



sketching

drawing techniques for product designers

koos eissen and rosellen steur

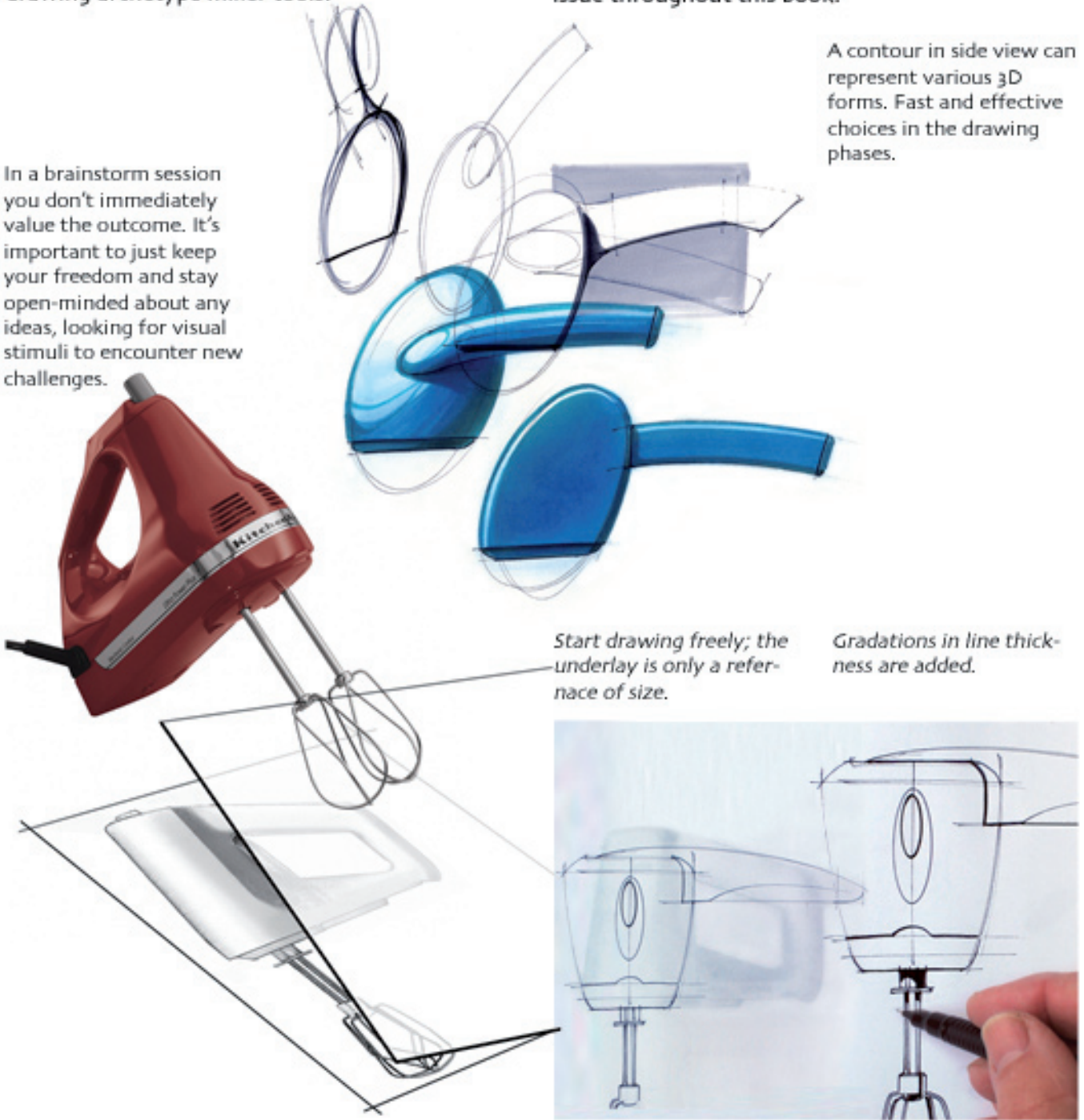
Getting started

Redesigning a handheld domestic food mixer, using a photo of an existing product. To get started an underlay has several advantages. It speeds up the drawing process and gives a realistic feeling of proportions, volume and size. A 1:1 scale is most convenient, because you can actually compare hand size and grip. Ergonomics and realistic appearance can thus be integrated easily. The design proposal gains readability and scale, by drawing archetype mixer tools.

As a line drawing leaves many interpretations, shading is added to express volume. Choosing an appropriate light direction (coming from the top left, slightly 'van je af'), makes volumes and shape transitions recognizable/ readable. When adding volume and color to a line drawing, immediately decisions about looks and feelings can be taken. This clearly states the importance of shading. Knowledge about light and shading will be a key issue throughout this book.

