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# FUTURESCAN 4: VALUING PRACTICE

## Animation, Fashion and Sustainability

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### Abstract

This paper presents an experiment, within a PhD project, to create a two-dimensional (2D) fashion design tool using animation techniques. The tool appropriates Adobe After Effects software (incurring low costs) supporting innovation early in the design process: design takes place on the timeline, utilising rotating mood-boards and application of design elements to a fashion figure. The technique requires some prior knowledge of Adobe Photoshop and Adobe Illustrator, unlike specialist computer-aided design (CAD) software, which requires much training.

Fast fashion and rapid consumption dominate the fashion industry, in response, some designers adopt a slow fashion philosophy, utilising local craft industries, or integrating vintage garments into their collections, many with innovative approaches to sustainability.

A research through design experiment explored whether the animation tool could support sustainable approaches to fashion. A foundational concept was to re-use and up-cycle by producing design for a limited-edition range. Healthy stocks of men's white shirts are available in charity shops, allowing the concept to be repeatable on small scales. The shirts would not need to be cut into until ideas were developed. The retained proportions of the deconstructed shirts created realistic design propositions.

A method developed: firstly, to photograph the shirts, deconstructing them in Adobe Photoshop. Fabrics were added to the deconstructed elements when imported into Adobe After Effects, creating new designs on the timeline. Construction and cut were considered. Hand drawn, large-scale prints were then superimposed mixing the hand crafted with the digital process, adding unique selling points.

Reflective practice, in and on action, revealed that the figure and prints do not need to be repeatedly re-drawn. Rotating mood-boards also reminded the designer of their research inspiration. An element of the unpredictable - moving from one transition to another - was also discovered, further advancing design development. Feedback from fashion lecturers and students revealed perceived value for the technique.

Keywords: animation; experiment; software; fashion; sustainability.

### Introduction

This paper presents experiments, within a practice-based PhD project, that contribute to the creation of a two-dimensional (2D) fashion design idea generation tool, using animation techniques, known as the 'animation tool' which appropriated Adobe After Effects software (incurring low costs) supporting innovation early in the design process. Design took place on the timeline, utilising rotating mood boards and the application of design elements to an illustrated fashion figure, it allowed for the

generation of many ideas and inspiration was available on screen so that idea development could always be fluid, preventing potential burnout when designing for many collections. Li Edelkoort (2015) cited the burnout of designers and their subsequent need to leave their posts, as casualties in the production of ever more collections and variations on a theme, in response to the needs of a fashion brand.

### **Computer Aided Design (CAD) Software**

Animation is used in the fashion industry in three-dimensional (3D) simulation software, where it is possible to explore a design as pattern shapes, then virtually stitch garments together, dress an avatar and make it walk when designing is complete (the animation element), for example, the Fabricant website shows designs in motion, where gravity and wind effects are used to realistically highlight the properties of virtual fabrics (The Fabricant 2019). Much attention was paid to this technology from the manufacturing side of the fashion industry, for the production of technical specification packs, pattern cutting and subsequent production and manufacture.

Marvelous Designer used in the animation and games industry, was created by CLO Virtual Fashion in 2009 (Marvelous Designer 2019). It has a user-friendly interface, it was possible to design with simulated fabric on 3D avatars (figures) exploring draping, folding and gathering techniques. Figure 1 shows a screenshot of the Marvelous Designer interface with pattern shape production in the 2D space and an avatar in the 3D space (the subject is wearing shirt designs from these experiments).

