# 2.3.4b A2 Pattern drafting and toiles

## Development of prototypes

- Designers communicate ideas to clients through mood or theme boards, sketched ideas, presentation boards, 3D simulations and final prototype products.
- The advantages of CAD presentations are that they can be revised and amended quickly.
- Life size prototype products allow designs to be visualised more effectively for fit and proportion. It also allows the fabric to be tested see how it handles and drapes in reality.
- Modelling of ideas in the iterative process takes many forms, but should include an initial sketched idea, a life-sized calico toile and final prototype. Components parts can also be modelled and tested.
- Initial models to test concepts can be in any fabric or material. However, details should be refined and more precise further into development.
- Modelling allows for testing of materials, components, dimensions, scale and fit.
- In industry, materials and components go through rigorous testing, for example strength, durability, flammability, crease resistance and shrinkage.
- Compliance with appropriate legislation should be a consideration when new products are in development.
- Print and embroidery designs go through similar iterations to products when in development.
- Digital printing allows test prints to be realised, quickly eliminating the need for expensive test runs of fabric prints.
- 3D printing of components parts is an effective way of modelling new ideas before production.

## Lay-planning and pattern language

- All fashion and textile products comprise of several different shaped parts. A lay plan maps out the most economical way to cut the pieces and minimise waste.
- In industry, a lay-plan would be designed using a specialist computer programme which is then sent straight to the cutting table.
- On plain fabrics, template pieces can be tessellated to minimise waste in between the pieces.
- One-way prints require all pieces to be cut in one direction only, which can lead to waste. This also applies to pile fabrics where shading could occur if the pile goes in opposite directions on a garment. This is wasteful, but essential for quality purposes.
- A universal pattern language consisting of a series of symbols is used so that all sewers can lay templates out correctly.
- Failure to follow pattern language can lead to an inferior end product.
- In hand sewing, tailor's tacks are used to transfer critical placement points.
- The straight of grain on a fabric runs the length of the fabric and parallel to the selvedge edge. Accuracy in applying this rule is critical if the end product is to drape or hang correctly.
- The strength in a fabric is along the straight of grain line.
- Some products require the templates to be cut on the bias which allows more stretch in the final product. This means laying the templates out diagonally on the fabric.
- The bias allows garments to hang or drape better. The fit is also improved. However, bias cutting can be wasteful.

## Commercial manufacturing

- ***Hot notch marking***

Transfer of critical points such as pocket placements is done with a hot notch marker. It will bore a hole through several layers of fabric to mark specific points. The hole is sealed at the same time.

- ***Fabric spreading machines***

Automated fabric spreading machines lay out several layers of fabric on long cutting tables. Some of these have suction to prevent the fabric from moving whilst it is being laid out and cut.

- ***Cutting tools and machinery***

The agreed lay plan is sent automatically to the same machine that has the fabric laid out on it. The individual pieces that make up a product are cut automatically according to the lay plan. Laser cutters are increasingly used in this process.

- ***Straight, round and band knives***

These are table mounted hand operated cutting knives used to cut around product pieces as laid out in the lay plan. The lay plan is mapped out on paper and placed on the top of the fabric for the operator to follow.

- ***Automated die cutters***

When constant small shapes are needed such as those found in a bra, metal die cutters are used. When force is applied, these will cut through several layers of fabric.

- ***Laser cutters***

As well as being used on cutting tables, laser cutters can cut intricate and complex shapes out of fabric that cannot be done in any other way. The laser beam also seals the edges of the fabric so that it does not fray. Designs can also be engraved onto fabric.

- ***Additive manufacture or 3D printing***

Three dimensional products can be printed – layer by layer – creating finished prototype products including wearable garments and useable accessories.