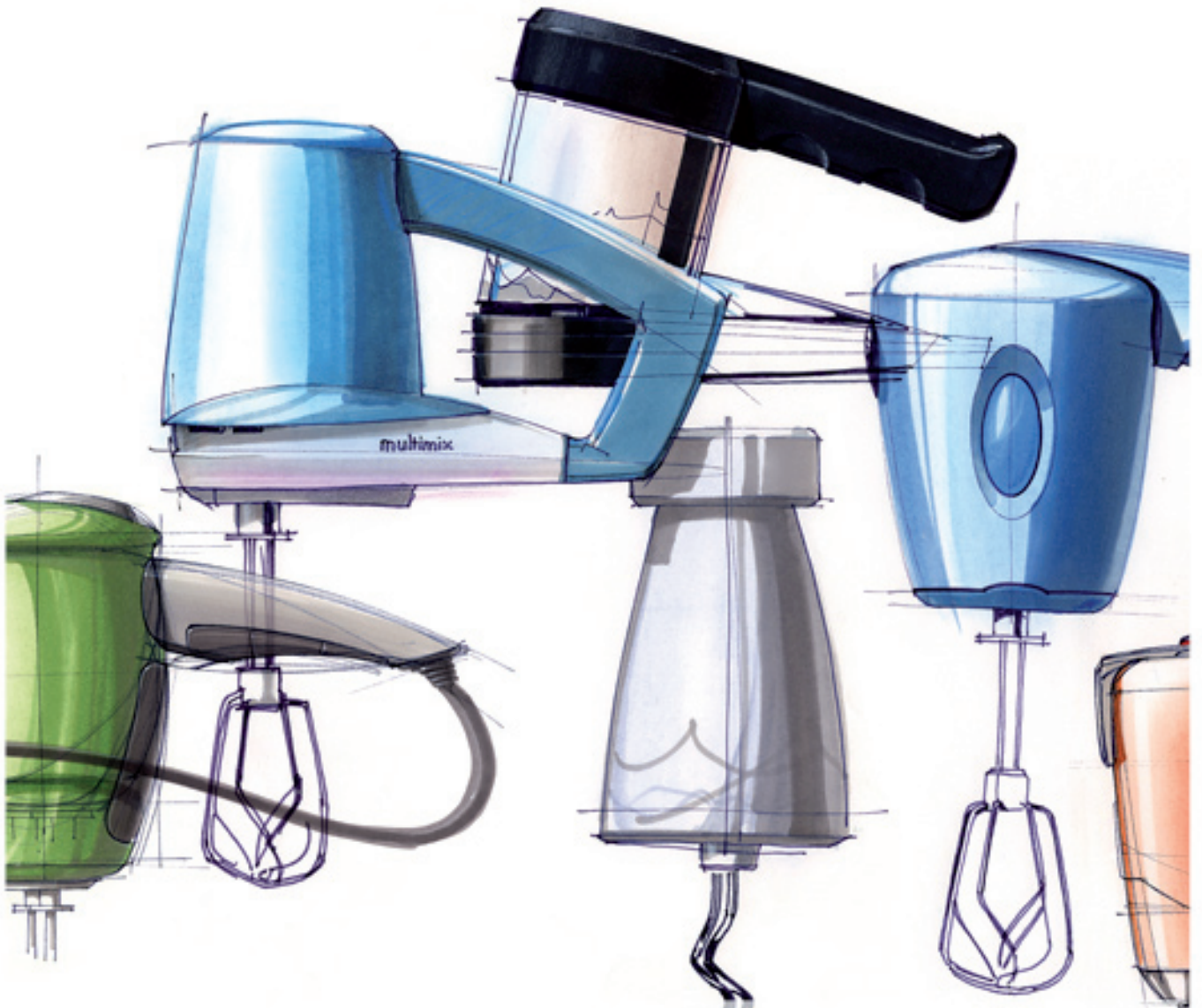
In a brainstorm session you don't immediately value the outcome. It's important to just keep your freedom and stay open-minded about any ideas, looking for visual stimuli to encounter new challenges.

A contour in side view can represent various 3D forms. Fast and effective choices in the drawing phases.



Start drawing freely; the underlay is only a reference of size.

Gradations in line thickness are added.

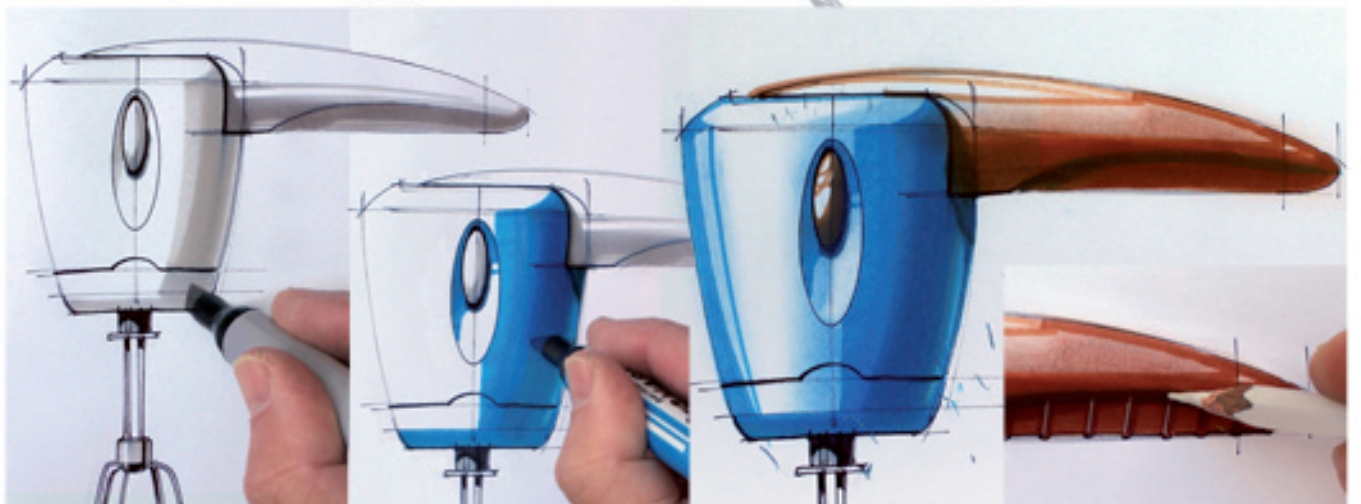


Shadows explain not only the forms that cause them, but also the forms upon which they cast.

Depending on the brightness of the colour a lighter or darker gray marker is chosen to darken the colour

Colour marker and pastel give the colour suggestion.

