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**Making – an international conference on “Materiality and Knowledge”**

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**The Process of Fashion Design and Garment Construction as a Practice Initiated in Three  
Dimensions: Are we teaching our designers as much as we could?**

**Introduction**

This paper outlines an ongoing PhD research with the aim to develop an alternative fashion design and garment construction process for the initial design stages, using a practice initiated in three dimensions. The paper was partly triggered by views that meanwhile, especially in design education, there is a need to underline more the practical aspects of the design and making process, for example pattern cutting skills.

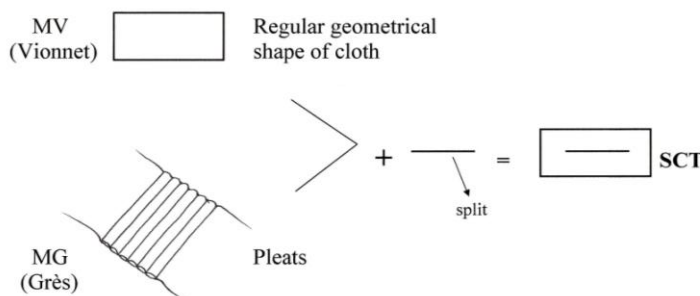
The nature of this design practice research utilizes tacit knowledge. It was therefore necessary to find a method to express such tacit knowledge in a tangible form.

Due to its exploratory nature and the need for substantial iterative practical work, the reflective, practice-oriented approach of Action Research was used as lead methodology.

**Case Studies**

The Research started with case studies on the work of Madame Grès and Madeleine Vionnet, two designers that had used a three-dimensional approach to garment design during the initial design stage. There was limited information available as to how exactly Madame Grès worked in the initial stage, more material was available on Madeleine Vionnet. The Researcher felt that the best way to gain more insight and to understand their processes better was by closely examining their garments and subsequently replicating their technique and creating garments using some of the techniques.

The analysis and re-construction of some of their garments brought findings on their making processes and the importance of the practices used in the conceptual stages. Subsequently this led to the development of a new technique by the Researcher called SCT, Split Cloth Technique. The development of SCT can be summarized in a single formula, see Figure 1 below.



**Figure 1: Progress Formula of SCT**

## How does SCT work?

Conventional fashion design uses various darts and pleats to shape the fabric. This process usually leads to some cutting or removing of fabric after the shape has been designed. SCT achieves shape and volume by cutting the fabric before or during the process of creating the silhouette, rather than afterwards. In that way the cutting becomes a primary element in the initial design stage, often directing the making process and with that, the shaping of the garment. In this case the cutting of fabric becomes a central element in the making process, rather than being an afterthought.

The Researcher then experimented with SCT in half- and full-scale and developed toiles see Figures 2-4 below as well as finished, wearable garments.



Figure 2: SCT cloths with one split (left) and two splits (right)



Figure 3: Sample of a SCT toile – experiment with one split



**Figure 4: Sample of a SCT toile – experiment with two splits**

### **Peer Evaluations**

In order to validate the technique, the Researcher conducted an extensive peer evaluation program with participants from design, fashion, and academic backgrounds.

Due to the likely subjectivity of the results of the peer evaluation it was necessary to first assess the methodology of the data collection. To that effect the Researcher conducted three Pilot Studies to test the overall peer review frame work, the materials used, the way the SCT concept was communicated, how the physical experiments with SCT for the participants were handled, as well as the suggested questionnaire. After making amendments to the format and materials following the Pilot Studies, the Researcher progressed to the actual Peer Reviews. These involved various groups with a fashion design interest (Haute Couture and Mass Market), designers outside of fashion, and/or with an academic background, students (from first and third year), and tutorial staff at Northumbria University school of design.

Overall the results of the thirteen Peer Reviews were very encouraging. They confirmed the experience the Researcher had from her own application of SCT. The creativity-enhancing properties SCT offers became apparent in the participants responses to the questionnaire and in their activities and statements in the practical experiments. They also mentioned the positive impact the technique has on their inspiration and imagination in the making process.

