

FALL 2016

24-672: SPECIAL TOPIC ON DIY DESIGN AND FABRICATION

LECTURE 021

- Your class sketchbook
- More sketching techniques
- PS1
- Typical industrial design sketches
(line drawings)

Carnegie Mellon University





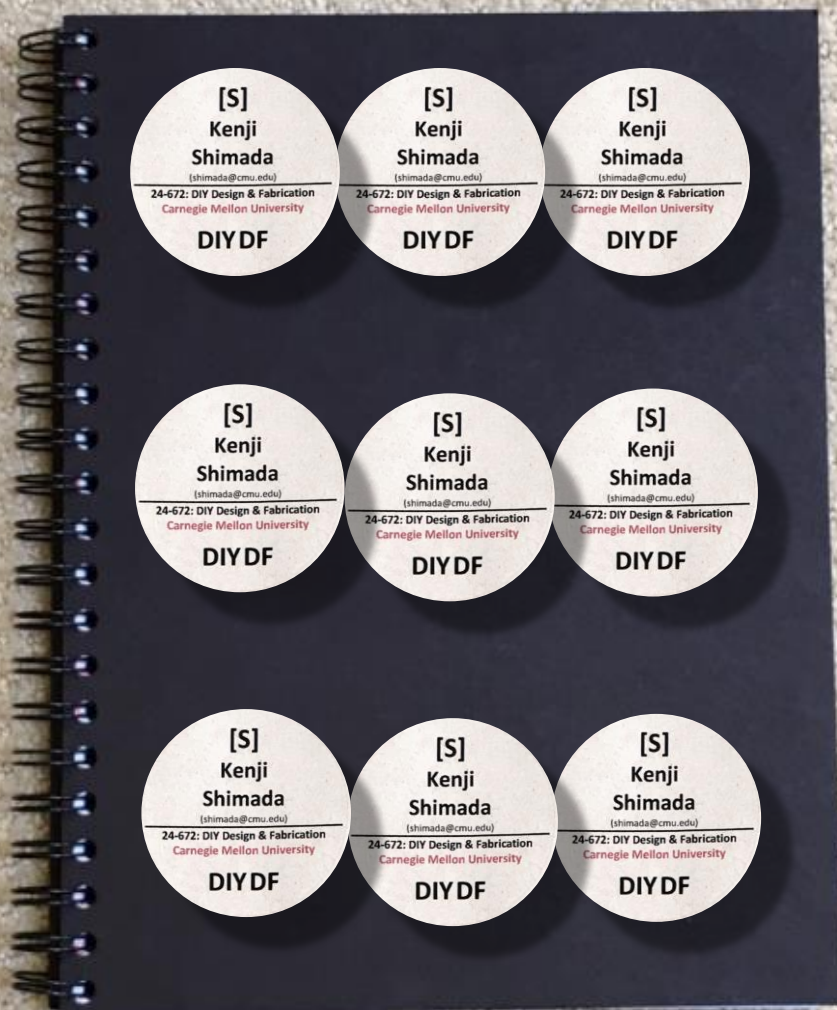
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24-672: DIY Design & Fabrication
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DIYDF



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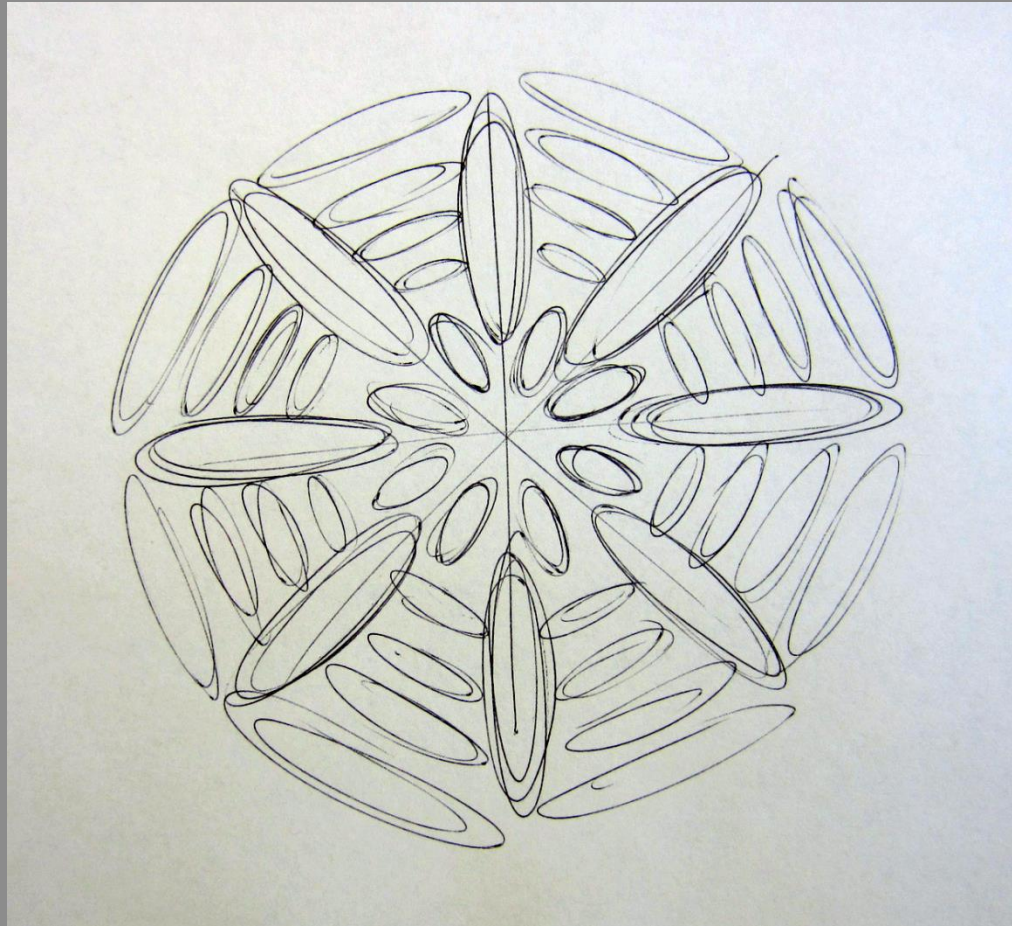
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DIY DF

