

FACE

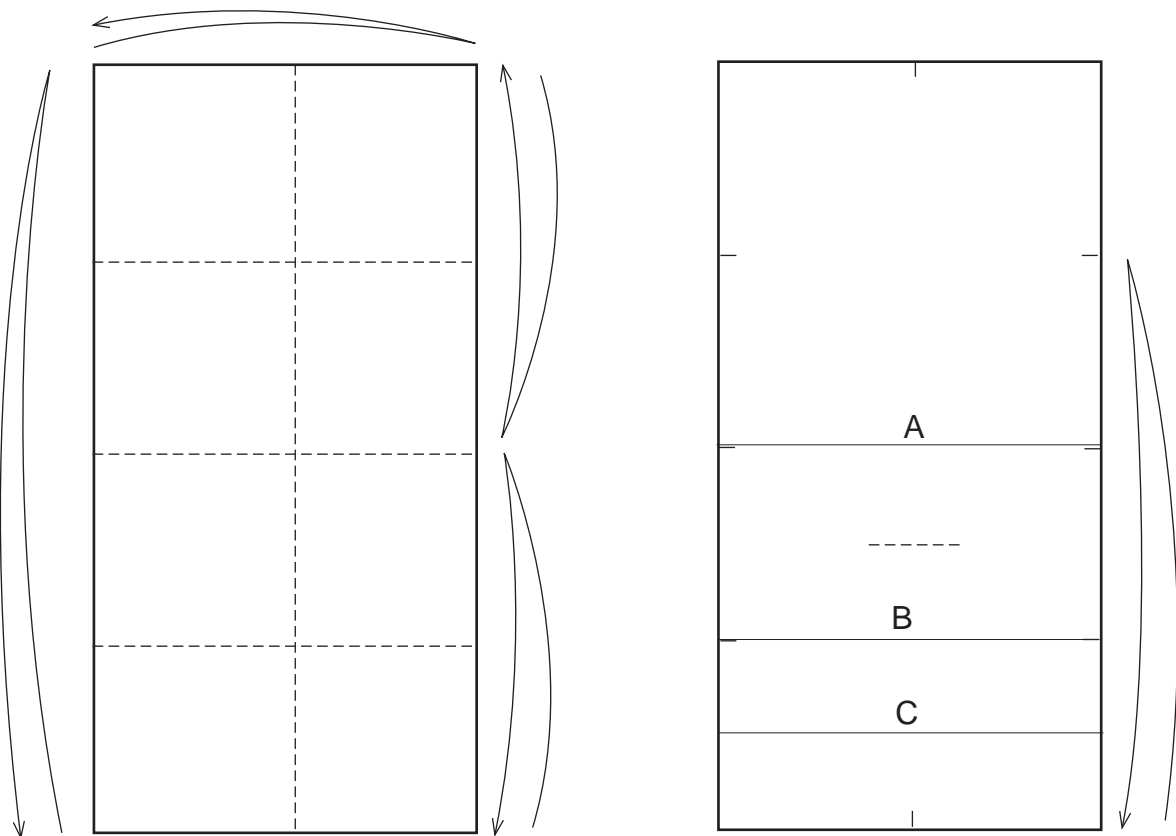
Leong Cheng Chit © 2000

Complex

(Singapore)

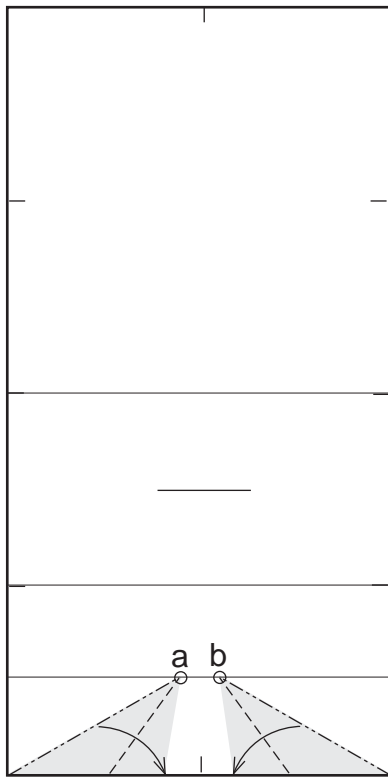
A 16 inch by 8 inch rectangle gives a 5 1/2 inch by 4 inch model. Use relatively stiff 110g paper for best effect.