The Pilot Studies and Peer Reviews showed that working with SCT is generally perceived as a creative and enjoyable experience that offers further opportunities for garment making and raises awareness of the use of fabrics previously considered unsuitable for a draping or SCT approach. Apart from the enjoyment, a recurring positive feature was the need to “get the brain into neutral”, to get away from “preconceptions” regarding garments or the application of fabrics

These evaluations confirmed the utility of SCT in particular to design education. They showed the value as an immersive, tactile, hands-on process to aid understanding and appreciation of the physical possibilities of materials on the three-dimensional body. The creativity enhancing

immediacy of the material and the versatility of the process allows for the effective generation of design knowledge. SCT can lead to a more imaginative approach to garment making as it allows to think “outside the box” of the prevalent block-based making and construction processes.

### **SCT as an enhanced three-dimensional design technique**

SCT can be seen as an enhanced 3-D draping technique. The concept of inserting a cut into a cloth is not new, yet it does not seem to have been implemented in this way as a separate technique or teaching method.

It can be used for a variety of purposes and situations. The most obvious application is for the creation of completely new garments. Furthermore SCT could be used as a tool to enhance parts of existing garments especially around specific areas such as sleeves or shoulders. For example, designers that work with existing blocks could use SCT to enhance particular elements such as the fall of a garment over the hip.

### **SCT Benefits**

SCT as a three-dimensional design approach has at least all the various benefits that 3-D draping based making has. In addition to those, the Researcher identified following advantages:

- By inserting a cut into the flat, two-dimensional cloth, SCT enhances the possibilities for its usage in the draping process. Conventional draping starts with covering the body, i.e. the wrapping of the two-dimensional cloth around the body. In SCT the cut in the cloth opens the potential for more than just the wrapping by offering additional/different anchor points. These can be used to insert cloth -either a different cloth or other parts of the same cloth- or limbs, or by providing an opening for decorative purposes.
- The cut in SCT does not only open the cloth, it also “opens the thought process” due to the possible multiple functions of the cut.
- The creativity can be enhanced by the considerations about where the cut is applied to the fabric. The fabric can be cut on the 3-D form or away from it, e.g. on a table.
  - In the first case the 3-D shape is the starting point of the design, and the designer might ask “how can I use a cut in the design that I am currently developing”. This tends to result in cuts that are linked to more clearly defined functions in relation to the parts of the body that they are applied to. Another aspect that is important in the application of the cut in this way is the effect the cut has not only on the immediately surrounding area of the cloth but on the cloth and its behaviour as a whole. The cut tends to relieve tension which has an impact on the fall of the whole cloth and result in a chain reaction for other parts.
  - In the second case the designer could ask “what kinds of designs can I generate by inserting this type of cut(s) into the cloth and then apply it to the 3-D form”. The designer’s idea of the cut is less driven by the underlying part of the body and is therefore less likely to result in the use of the cut as a tool to adapt the previously draped cloth to the shape to the body. In this more explorative approach, the cut itself is the starting point for the design thinking, rather than the body that is being designed for. From a making approach this is a significant difference.

- In either case the cut enhances the designers draping possibilities over the basic enveloping of the body.
- SCT, more so than traditional draping, enhances the understanding of fabric properties. Draping in general enables to understand weight, malleability, fall, texture etc. of the fabric. The additional cut or opening of the fabric in SCT and the resulting altered properties, as well as the need for finishing or sealing the edges of the cut, increase the understanding of the fabric properties and behaviour.