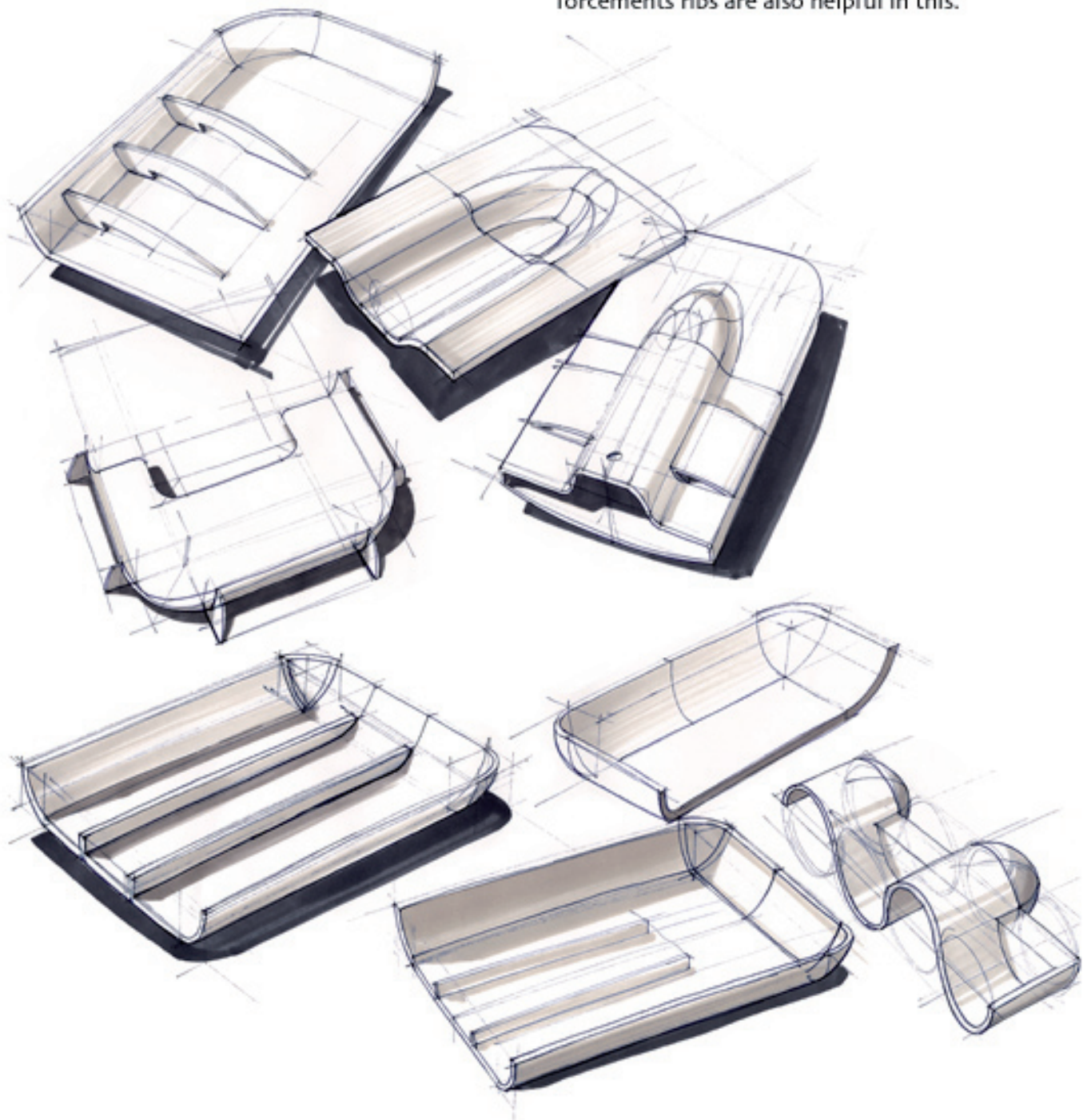
Coloured pencil for highlights and details finishes the drawing.



Although these objects differ a lot in shape compared to the earlier objects, one can still see the same drawing approach as before.

The drawings are started with a flat surface into which the large rounding is drawn. Smaller rounding is added later.

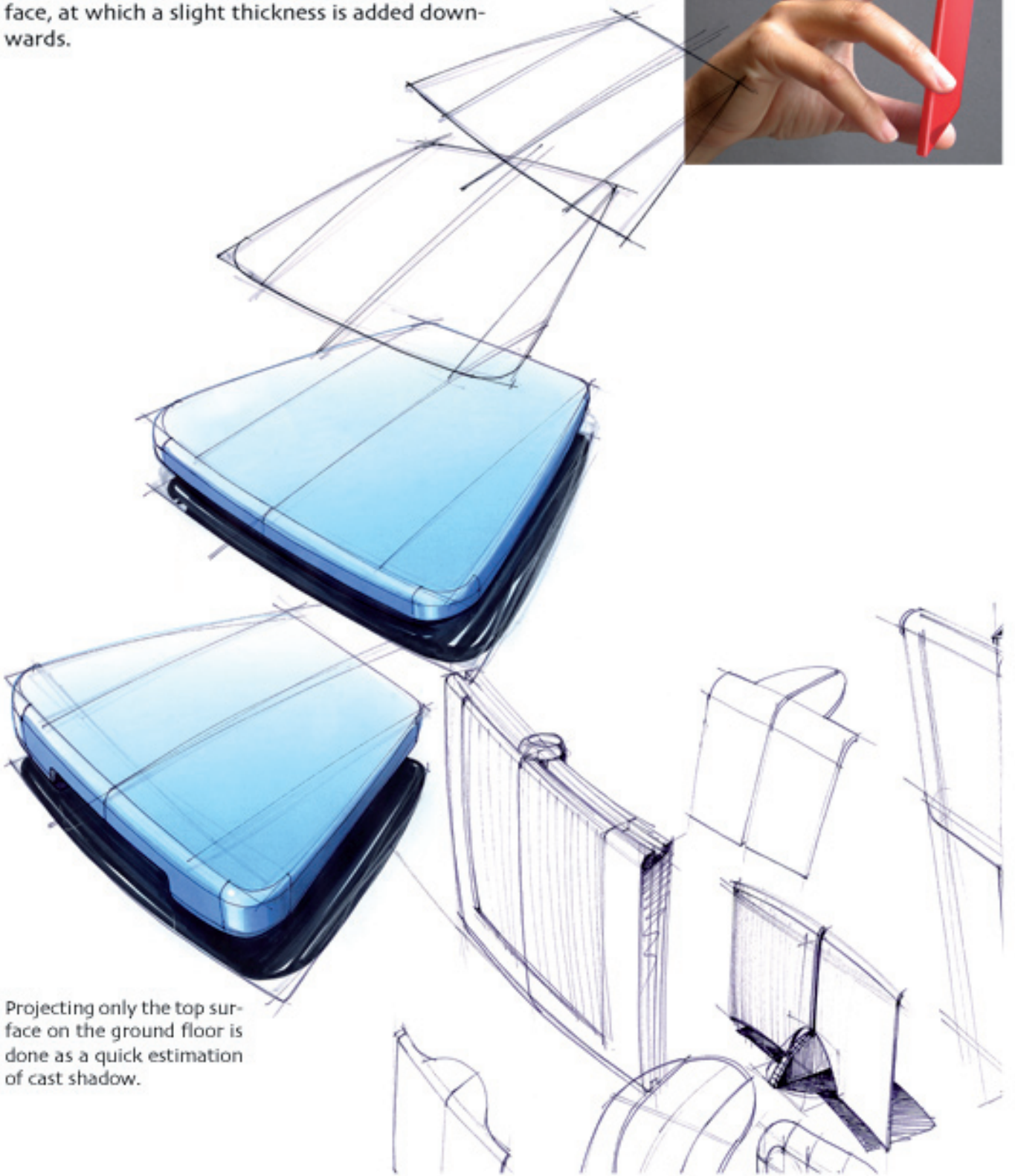
An occasional cross-section is added to emphasize the transformation of the surface. The reinforcements ribs are also helpful in this.



