Elements of art

Visual art often gets analysed by being broken down into seven elements, which pair quite naturally with different considerations within figurative origami design:

- Shape – related to design geometries, as well as tree theory and other similar methods
- Texture – achieved with pleats and patterning
- Line – whether there are visible creases and folded edges, and if they are sharp or soft
- Form – potential for shaping
- Space – composition of pieces and making multiple subjects from one sheet
- Value – three dimensionality adds shadow (and some very creative designs use translucent paper to create a whole spectrum of values by using different layer thicknesses)
- Colour – using different sides of the paper for different features

Purist origami is quite limited in this last category: traditional origami paper (*kami*) is coloured on one side and white on the other, so each visible region has a binary choice – it can only be one of two colours. (Of course, with any model you can choose to use decorative paper to get several colours exactly where you want them, but this isn't an origami design decision.)

Many designs, including almost all of the famous traditional models with named bases, only use one side of the paper. However, most of my favourite designs use the two different coloured sides of the paper. Any model that does this is a **colour change** model.

NOTE

There is a practical limitation with colour change designs – many types of paper are not available with a different colour on each side. You can stick sheets together, but this makes sheets which are twice as thick as their monocoloured counterparts (as well as being inconvenient to prepare).

The key thing about colour changes is this: regions of different colours must be separated by a raw edge. In other words, you cannot travel between two points of different colours without crossing the raw edge at least once.
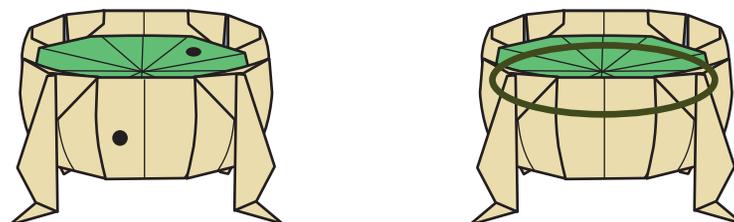

Left: Cauldron with two points of different colours. Right: A hidden raw edge separates the green region from the rest of the paper.

Eye of Horus

We're going to see a number of different ideas and techniques in this section. To prevent this chapter from becoming far too long, these are more whistle-stop summaries than technical methods. These ideas are in no particular order.

The shape

First, let's take a look at the shape we're trying to make:
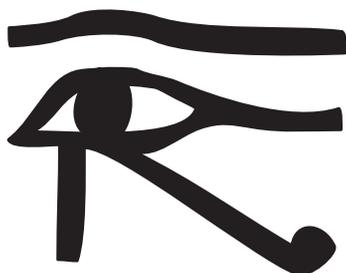
Eye of Horus.

For the most part, the Eye of Horus is comprised of a few thick lines. This gives us a vague idea for how we might approach designing this model. First, we'll fold a strip of paper over at each raw edge to make a border around the edge of a slightly smaller square than we started with. Then we'll make a number of flaps that use the edge of this new square. Each flap will have a line along its edge, so all we'll have to do is fold the flaps so that the lines form an eye shape.
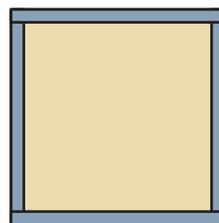
Optimistically, we'll start to make a folding sequence for the model:
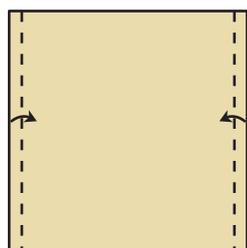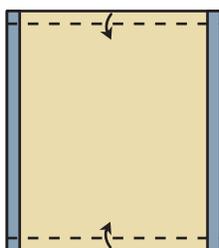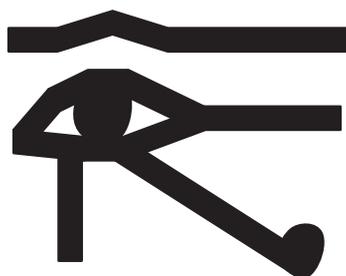

1*. Valley-fold.   **2*.** Valley-fold.

Now let's simplify our shape to a series of lines as much as we can:

A simplified Eye of Horus made with lines of equal thickness, except the pupil and lobe.