### **SCT in Fashion Education**

With the diversifying trends in fashion, the increasing multitude of influences, the increasing rate of change as well as the capabilities of CAD, there is a requirement for the educational system to bring people to the industry with a thorough grounding in the basic skills. To that effect SCT can be a central method in design education. A few examples of views on the current fashion education system in the UK that seem to support this view:

- “More technical skills and less pure design are what the industry needs, according to a strategy for fashion industry training put forward by sector skills body Skillfast-UK.....main change requested by employers was for technical skills such as pattern cutting and grading to be brought back into degree courses” (Drapersonline, 2007)
- “We have often taken on ex-fashion students either as staff or for work experience, and the majority have never been taught pattern-cutting, yet expecting glittering careers in design” (Everett, 2008)

### **Benefits for students & teaching staff**

- According to various industry sources more and more students enter design education with less and less craft and practical knowledge. The increasing usage of CAD throughout the making process is not likely to increase the practical hands-on experience.
- Complementing the focus on CAD and the virtual fashion world, SCT can, as a more in-depth experience than conventional draping, offer “hands-on” work with fabric in order to compensate for the lack of exposure to actual fabric that the extensive and increasing application of CAD in fashion education might lead to. In addition it should be noted that the time savings that CAD offers and the subsequent higher output of numbers of garments based on a CAD design process might give a false impression of the creativity employed. This is especially so as the more frequently used CAD applications enable or are used often for the adaptation of an existing set of blocks or designs rather than to create something fundamentally new.
- SCT allows for a deeper, more holistic learning experience because more physical senses are involved in a more dynamic manner.
- SCT allow students first and foremost to break with the restrictions of the traditional block-based making and to adopt a more exploratory approach. Design that is based on blocks compresses the making process into a somewhat confined space where the designer tries to realise the initially sketched silhouette by adapting the pre-defined blocks to come “as close as possible” to the initial sketch.
- Fashion design training in the UK seemed to have been dominated over a long time by a design approach that was driven by drawing sketches initially. In combination with the

use of an extensive pattern block library and by finding similar blocks to be then amended, the sketched garments are then tried to be achieved. One commentator states that “UK Education only uses blocks, students are not taught how to develop them”. This practice of tracing patterns does not make students understand the fundamentals of the individual pattern or of garment construction after the design stage.

- Independent learning played an increasingly important role over the last decades in the education system. SCT as a teaching method is very suitable for independent learning. In fact, the explorative nature of the SCT learning process and the potential for the students to find their own direction is probably best realised without direct supervision. For the teaching staff this means that they can focus on students that need more individual guidance at the beginning, whilst the more advanced or adventurous can be left alone.
- There is also the view that many fashion design students have somewhat inflated ideas about the role of the designer, yet limited appreciation for the various other functions (modeliste, pattern cutter, dress maker) in the making process. The latter ones are often the roles that many of those design students will be working in after their education. The “hands-on” experience of SCT will enhance that understanding and appreciation.
- A benefit of SCT for students and possibly the industrial design process could be the quick response possibilities the work with the technique offers. For the ever shortening fashion cycles, SCT, when applied for example as a concept tool for the initiation of a design process, could be a very effective method to generate/develop various different ideas to a stage when they can be assessed for their further development potential.
- The Peer Reviews revealed an interesting phenomenon amongst a few participants. Especially with first year students, a slight hesitancy to cut into fabric and to work with it was noticeable. SCT would function as a catalyst to break down this hesitancy to cut or handle the fabric and experimenting with it. This means that in addition to the creativity enhancing features of SCT, it will increase the students’ confidence for working with fabric.
- From the Researchers own experience and from statements from the Peer Reviews, SCT generates creativity, “frees” the imagination and helps the students to a fresh approach to conceptual thinking. The “playing around” aspect of the draping process shall not be underestimated. The “playful” approach seems to result in very creative outcomes.
- SCT has been described by students and educational practitioners during the peer evaluations as an enjoyable and satisfying teaching technique.
- From the Peer Reviews the Researchers view is that SCT can be used and benefitting novices as well as seasoned professionals.

### **Benefits to Fashion Practitioners**

- A key benefit for the design process in industry are the quick response times. For the ever shortening fashion cycles, SCT, when applied e.g. as concept tool for the initial stages, can be a very effective method to develop ideas quickly.
- Similar to the benefits in university education, SCT can offer the same educational benefits for in-house training of practitioners for either novices or for seasoned practitioners that want to enhance their skill portfolio.