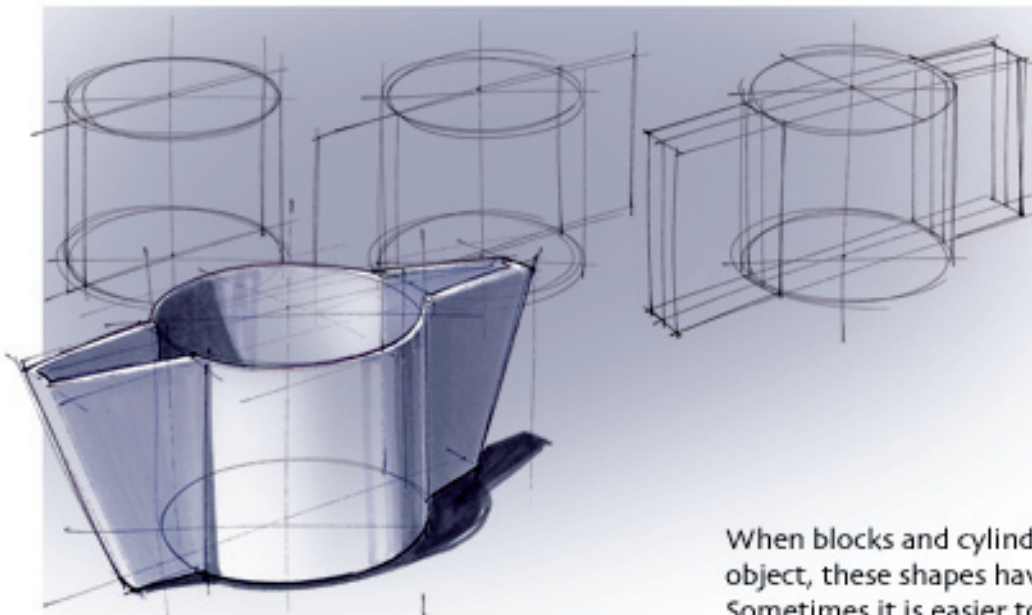
Starting at the surface

When a shape is not clearly spatial or voluminous, but is for example very flat, approaching it as a volume may not be very efficient.

This object is drawn starting with the top surface, at which a slight thickness is added downwards.

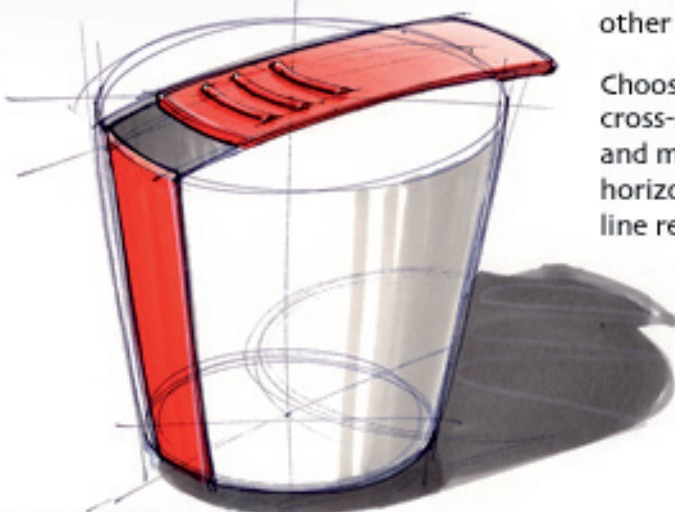


Projecting only the top surface on the ground floor is done as a quick estimation of cast shadow.