This model, formed by mostly 3D folds, gives an anatomically close representation of a human face. Unlike flat or 2D folding, 3D folding requires much judgement as to where to position the folds. Creasing line on the paper as guides would spoil the look of the final model. However, small creases may be formed at the edges of the paper as landmarks. In the completed model, these creases are largely hidden.

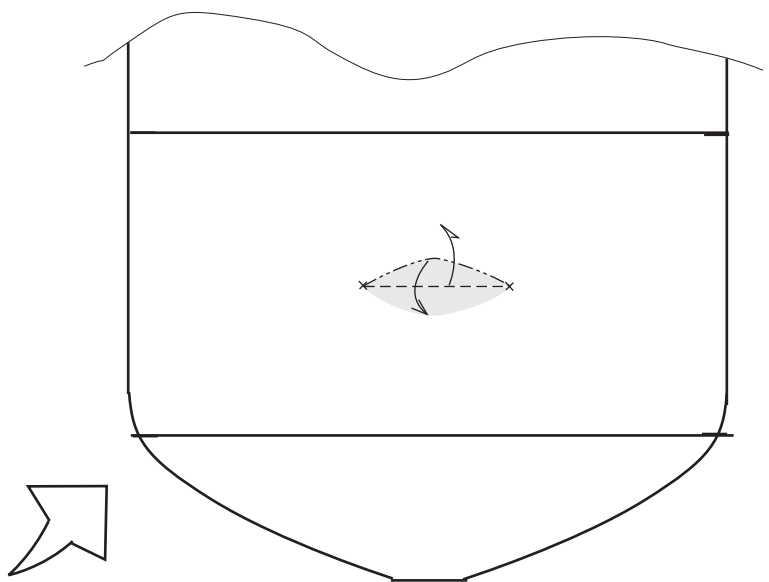


1 Pinch small creases at the edges of the paper by folding the width into halves and the height into quarters. Do not crease all the way along the folds.

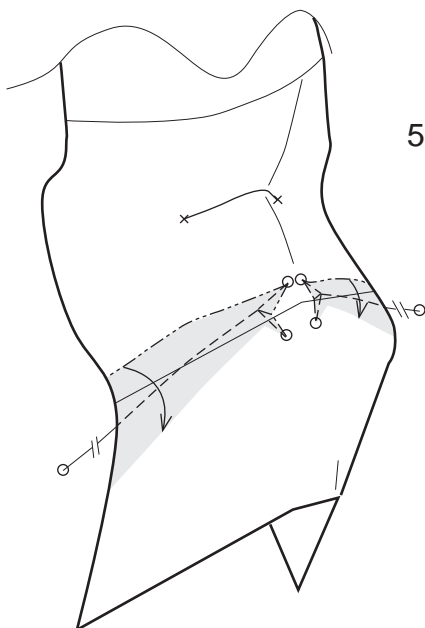
2 Fold and from the back of paper pinch a crease line at center equal to 1/4 width length. This defines the part of the face where the top of the nose meets the brow. Lines A, B and C are not folded at this stage but mark the positions of the upper forehead, the part between the nose and upper lip, and the lower end of the chin respectively.



3 Fold two crimps. Shaded areas represent overlap. The distance between the cusp points, a and b, should be about 1/10 the width length. A soft mountain fold automatically forms at the tip of the chin. The surface around the cusp point is a convex cone. We denote it with a small circle at the cusp point. We shall call a crimp fold with one cusp point simply as a Cusp fold, the reason for which will be explained later.