*Figure 1: Marvelous Designer Interface.*

This software had been used in the film industry by WETA Digital. According to James Moore, Senior Modeler for WETA Digital (2013), digital characters replaced actors in dangerous scenes in *The Hobbit* (Holmes 2013). They were modelled in Marvelous Designer to convincingly create photorealistic actors and their clothing, then remodeled in Autodesk Maya for the film. CLO also produced CLO3D, a more robust version of Marvelous Designer used in the fashion industry (CLO3D 2019). Designers could create pattern shapes in a flat 2D form then place them on the 3D avatar, which used simulation, to show drape and hang. CLO had competitors such as Lectra, Optitex and C-Design, all targeting large mass production companies where the software helped reduce the number of samples required and offered Product Lifecycle Management (PLM). The cost of the software for commercial clients varied from around £4000-£20,000 per annum depending on the size of the business, or individual licenses could be purchased (Optitex 2019; Lectra 2019; C-Design 2019). This CAD software was not necessarily helpful for generating new, radical ideas, early in the process, it was more useful for creating pattern shapes and designs in 3D, as sample prototypes. Designers added to commercial templates to adjust and tweak designs for the mass market. These CAD solutions required knowledge of 2D, 3D and pattern cutting and were hybrid solutions, borrowing from the animation (2D and 3D) and fashion industries (pattern cutting) and required training to use. In contrast, the research presented in this paper developed an animation tool that worked in 2D, in Adobe After Effects. One method of testing the developed animation tool was to look at issues in the fashion industry and apply it in particular scenarios.

### **Sustainability Concepts**

Fashion is a resource heavy industry. Eva Kruse (2017), in her broadcast for VOICES talked about the need for a sustainable fashion model, one that did not contribute to carbon dioxide levels, water scarcity, human rights violations and production of waste. Kruse continued that the answer lay in lower energy usage, recycling and re-use strategies, new technologies, new ways of sourcing materials,

cradle to cradle production, and consumers willing to pay more. Li Edelkoort (2015), in her Anti\_Fashion manifesto, suggested that in the future, recycled hand-me-downs and new desirable items produced from vintage garments would give dignity back to clothing.

The strategy of re-use and re-cycle was used by designers such as Berlin based designer Christine Mayer, founder of the Mayer Peace Collection in 2004, where she recycled flour sacks, applied embellishment and created tailored jackets from up-cycled denim jeans, visited flea markets, farms and mills, extending the life of materials (Brown 2013: 73). Elizabeth Brunner founded Piece X Piece in 2008, in California, with a philosophy of ‘...creating beauty from waste’ (Brown 2013: 173) by re-using fabric swatches and leftovers from production, preventing them from entering landfill (Brown 2013: 173). She made limited edition pieces from these scraps of fabric, without adhering to a particular season (Brown 2013: 173). Michelle Lowe-Holder launched a sustainable accessories collection called ‘Ribbon Reclaim’ for Autumn/Winter 2010/11 in London; made from recycled and vintage ribbons and trims, plus re-used chunky hardware fastenings, subsequent collections built on historical inspiration and craft heritage, but maintained her modern styling (Brown 2013: 165). Lowe-Holder operated a zero-waste philosophy adhering to sustainability and ethical practices (Brown 2013: 165). Alabama Chanin was founded in 2000, by Natalie Chanin, the company used 100% organic cotton fabric plus reused and reclaimed materials. Chanin believed in craft tradition, utilising local artisans in Florence, Alabama, for lean manufacture (Alabama Chanin 2018). Christopher Raeburn refashioned snow camouflage fabric, parachute nylon and second-hand high visibility canopies from lifeboats, to create menswear for his Remade in England collection (Leitch 2016). Most items were available as a limited edition of up to 50 (Raeburn 2018) and 30% of Raeburn’s output was for the Remade label (Leitch 2016).

Utilising some of these sustainable strategies, including producing limited editions and using reuse and recycle strategies, the following animation experiments attempted to offer a solution, albeit on a smaller scale, to the issue of sustainability.

## **Method**

### Concept 1 - White shirts up-cycled – Construction

The approach was one of generative research using reflective practice, in and on action (guiding the experiments) and evaluative research (with feedback from students and experts).

Most charity shops sell men’s white shirts, so repeatability of this idea was possible, as a limited-edition range. To realise the first concept, a number of white shirts were bought, for around £1.50 each, ideally men’s dress and casual shirts because of the extra fabric (figure 2). The process would be subtractive (taking away from the original shirt) and additive (adding new fabrication like organdie or muslin). The process included the following steps:

1. Photographs were taken of the shirts, using a smart phone (specialist equipment was not necessary);
2. A neutral, contrasting background was used and evenly spread light was preferred;
3. Shirt proportions were maintained;
4. The photographs were uploaded to the computer.