## **Relationship between SCT and CAD**

- The functionalities that CAD developed over the last decade have resulted in a substantial impact on the possibilities for the overall making process. CAD has gone through a tremendous expansion in the 2-D to 3-D design capability by adding functionalities such as virtual prototyping, virtual try-on, fashion shows
- Looking at these developments, it could sound plausible that 3-D hands-on work with fabrics may not be needed, once CAD is so sophisticated that all fabric properties can be simulated. However, the Researcher's view is that the important element of the physical contact of the designer with the fabric and the interaction that enables the designer to appreciate all relevant fabric properties in parallel would still be missing.
- In the near future CAD will not be so sophisticated to offer the sensual and intellectual stimulation that holding and draping the fabric dynamically has on the moving body. The Researcher does think though, that non-virtual 3-D design work with the fabric on the 3-D form such as SCT and virtual 3-D design work as in CAD complement each other.
- In fact, the increasing usage of CAD or other IT based technologies in the making and production process will inevitably lead to the designers having less and less "hands-on" experience with garments. Therefore a thorough and deep experience with fabrics and garments in design education can deliver an understanding of fabrics, their behaviour and properties that designers may have increasingly less opportunities to experience due to their extensive use of CAD at later stages of the making process.
- The more CAD becomes used in fashion design practice and education, the more useful a tool that compensates for the reduced exposure to hands-on work SCT can be by providing a deep experience with fabrics in the making process.

## **The Applicability of SCT beyond Fashion Education**

- SCT is a general design approach that can be used in various markets. There is a perception that SCT could not be used for the Mass Market. That is only true if the application of SCT results in very complex garments that are difficult and expensive to produce. However, SCT could well generate designs that are very simplistic, thus easy to produce yet appealing to various markets.
- SCT made garments are likely to generate more unusual patterns. This requires a somewhat different production process and probably a more challenging sewing process. There is the potential for a higher variance in shapes between undergarment or linings in relation to the outer garment. This could increase production complexity and costs.
- The Peer Reviews revealed that many participants thought that SCT is applicable predominantly to formal, elegant female garments such as evening wear. The inherent elegance in the one-cloth approach and the individualistic making process led to that perception.
- However, the perception of the applicability of SCT to elegant garments would be too superficial. The Researcher can think of applications where the split in the cloth can have a very practical impact such as on garments for maternity wear or for casual, multifunctional garments that allow for movement and versatility.



- SCT could be applicable for loose- as well as tight-fitting garments. There is a perception that SCT could be usable in particular for wider garments or those that are on the outer layers, sometimes allowing for excessive fabric that can be cut into or manipulated with insertions when draping.
- In as much as SCT lends itself to creating garments that allow for movement and flexibility, such as those that lead a physically active life, it is also very useful for the creation of garments for less able-bodied people. Bodily asymmetries or imbalances could be counteracted by unusual or asymmetrically made clothes. The participation in the creation process by the physically impaired person could also have an impact on how the wearer feels about themselves and the garment. Similarly, people that are struggling with obesity could find in SCT-made garments an alternative to many of the ill-fitting garments they have to buy otherwise.
- SCT can support the sustainability requirements for the industry in two ways: Through upcycling by offering a design technique that can enhance used garments and by making good use of cut-offs fabrics for example in an educational environment.

### **Applicability of SCT outside the fashion industry**

SCT has been looked at so far from the initial design process in Fashion. The technique could also be potentially beneficial in other areas such as performing arts in aiding manipulation and draping of fabric within costumes or fabric related interior decoration.

### **The Future**

The Peer evaluations confirmed the usefulness of SCT as a teaching tool with “SCT-type blocks” as a useful addition to the curriculum.

In the light of these educational benefits it is planned to publish an illustrated educationalist booklet.

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