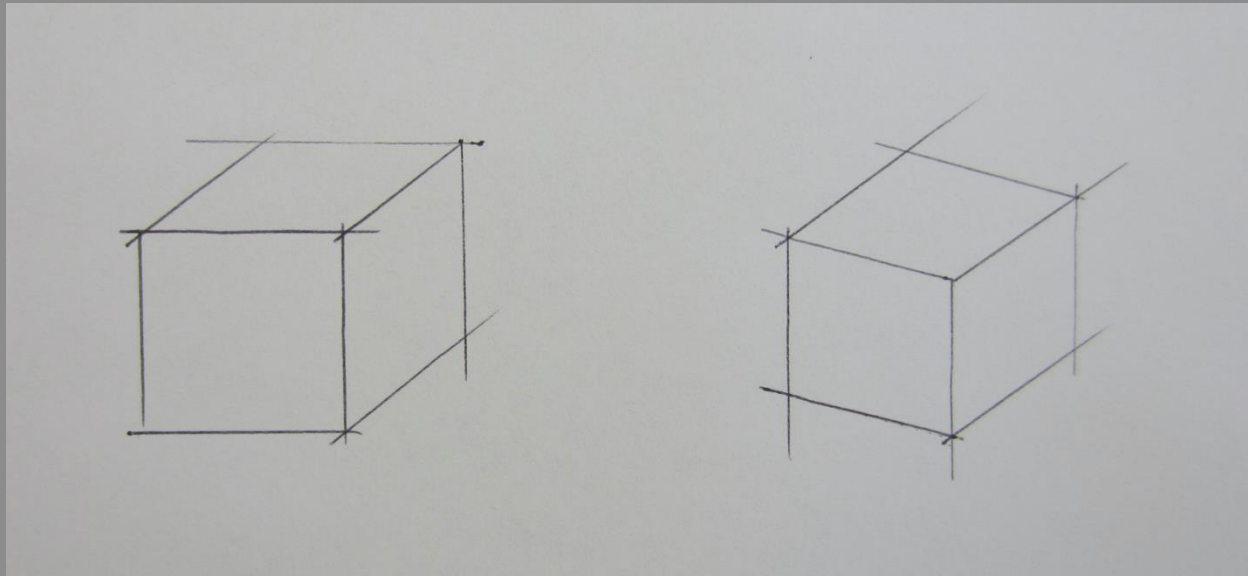


Warm up



No

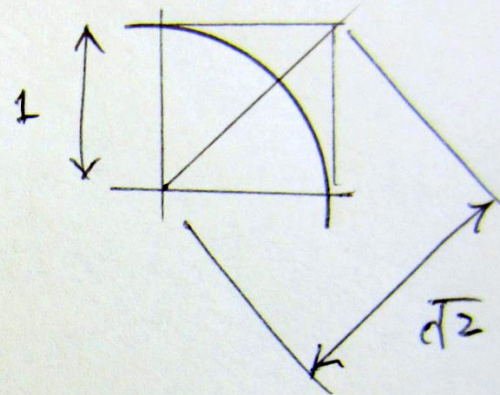
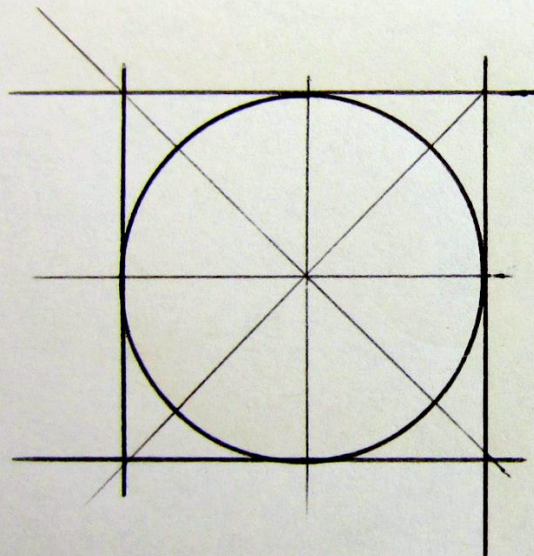
Yes