There may still be a few things to tidy up, but this is good enough for now.

The background

Picture colour change models typically have a main shape of one colour and a background that contains the shape. The background is usually a simple polygon (but not always – see the Lizard). Let's choose a rectangle since it frames the eye shape well and is generally the simplest shape we could choose.

The other choice with the background is a little more subtle. We have to decide whether the border touches our shape at the outermost points. Having fewer transitions between the background and the shape will make the model easier to fold. Below we can see a row of four images where the background gradually shrinks, reducing the difficulty as we move along the row. But as we reduce the background, the images look less pleasing too (in my opinion, at least). We don't have to decide exactly what the background looks like right now, so let's just keep this in the back of our minds.
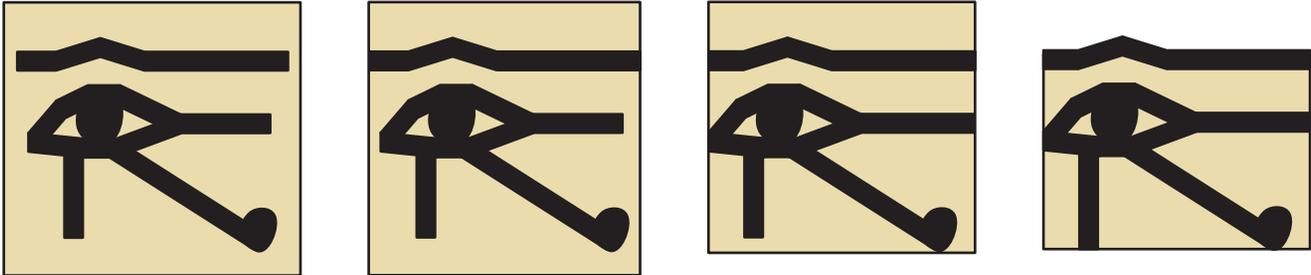
Left to right: Reducing the background size. For now, we'll work with the second image.

Removing loops and adding symmetry

Looking back at our shape, there are a few pockets of the background colour in the eye. This happens where the lines form connected loops. It will be easier to plan out the model if we split up the lines to remove these enclosed areas. There are many ways to do this.
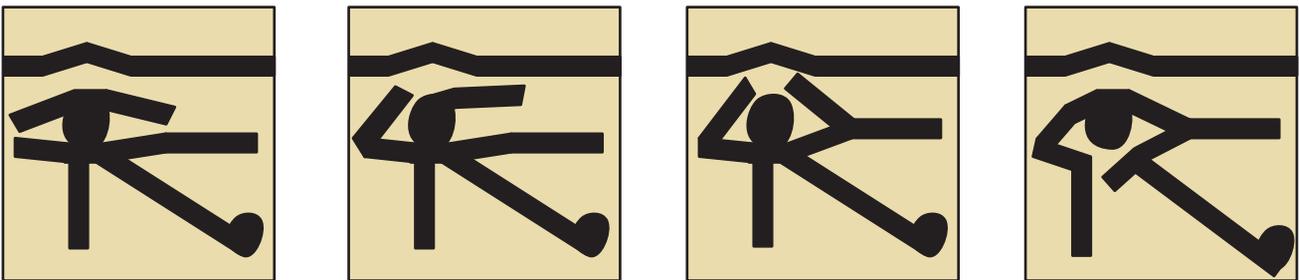
Four options for removing the enclosed areas.

So which of these options is best? Eventually we want the lines to come from separate, movable flaps. This will probably be easiest if at least some of the flaps are symmetric. We'll pick one of the options above and a line of symmetry to make this possible. We actually want to use an off-centre line of symmetry, despite how paradoxical that sounds!
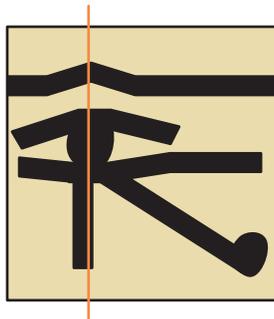
The two lines at the top of the eye are symmetric about the indicated line, which may help to make folding their flaps easier. Notice that the eyebrow and pupil also have symmetric elements about this line.