*Figure 2: Photographs of the shirts, with details.*

The next stage was to deconstruct the shirt shapes by separating the sleeves and collars, for example,

so that they could be manipulated in After Effects. Figure 3 shows the casual shirt deconstruction. This took a maximum of 10 minutes, per image. It was key to try and create as many deconstructed shapes as possible to design, but as the process was non-linear it was easy to toggle back to Photoshop, from After Effects, and create more shapes when required.

*Figure 3: Casual Shirt Deconstructed.*

The fashion figure was drawn in Illustrator, then, by placing each limb, head and torso on separate layers, imported into After Effects and 'rigged', to allow for changing arm positions, using the DUIK Plug-in in After Effects, normally used for character animation (DUIK 2019). It took three hours to complete this process. Accessories were drawn in Illustrator to create the look, then these and the design elements were imported into After Effects and placed on separate layers. Figure 4 shows the interface including the figure on the timeline and DUIK plug-in window.

*Figure 4: Figure, Timeline and DUIK Plug-in Window – After Effects Interface.*

#### Adding Mood boards to the Screen for Reference

Seven mood boards were compiled at A3 scale, in Photoshop. They were placed on the top right-hand side of the screen, each board transitioned through, in a 'rolling' form for the duration of the animation. This simple device meant that inspiration was available for reference when designing the garment shapes. Often inspiration, in the form of sketches, tear sheets and books would be scattered around a table for reference when designing, or would be pinned to boards, then made available for a whole design team to view (Keller 2005), shown in figures 4 and 5.

*Figure 5: The Fashion Figure on 4 screens with 'Rolling' Mood boards (with Concept 2 shirt designs).*

Varying shapes were applied over time, inspired by ideas from the boards. As shown in figure 6, entirely different shapes were created from the original shirts.

*Figure 6: Re-constructed shirts.*

#### Concept 2 – White Shirts up-cycled - Printed

The second idea was to develop prints from sketchbook work and inspiration boards and print (virtually) on to the shirts, to join disparate elements and add impact. Large placement prints and broken/distressed all over prints were created, for more unique and desirable garments.

The constructed shirt animation was used as a basis to apply the prints. The print ideas needed to be generated. The process started as a traditional 2D exercise, but on reflection moved over to becoming an animation, using the tool, as this was a simple way of developing ideas and transitioning from one to another capturing these 'in-between' designs. Figure 7 shows a selection of screenshots from the print animation.

*Figure 7: Selection of Print Ideas from the Print Animation.*

This animation took three hours to create, once the design elements were made. Figure 8 shows the re-constructed shirts with applied prints.

*Figure 8: Re-constructed Shirts with Prints.*

The animations potentially fulfilled an objective of the PhD, to enhance idea generation early in the design process, and the technique also seemed versatile for other types of design. But, would students use the tool as part their design process and did it allow them to communicate their ideas fully and clearly?

## **Feedback**

### Student Workshop

The Fashion degree is a four-year sandwich course. It explores ‘...craftsmanship, aesthetics and the encapsulation of the body through a range of materials, pattern cutting, manufacturing processes, constructed knitwear and printed fashion fabrics’ (Northumbria 2018: no pagination). The course aims to produce ‘...directional designers with the creative vision and the commercial realism to begin a career within the Fashion sector...’, committed to supporting students to ‘...identify a personal fashion design philosophy through drawing and illustration, developing artisan craft skills, pattern cutting and constructing knitted fabrics and textiles... supported by contextual fashion studies and critical thinking’ (Northumbria 2018: no pagination).

A workshop on learning how to use the animation tool was proposed to the Level 6 Fashion students. They were working on their final collections and had research work to do. Many of these students worked by hand to generate ideas, then used digital tools to develop specification drawings, or scanned in their hand drawings and modified them in Photoshop or Illustrator. Some were interested in the further use of digital tools in early idea generation. The animation tool required some experience of using Photoshop and Illustrator, hence choosing students who would soon graduate.