(oblique)

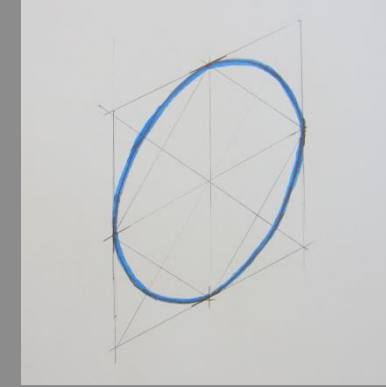
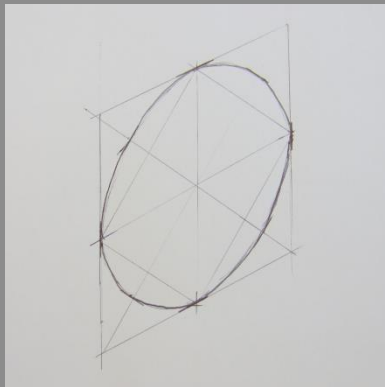
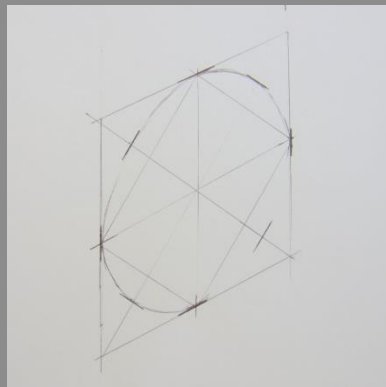
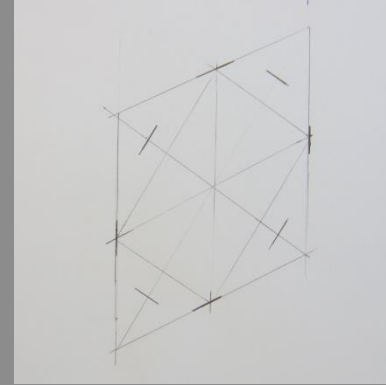
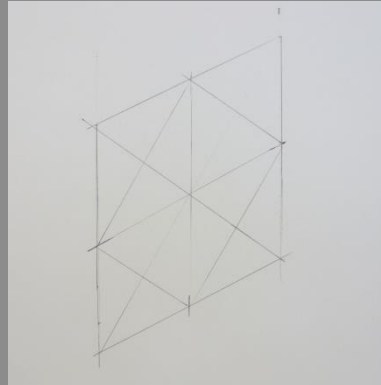
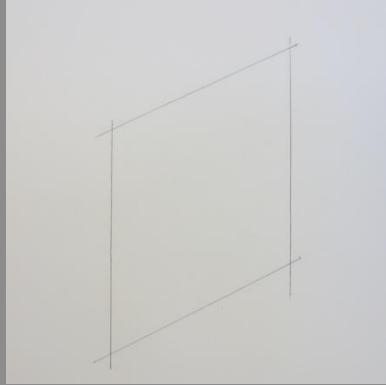
(isometric, trimetric, diametric)