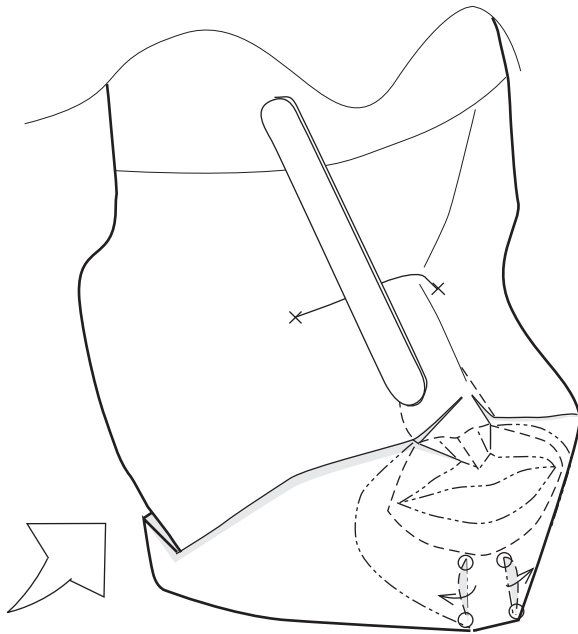


4 We now fold a crimp with two cusp points at the crease line formed in Step 2. Again, from the back, pinch the crease. Ensure enough overlap of paper and bring upwards, at the same time making a soft vertical mountain fold for the bridge of the face's nose. Flatten the horizontal mountain fold at the front such that two cusp points are formed at either end of the original crease line. Note that each of the cusp points is an apex of a concave conical surface. A cross indicates that the cone is concave. We shall call the double cusp point crimp a Swallowtail fold. If folded properly the fold will hold its shape. You may however use a paper clip to hold the upper two corners of the paper together as a temporary measure.



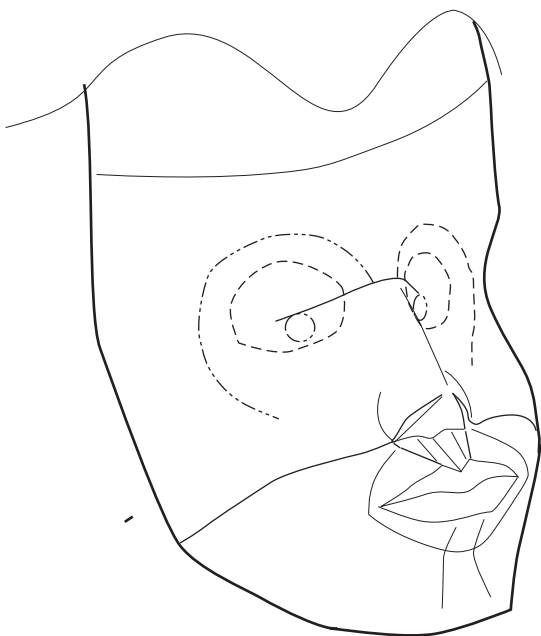
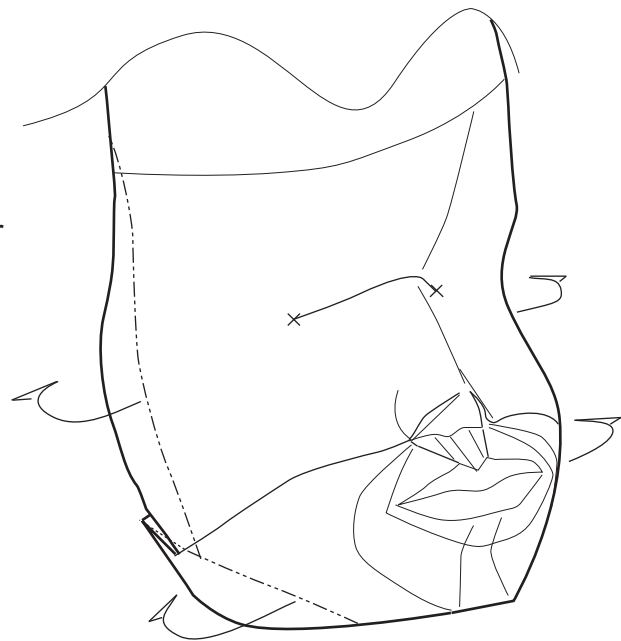
5 View at an angle from side. We now attempt to fold a three cusp point crimp, at each side of the face to form the part between the tip of the nose and the upper lip. This is the Butterfly fold. The first cusp is at the tip of the nose slightly off vertical center line of paper. The second cusp point is on one of the tips of "M" of the upper lip. The third cusp is at an imaginary point outside the paper. Form the valley folds of the Butterfly folds first, crease and bring the overlap areas upwards and towards the center..