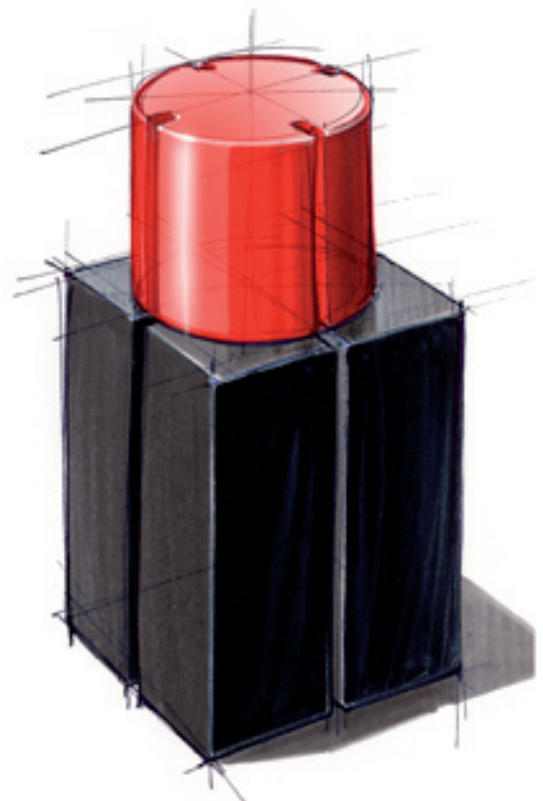
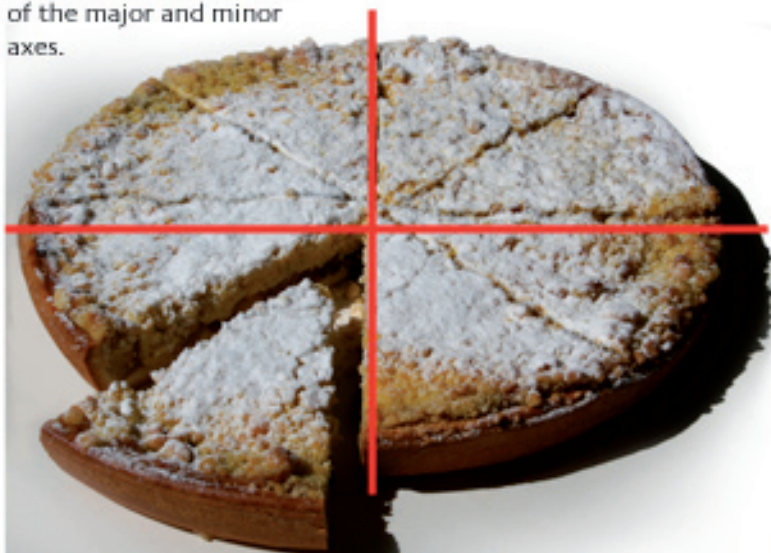
An axial line crosses the ellipse at two places. Tangents to these points are perspective perpendicular to the axial line, and should converge slightly. Make sure the ellipses are not too flat/ foreshortened, as this makes estimating tangents very difficult.

When blocks and cylinders are combined into one object, these shapes have to match perspective. Sometimes it is easier to start with the ellipse and derive a perspective square from it, than the other way around.

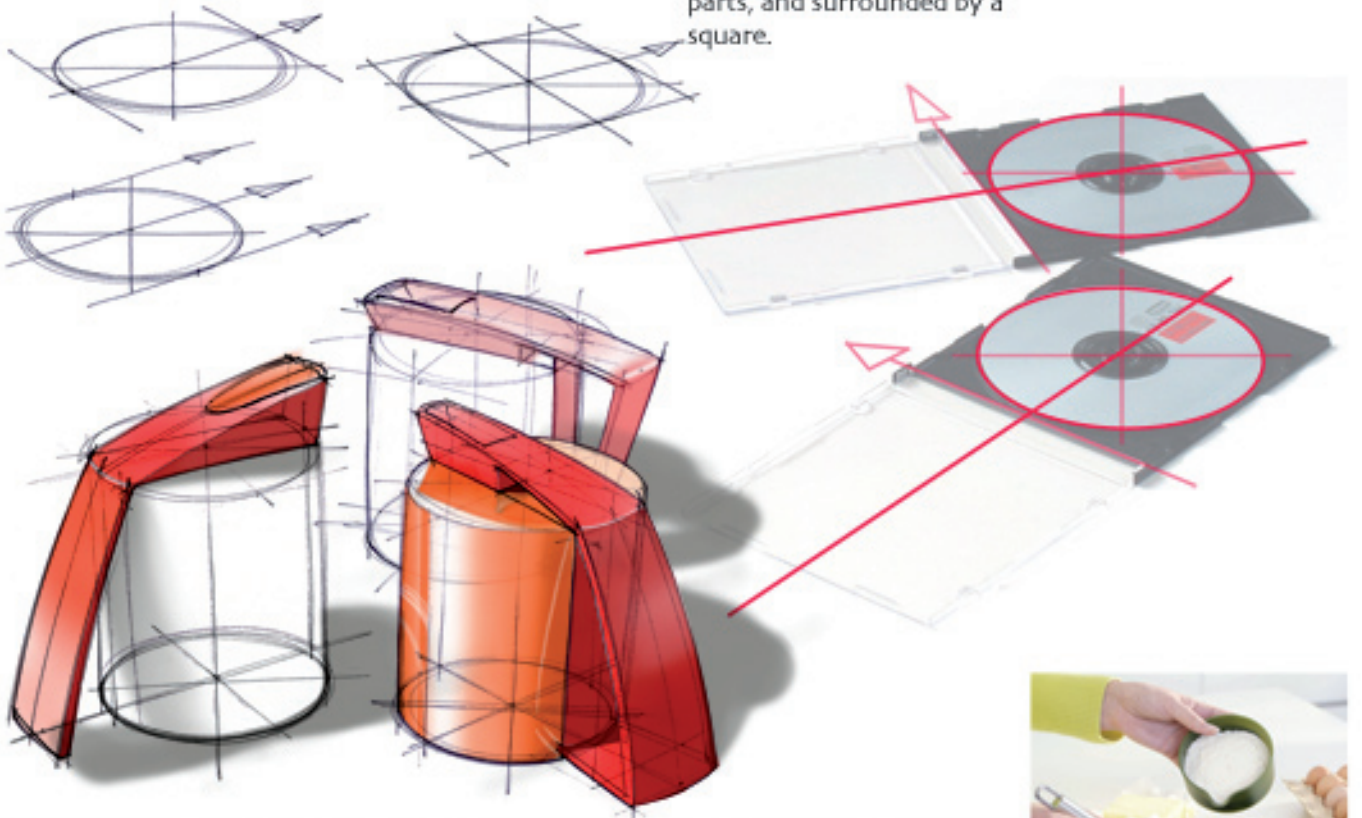


Choosing the direction in which the ellipse is cross-sectioned, is done independent of the major and minor axes of the ellipse. These axes remain horizontal and vertical. Each direction of the axial line results in different tangents.

The centre of a circle in perspective is located 'behind' the intersection of the major and minor axes.