Circle



$$\frac{1}{\sqrt{2}} = 70.71\%$$

Ellipses



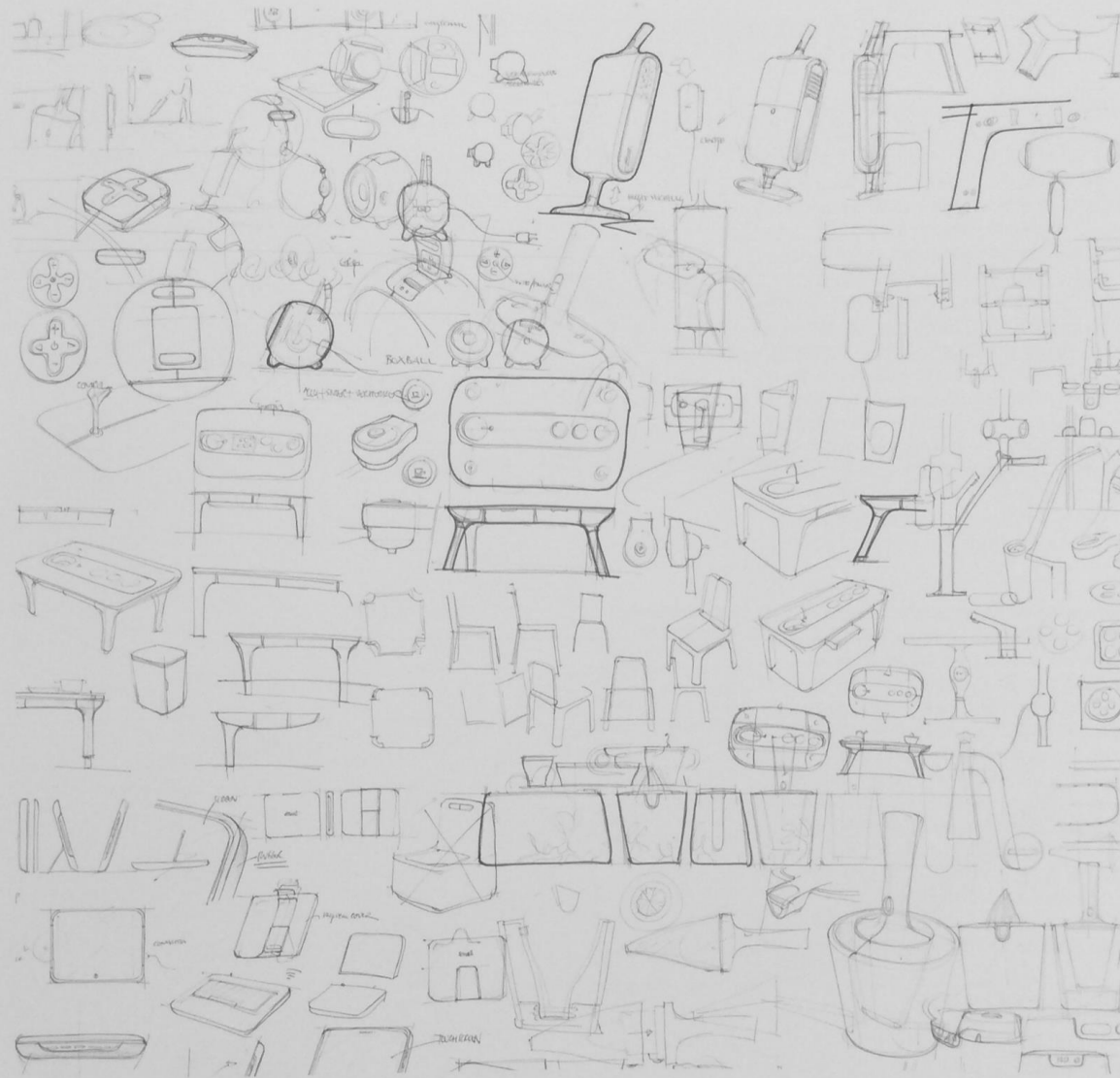
Sketching – visual thinking tool

A variety of ideas, quickly

Structure vs. details

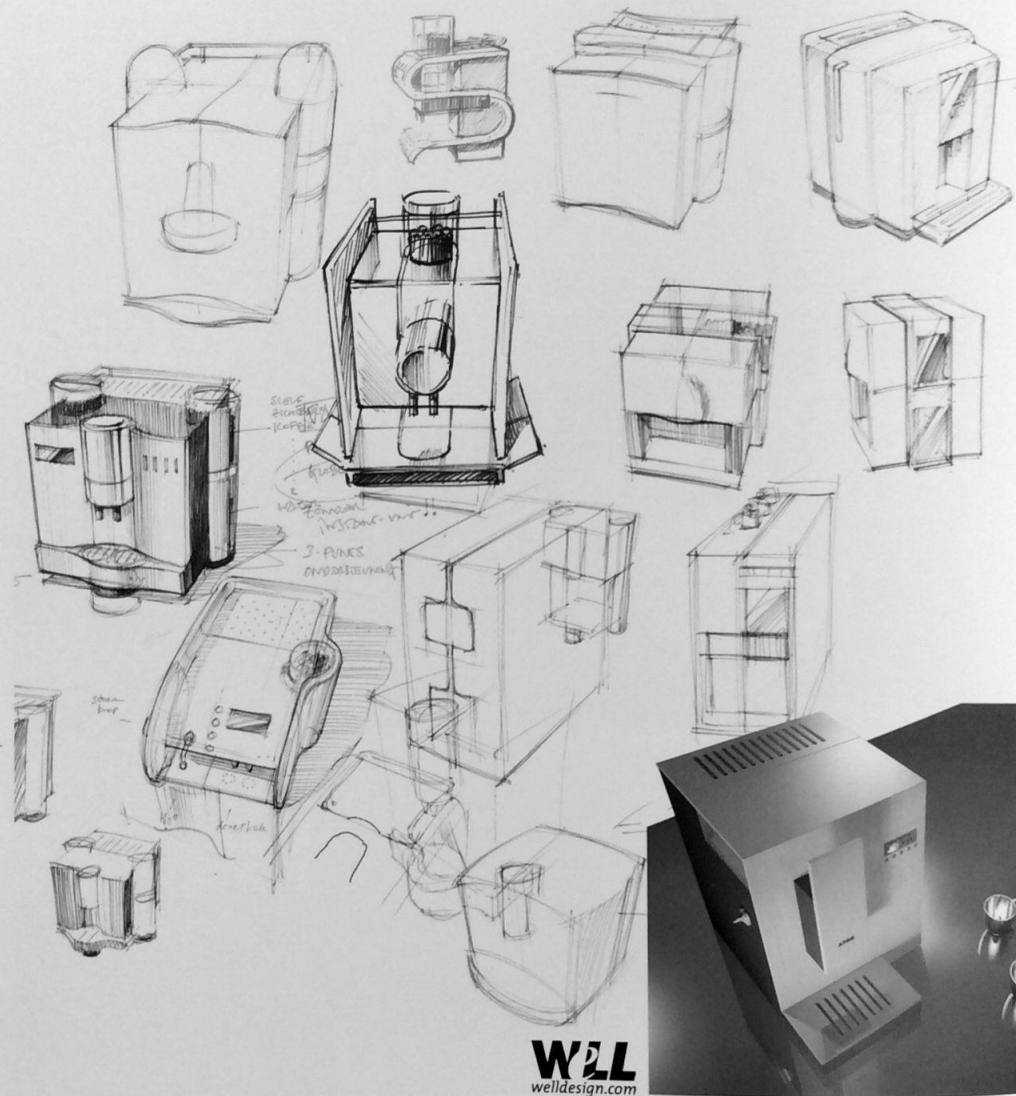
Line quality – straight, clean, confident (not, wiggly, scratchy, stuttered)

