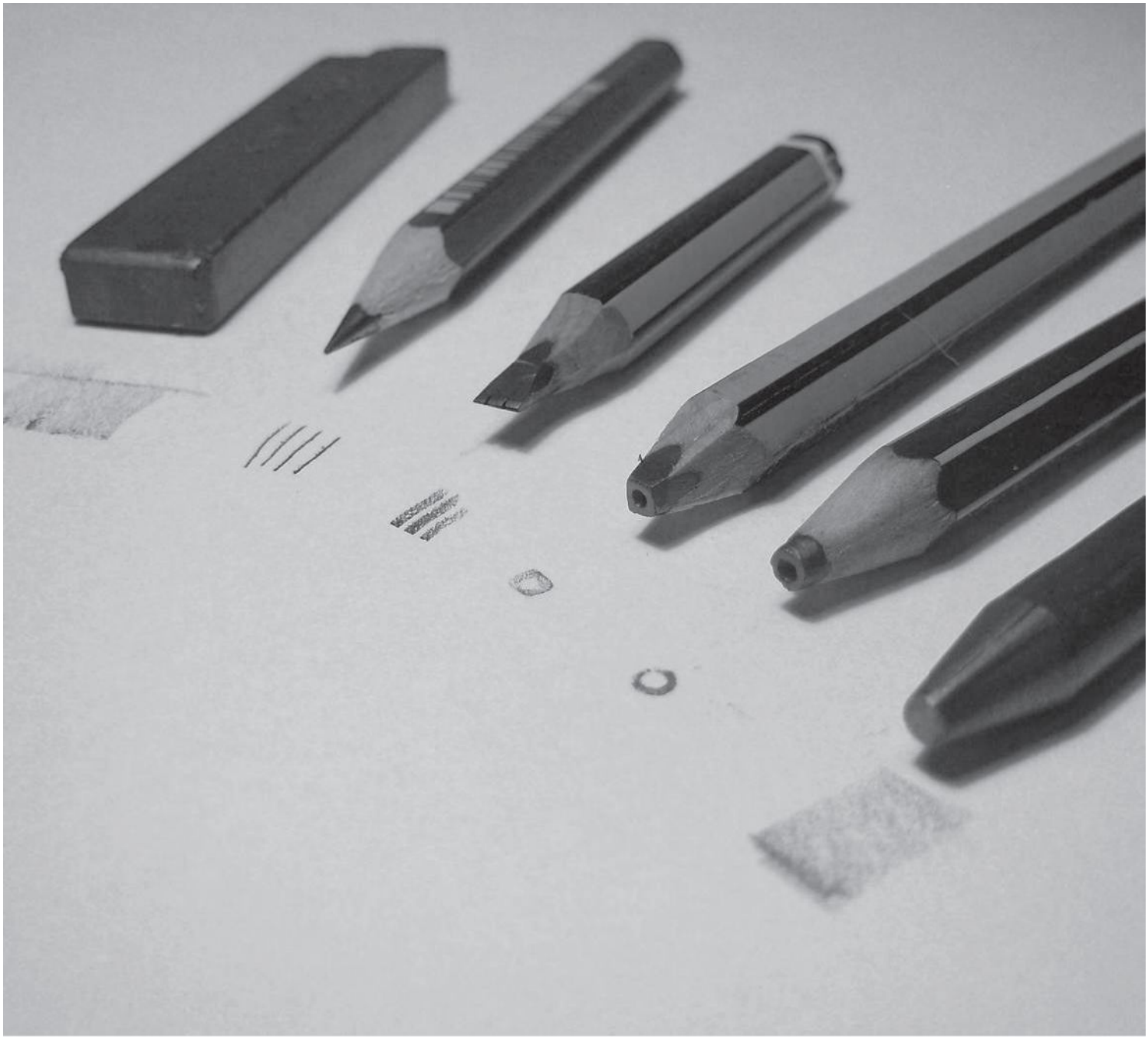
3 | A fabric used to create gathers and frills.

4 | Continuous and pronounced lines denote possible ironed and stitched tucks.

5 | Stitched pleats forming strips from satin fabric.

6 | An overlay of transparent materials that is gathered at the top, with a suggestion of box-pleated tulle. An agglomeration of lines creates the effect of transparency, especially when some are stronger than others.

Note in all cases the sum of the different strokes and lines creates illusion and meaning. The decontextualized lines are nothing more than isolated letters that have been shorn of their text and lack meaning. But when we join together these lines for ourselves when we read or draw they can gain a meaning and can *speak*; they can signify something that we understand. This is quite logical, since our brain continually works in this way, constantly contextualizing and interpreting to find meaning without "seeing objectively." As artists we must pay close attention to what our eyes see without the interpretation of our brain, as this will help us to discover how, through lines, we can simulate an effect that is similar to reality.



▲ Fig. 236

Textures and pencil work

The term pencil work refers here to grouped strokes that make up a sense of visual texture and evoke a possible tactile association.

Generally we use our pencil unconsciously, without realizing the enormous and varied possibilities of strokes and effects we can get from it; to discover them it would be a good idea for us to dwell on the variables that the pencil offers.