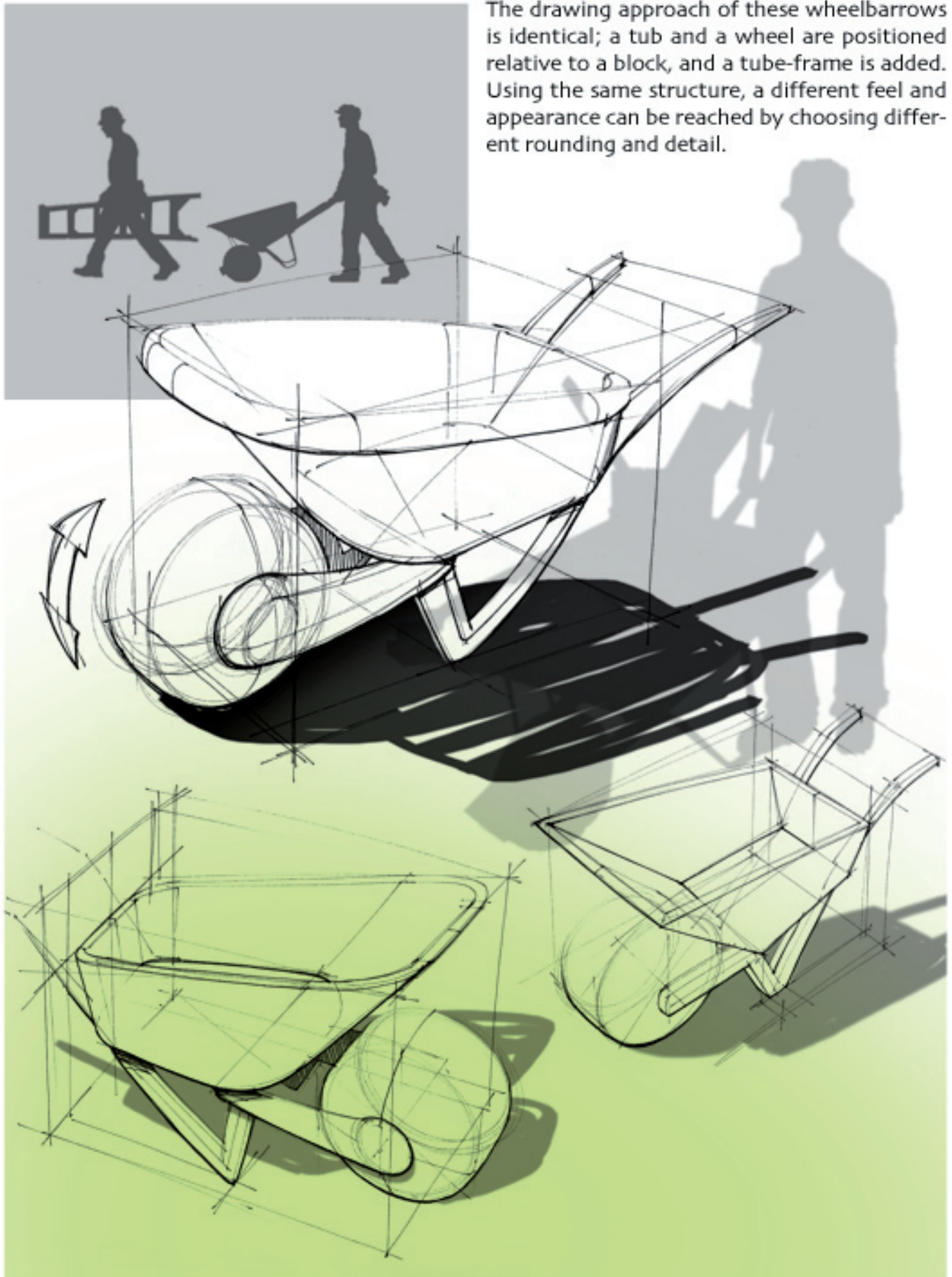
The ellipse is now perspective-
divided in four equal
parts, and surrounded by a
square.

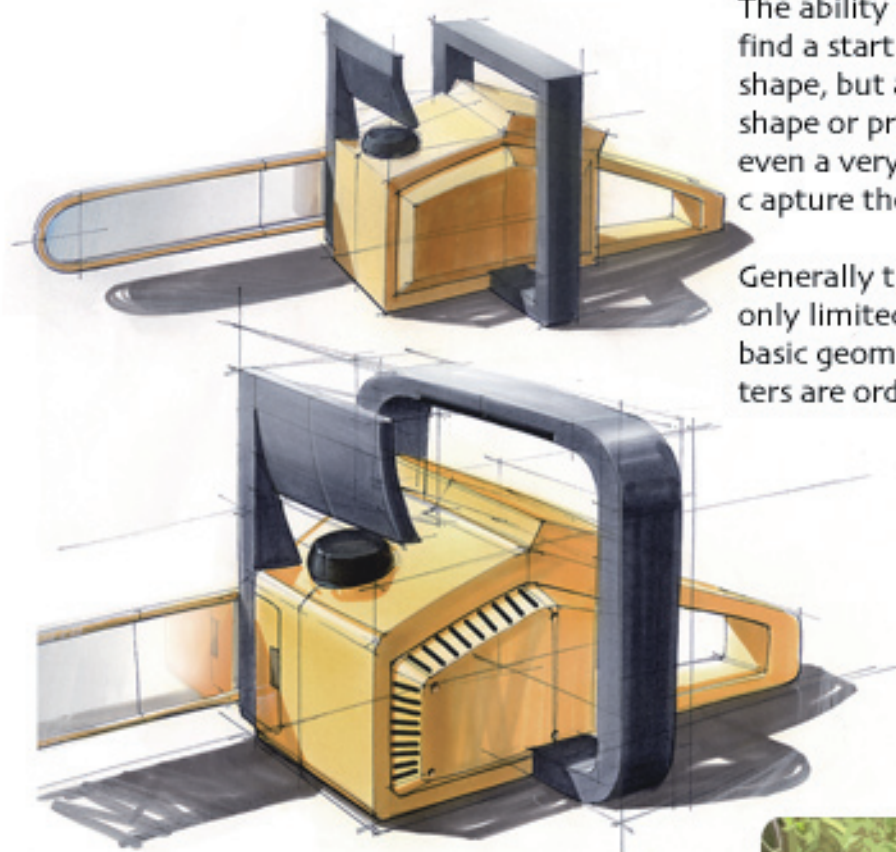


In each sketch the object
is rotated differently, for
each shape may have a
preferable angle of view.