SAMPLE ID SKETCHES



Sketches by Robert Bronwasser, SMOOL

In the ideation phase it is important to generate many ideas, explore several variations, and end up with a range of ideas. The ideation phase will conclude with a selection of these ideas with which to continue. These are the potentially good ideas that may grow into a real proposal or concept.

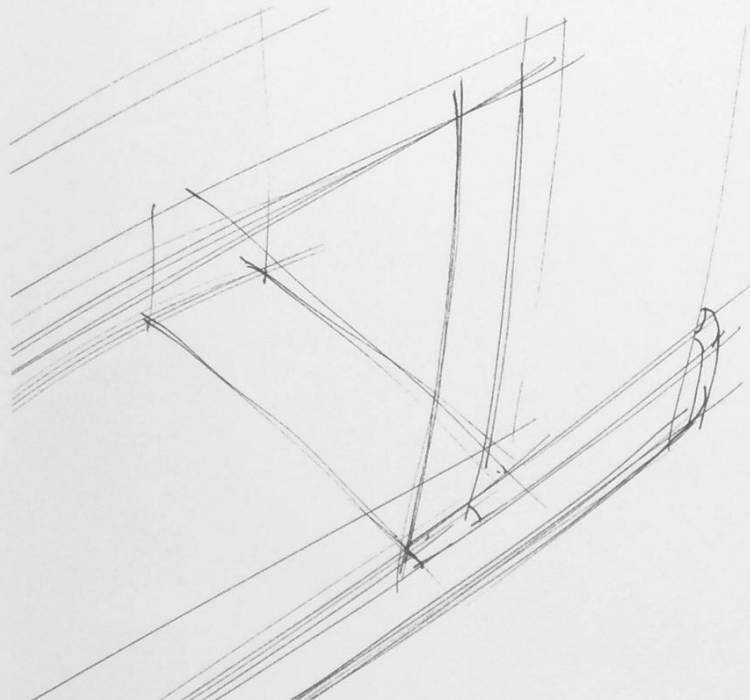


WeLL Design

For Etna Vending Technologies, a series of fully automatic espresso machines was developed by designers Gianni Orsini and Mathis Heller. After a thorough strategic

analysis of the market, the conceptual phase was carried out in competition with two other major Dutch design studios. The aim was a more luxurious design than dozens of other machines at the same price level.

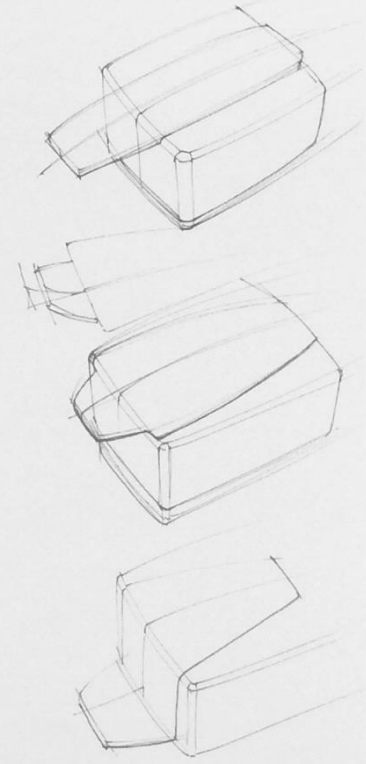
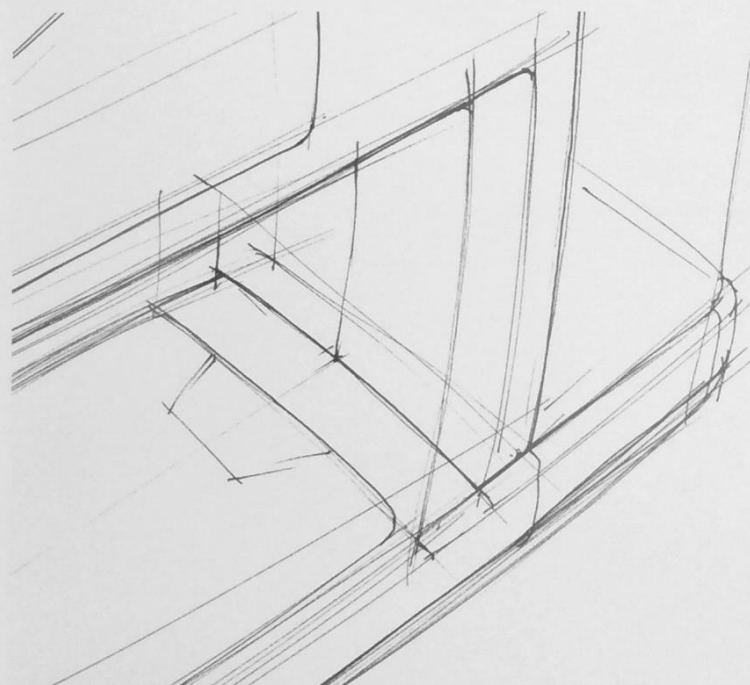
Another challenge was to come up with designs that would suit their own brand and two unspecified global brands. Finally, it should be possible to fit three different structural components within the same housing design.