The terms Cusp, Swallowtail and Butterfly are borrowed from the names of the first three manifolds of Catastrophe Theory, a branch of mathematics. These manifolds have the same number of cusp points and similar fold patterns.

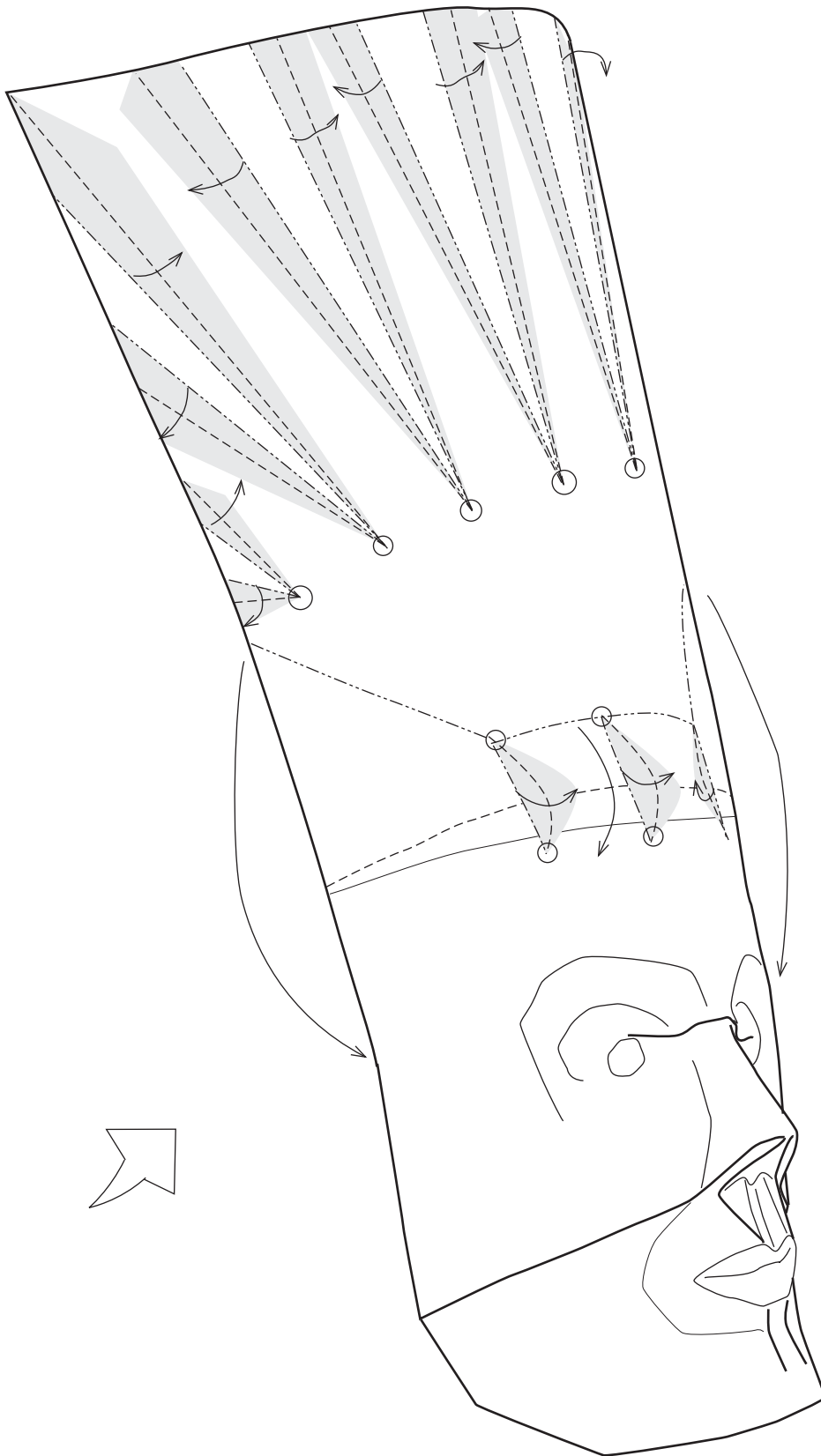


6 Carefully close the two Butterfly folds and at the same time, with the aid of an ice-cream stick, mold the nose and the upper lip. Next, again with the stick, mold the lower lip and contour the area around the mouth. All the folds are soft except the two between the nostrils and the cheeks. It will be necessary to form two tiny Swallowtail folds below the lower lip to indent the area.

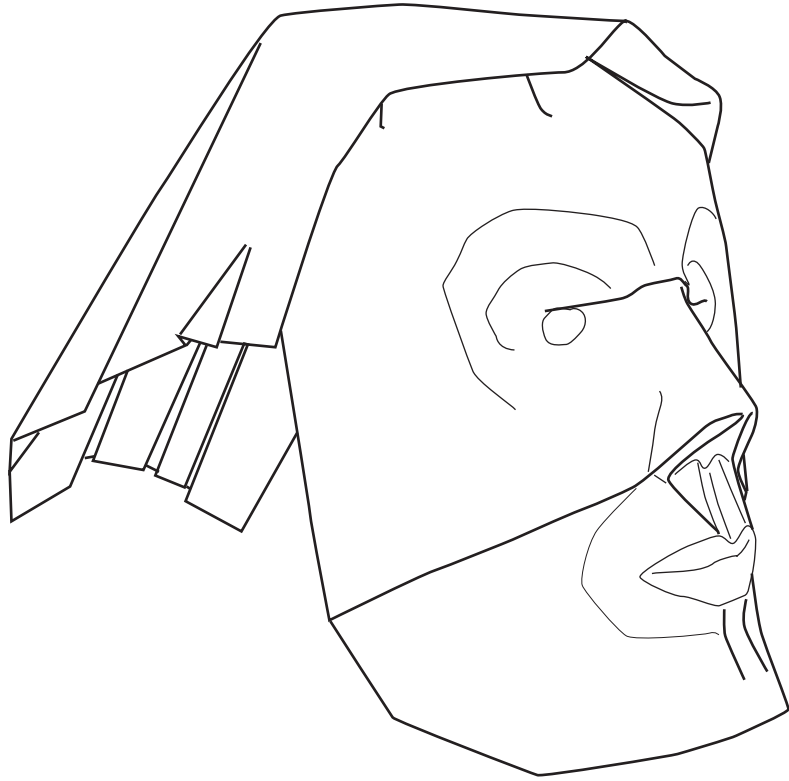
7 Lock the two Cusp folds below the chin by folding in the two triangular pieces behind. Next lock the two Butterfly folds by folding in the two triangular strips.



8 Using the ice-cream stick, pop out the two eyes. Form the two brows and continue down the sides for the cheek bone areas. Make two circular indentations for the pupils of the eyes below the Swallowtail. The fold of the Swallowtail above the pupils serves as the eyelids. It will be necessary now to lock the Swallowtail fold by bringing down from behind only the center part of the overlap and crease a small valley fold. This completes the main features of the Face.



- 9 Form three Swallowtail folds at the hairline, bring the overlaps to one side and collapse the folds together. The center line of the paper at the top should be almost horizontal when viewed from the side. Lock the three Swallowtail folds by folding in the corners formed at the back. Simulate hair by forming series of Cusp folds and creasing the fold lines.



10 The completed Face model.