The drawing approach of these wheelbarrows is identical; a tub and a wheel are positioned relative to a block, and a tube-frame is added. Using the same structure, a different feel and appearance can be reached by choosing different rounding and detail.

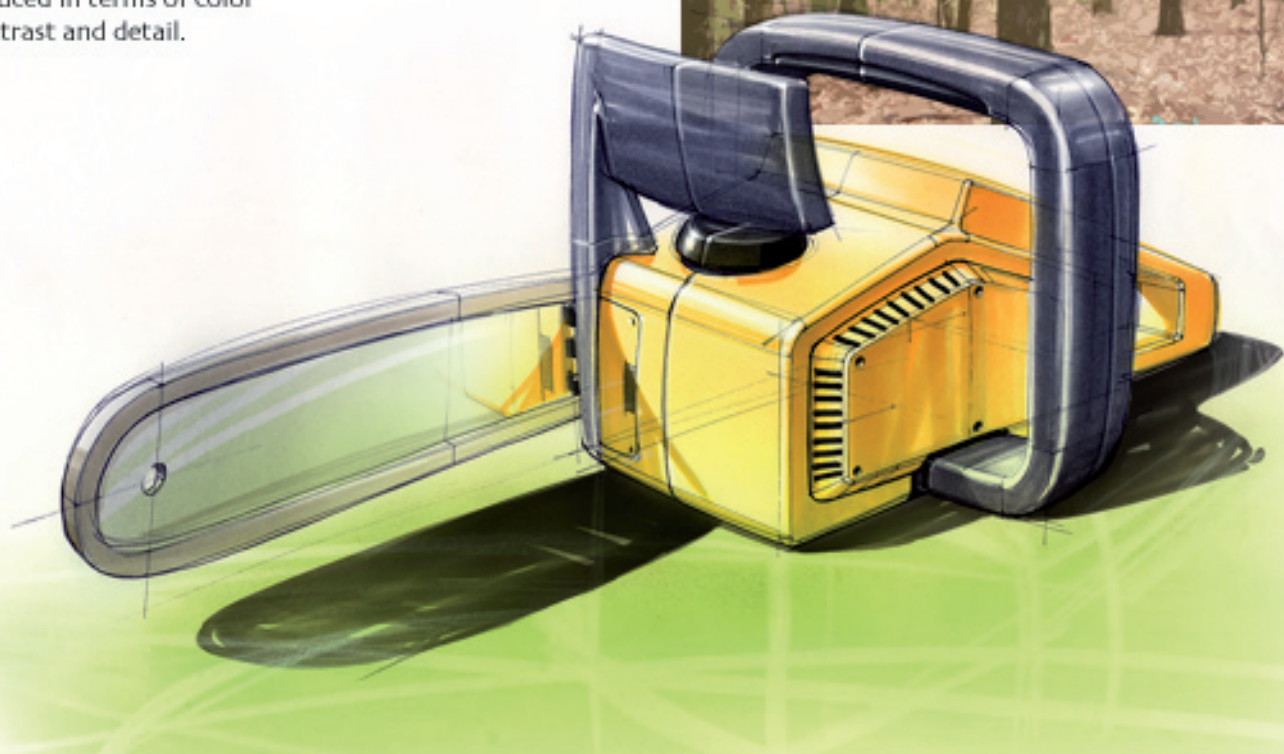


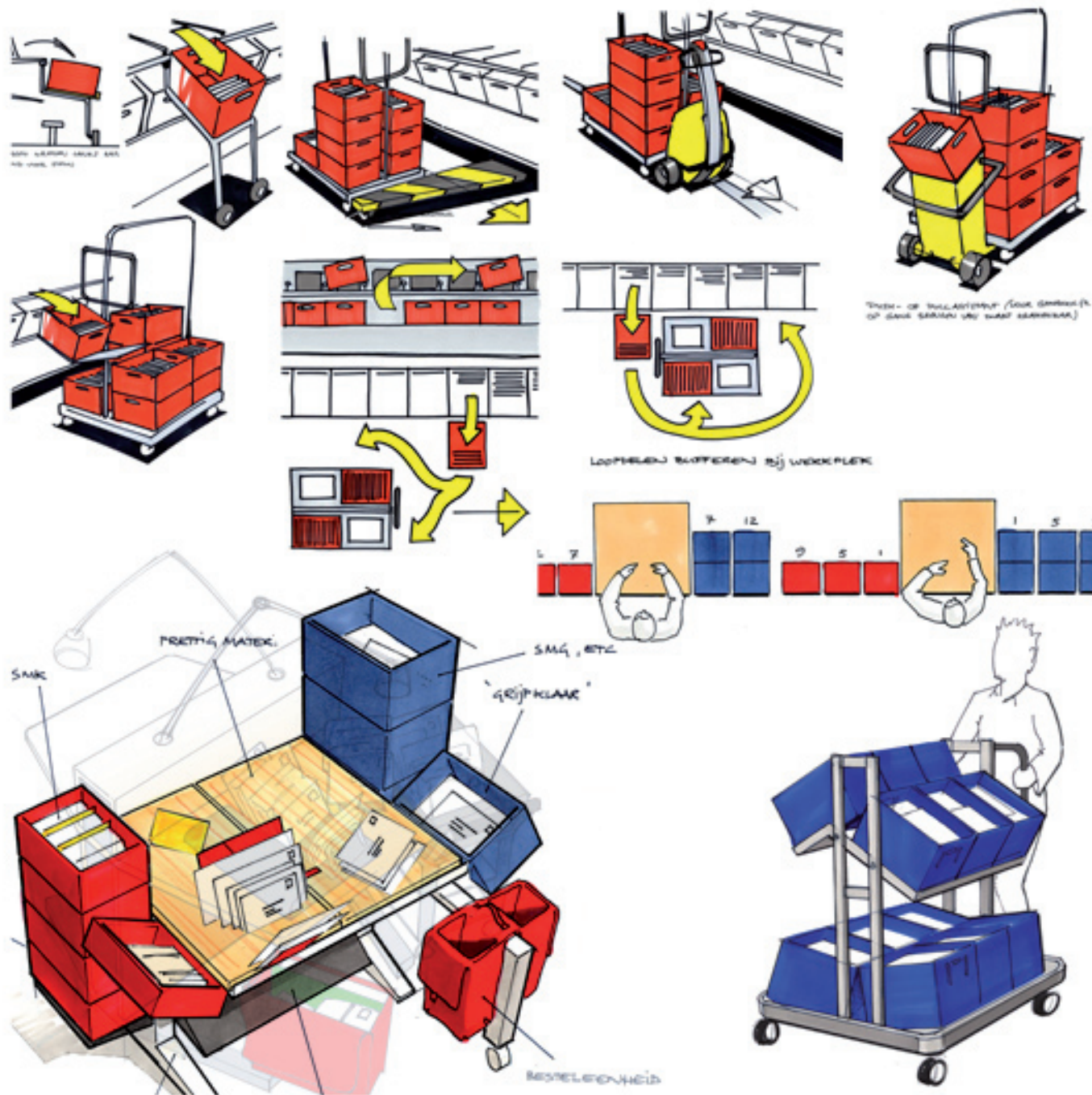


The ability to simplify is essential not only to find a start of an in itself complex product shape, but also to draw effectively. When a shape or product is simplified effectively, even a very simple version of it can already capture the character of the product.

Generally the analyses shows, that there are only limited ways to start a drawing; using basic geometrical shapes. The following chapters are ordered that way.

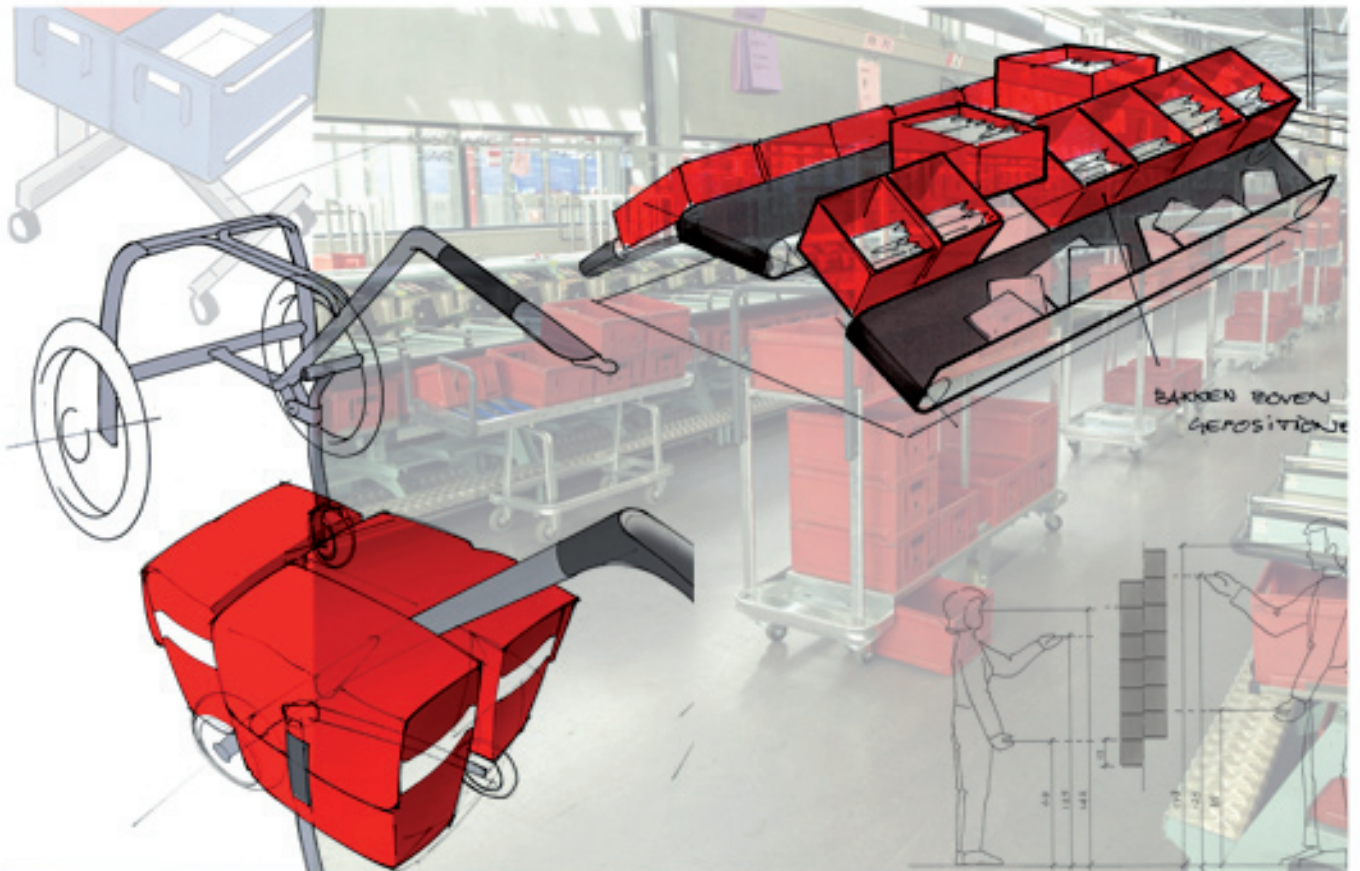
When an image is used to support the drawing, it should literally stay on the background. For that reason the image here is reduced in terms of color contrast and detail.





FLEX/theINNOVATIONLAB®

At the start of the project the complex situation was analyzed and mapped by numerous drawings. This overview helped to split up the situation in several smaller design areas, covering the process handling, routing, workplaces and object/tools. The simple yet clear drawings helped designers and the client to get a grip on the enormous complexity of the process and all its details.



Mail handling systems, 2004-2006. FLEX was involved in the development of aids to improve and optimize the process of collecting, sorting and delivering mail for the Dutch mail company TNT. The first results were the

trolleys for the temporary storage and collection of crates with sorted mail. Later followed a whole range of items amongst them the postal carrier used by postmen to deliver mail both on foot and by bike.