6.1.2 Drawing freely; shape optimising

Once you have experienced the various changes a drawing can undergo after finishing the line drawing, you know in advance that there is plenty of room to keep changing and adapting the drawing, even though the sketch is made with a 'definite' medium that cannot be erased.

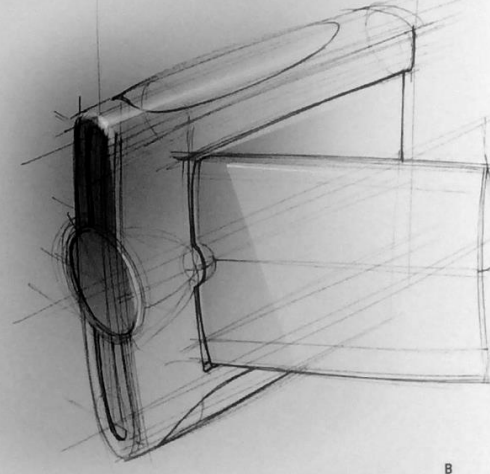
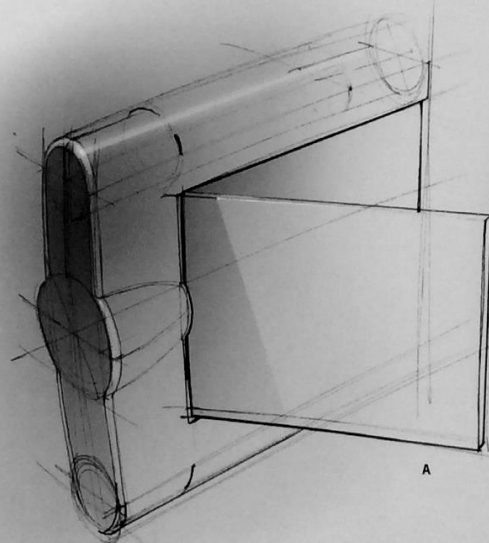
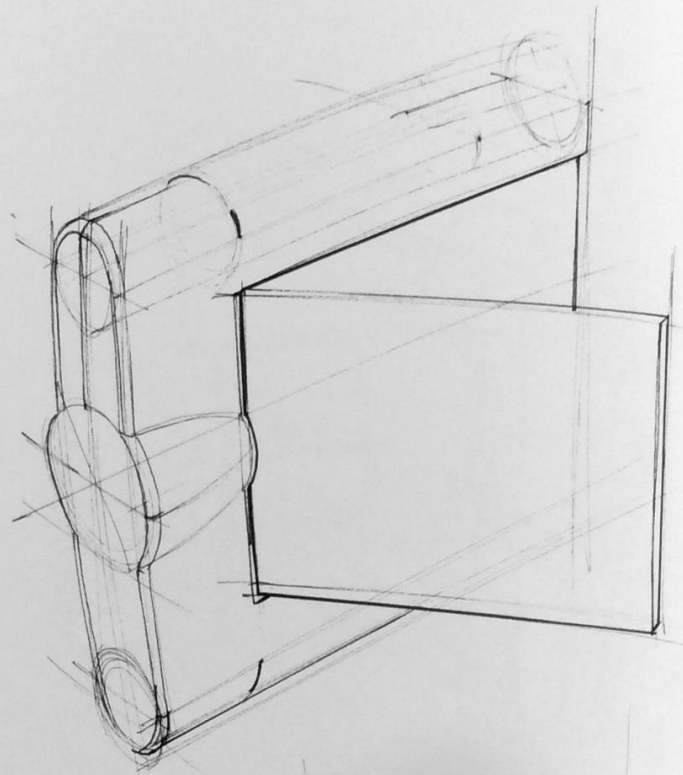
In this case, the line drawing was used to search for the right proportions so that the product is actually shaped while sketching. It is an effective sketching method, since having the right proportions has a lot of emotional impact on the viewer's first impression of the sketch.