This workshop for six students, consisted of a presentation outlining the sustainability ideas developed using the animation tool, followed by the practical workshop and an immediate feedback session, via a short questionnaire. It was anticipated that the workshop would take at least three hours, however, it ran over because the students wanted to take a complete animation away with them. Three hours was not enough time to teach the basics of After Effects and the rigging using the DUIK plug-in, so a simplified approach of laying figure elements - heads, hands and feet - on the After Effects timeline was adopted.

### Summary of the After Effects Workshop with Students and Questionnaire Feedback

The sustainability tool appeared to be readily understood by the Fashion students with one needing to explore a bit more to understand the software better. In the feedback questionnaire, distributed at the conclusion of the workshop, they overwhelmingly (all six students) thought that the animation tool enabled enhancement of early idea generation. Themes such as the speed of production and the experimental nature of what was produced highlighted positive responses to using the tool: ‘...it is a helpful way to create different silhouettes that you wouldn’t have thought of...’ (Student participant 002). A question about versatility for a range of designer’s approaches also produced positive feedback, with suggestions that it may be more helpful to high-end designers as there was more scope for avant-garde ideas, though ideas ‘...could also be toned down for High Street designers’ (Student participant 003).

The student participants were unanimous in agreeing that they would use the tool again and that ‘...it’s a very unique way to generate ideas’ (Student participant 001). In terms of communicating ideas, the students thought that it would be helpful to develop a digital portfolio showing development and that ‘...you can make it very personal and use original artwork to keep work in line with your own style and

designer handwriting' (Student participant 004) also 'It is quite experimental, but it's a really unique way of developing skills which could be taken into line-up sketches' (Student participant 001).

Drawbacks were explored and mostly '...time to learn...' and practice were the issues from three out of the six students. One student found the software fiddly and '...quite hard to get your head around' (Student participant 001), another thought the preparation and separation of the elements was a drawback (Student participant 006). The final question exploring the students' experience of CAD revealed only one lead, whilst they were on placement at Tommy Hilfiger, where '...they employed some 3D designers to develop a new system to 'move forward into the future'' (Student participant 005). Photoshop, Illustrator and InDesign were the familiar CAD software used on placement.

#### Presentation of Animations followed by Feedback from Design Professionals

Four interviews were undertaken with experts in the field, including an illustrator/lecturer, a designer with over 40 years experience in design and higher education, and one with ten years design experience who recently became a lecturer and a professional animator. The format was to first present the animations to the design professionals followed by a semi-structured interview capturing their observations.

When discussing the value of the moving mood boards, Interviewee 2 thought that linking the research to their design worked well. Interviewee 3 quoted '...what this does brilliantly is visually link ideas.' In terms of illustration and design development, Interviewee 2 thought that:

*Yes, in terms of the illustration, they can relate to those, definitely, beautiful, beautiful potential for illustration development and for the design development again, yes, as a starting point, I think it's a really positive thing to think about building those garments from shapes, because it will help them with how to make them. (Interviewee 2)*

Interviewee 1 thought '...where the arms are lifting up and down and you can see somebody just moving a little bit you suddenly get a real impression of what that would look like on a body, in movement and that might just sell it a bit more.'

Interviewee 2 stated that the main benefit was the speed of idea generation. Interviewee 3 saw more specific advantages in the fact that garments could be digitally cut up to up-cycle, so that 'garments' can be an inspiration for idea generation, not just drawings.

Interviewee 2 thought the After Effects interface looked quite intimidating and the time it would take to learn to use the tool could be a drawback, though after seeing it demonstrated, they did not necessarily think it would take very long because of their experience with Illustrator and Photoshop. Interviewee 3 felt positively about the tool but considered that too many ideas may be generated, so that design selection would be harder, but also thought it fed the creative process, it '...works as an idea generator.' Interviewee 4 (the animator) felt that there was '...not a big leap...' from Photoshop and Illustrator, continuing that After Effects was the simplest application for these experiments, '...especially having all those tools together in one place.' Interviewee 4 endorsed the idea of creating assets (an asset is where a design or object is created, for example, a geometric shape with a printed textile design superimposed, for manipulation on the timeline, created first in Illustrator or Photoshop) and importing them into After Effects, allowing for flexibility, as you could change assets '...without too much effort...', they considered the tools currently being used in the experiments to be '...the most relevant for idea generation' (Interviewee 4).