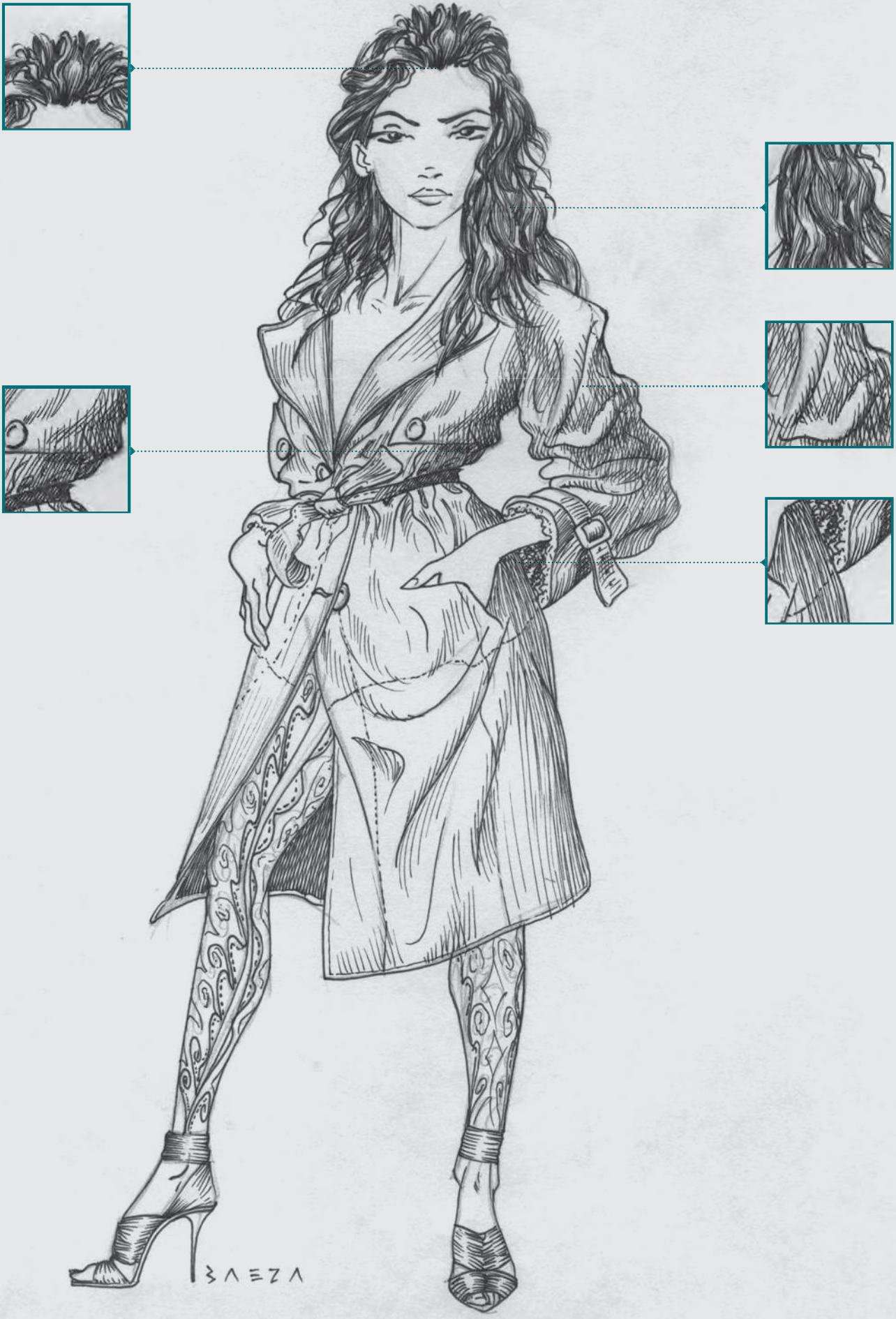
› **From pressure:** rapid pencil strokes create a difference in pressure between their beginning and end, with greater intensity in the beginning that tapers as the line progresses towards the end.
With greater control the effect can be varied. We can make strokes that begin gently and end strongly, or that vary in intensity in a regular or irregular way over the path of the stroke.

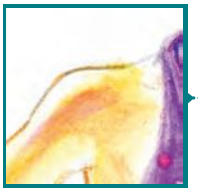
› **From shape:** we always use a pencil with a sharp tip and get the same regular line. If we vary the tip we see that the line is modulated and produces thick and fine strokes according to the position of the pencil.

› **From hardness:** we can vary the intensity of the stroke or the pencil work if we use pencils of different hardness. Pencil work with a high value is obtained with hard pencils (HB); medium value from medium pencils (2, 3, 4B), and low value from softer pencils (5, 6, 8B). We can also experiment with different effects using various types of grease pencils or chalk.

› **From grip:** holding a pencil with all five fingers results in thicker strokes without having to vary the tip; there are many other ways to hold a pencil, and each one provides different visual possibilities.

Drawn by Juan Baeza





Drawn by Juan Baeza