A more efficient way to trace an underlay can be seen here. Make sure you try to trace it as though you are sketching the shape for the first time and also trace guidelines. Leave room for minor changes along the way. Draw with the same 'handwriting' you would normally employ: confident and spontaneous.

Below you see the original sketch compared with the effectively traced one. What they have in common is a sense of spontaneity. The initial sketch, however, is more suggestive and leaves room for shape adaptations, whereas the traced drawing looks more definite.

You may conclude that the traced drawing (A) is more appropriate later in the design process, while the initial sketch approach (B) suits the early stage of the design process.

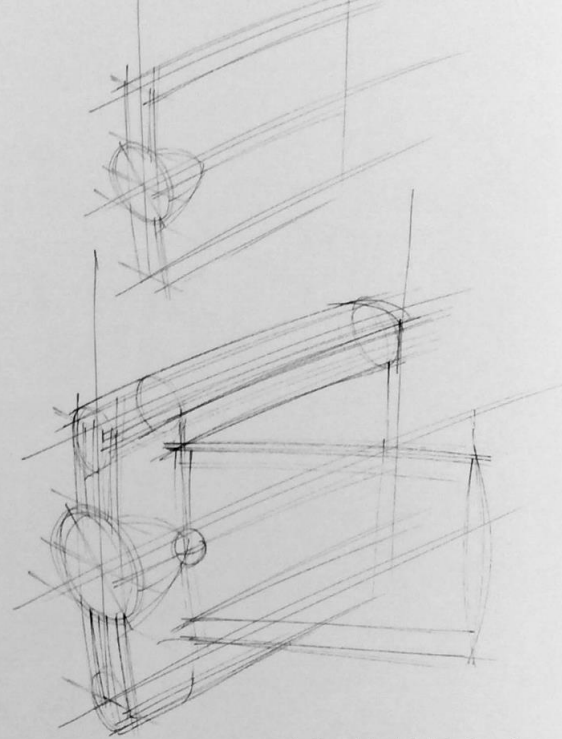


6.1 LINES

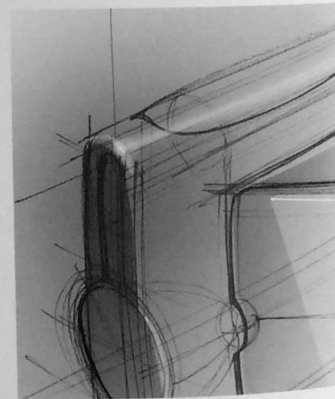
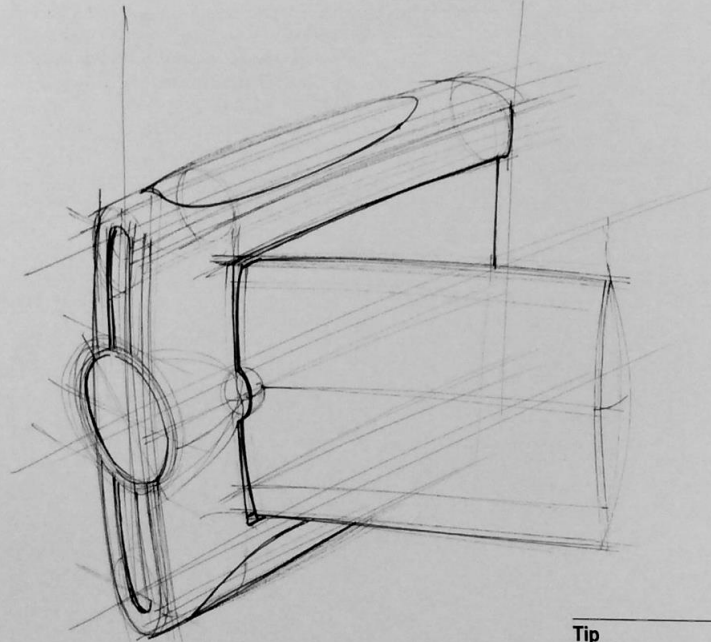
As you have seen already, the drawing material used after the line drawing has a great impact on the perception of the sketch. Knowing this, you can view the line drawing as an aid for the next materials like markers. It is therefore worthwhile to keep adapting the shape until you are satisfied, knowing that any 'wrong' lines will not be of much importance later.

The drawing starts with long thin lines that extend much further than the object. The focus is on the direction of the lines, not on the end points. The shape changes and grows as the sketch develops. At a certain moment, there may be so many lines that the shape loses clarity.

Darkening some of the lines can clarify the sketch again. Lines on the shaded side of the object can be drawn slightly thicker for spatial purposes. Thickening these 'shadow lines' can also bring back clarity to your drawing. This can even be a good moment to use a French curve or a ruler.

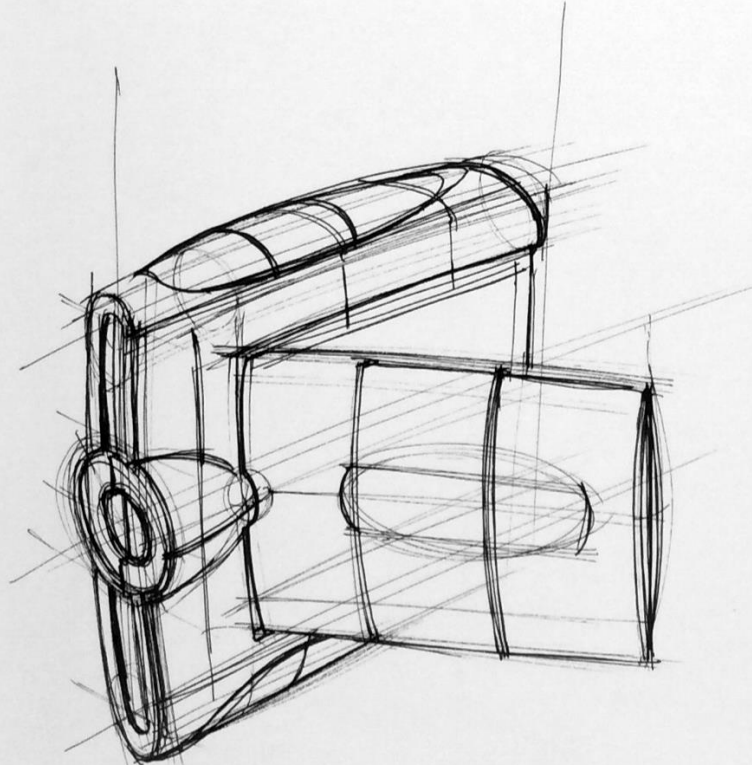


In the original sketch, these lines are darkened. This clarifies the shape of the object and makes the sketch workable. Applying just a quick airbrush and some highlights can transform this sketch into a presentable spatial drawing. The result is a clearly legible shape, and the sketch is still spontaneous thanks to the sketchy lines.

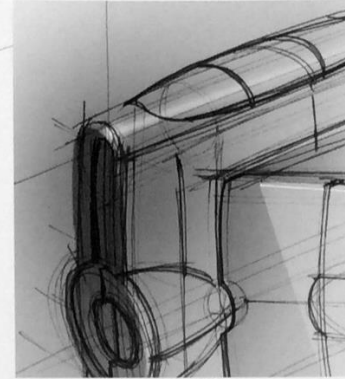


Tip

Let the drawing grow and change as it develops rather than precisely duplicating the mental image you had at the start.

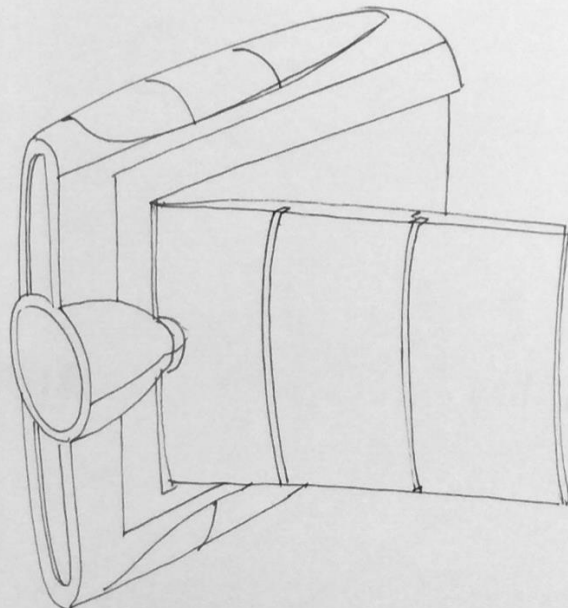


Sometimes a drawing is adapted so much that it is no longer legible. A solution may be to start thickening the 'right' lines. This, however, may result in a messy sketch and leaves little room for variations in line thickness.



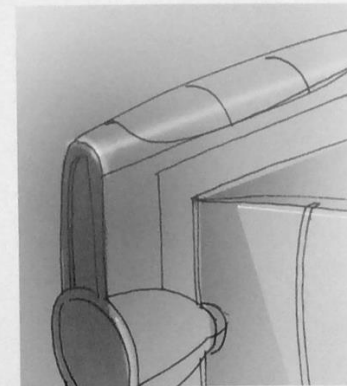
6.1.1 Tracing

Although it is good not to make a habit of it, it may sometimes be wise to trace the initial drawing. A way of tracing that is inappropriate for design sketches is to start tracing very carefully and to get rid of all the 'wrong' lines and leave out all help lines and guidelines. The result may look clean, but it is not efficient in terms of time and rids your sketches of all spontaneity and, far worse, personal handwriting and suggestiveness. Such drawings generally all look the same and lack all dynamism left in their lines.



Don't add too many dark lines.

Don't trace like this because it results in impersonal, forced lines



Coffee cup conundrum

PS1





Coffee
premium blend
@ Muggie





THANK YOU.

For questions and comments about this presentation contact:

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