## Conclusion

Drawing was still an important part of the design process evidenced through designing the figure, the printed textile designs and the accessories for the look, but these no longer needed to be repeatedly re-drawn, saving the designer time and effort. The moving figure allowed for more design possibilities and may also help to convince non-designers in a team, about a particular idea, as it became more of a realistic proposition with movement. In comparison, the software Marvelous Designer would not be used to generate designs, in this instance, cut-up garment elements could not easily be used to design new garment shapes. In Marvelous Designer, pattern shapes require drawing 'from scratch'. One advantage of Marvelous Designer is the ability to use the surface texture of the shirts on designs.

Having the mood boards on screen, gently transitioning through, allowed strong links with inspiration and research and the design development phase. Using the animation tool to generate ideas for printed textiles increased the speed of the process and allowed for new ideas that were captured in the 'in-between' frames, transitioning from one idea to another. It was this element that was very new to the design process: constant re-drawing to achieve this would be tedious for the designer.

Using the newly developed tool, it was possible to generate many more ideas than a usual paper-based design process and allowed the designer to articulate ideas faster by avoiding the repetition of re-drawing certain elements. This speed of production was key to designing a strong collection, so that time could be spent on the development of the idea in terms of construction and finishes outside of the computer. No garments were physically de-constructed in the process, so there was no destruction of a precious resource, until design ideas were selected. Maintaining the proportions of the resource (the shirts) in the design process, also meant that realistic design propositions were available on screen.

The animation experiments are available to view at:

<http://kmckelveyphd.tumblr.com/page/4> (McKelvey 2018)

## References

C-Design (2019) C-Design Website [online]. Available from: <https://www.cdesignfashion.com/design-software/> [Accessed 6 April 2019].

Chanin, N. (2018) Alabama Chanin - Our Story [online]. Available from: <https://www.facebook.com/VisitAlabamaChanin/> [Accessed 1 August 2018].

Clo3D. (2019) Clo3D Website [online]. Available from: <https://www.clo3d.com/> [Accessed 6 April 2019].

Brown, S. (2013) *Refashioned, Cutting Edge Clothing From Upcycled Materials*. London: Laurence King Publishing.

Duduf (2019) Rigging DUIK Animation, Rainbox. [online]. Available from: <https://rainboxprod.coop/en/tools/duik/> [Accessed 6 April 2019].

Edelkoort, L. (2015) *Anti\_Fashion: A Manifesto for the Next Decade*. Paris: Trend Union.

Facebook, (2018) Alabama Chanin - Our Story [online]. Available from: <https://www.facebook.com/VisitAlabamaChanin/> [Accessed 1 August 2018].

Holmes, S. (2015) The Hobbit – Marvelous Designer 2 [online]. Available from: [http://www.3dartistonline.com/news/2013/05/the-hobbit-marvelous-designer-2/?utm\\_source=3DArtist&utm\\_medium=facebook&utm\\_campaign=twitterfeed&fbclid=IwAR0as7MiweallHpaWValOGIP6FDIKphM2d6B-44JiK9IDYTxqJQEp2\\_GYTg](http://www.3dartistonline.com/news/2013/05/the-hobbit-marvelous-designer-2/?utm_source=3DArtist&utm_medium=facebook&utm_campaign=twitterfeed&fbclid=IwAR0as7MiweallHpaWValOGIP6FDIKphM2d6B-44JiK9IDYTxqJQEp2_GYTg) [Accessed 5 April 2019].

Keller, A. I. (2005) *For Inspiration Only; Designer Interaction with Informal Collections of Visual Material*. Delft: Janus Keller.

Kruse, E. (2017) The Entire World is Watching Fashion, What Do We Want Them to Know? Voices – *The Business of Fashion* [online]. Available from: <https://www.youtube.com/watch?v=6t90mzK6cR0> [Accessed 21 March 2017].

Lectra (2019) Lectra Website [online]. Available from: <https://www.lectra.com/en> [Accessed 6 April 2019].

Leitch, L. (2016) Christopher Raeburn's 'Slow Clothes' Philosophy is Redefining Streetwear [online]. Available from: <https://www.gq-magazine.co.uk/article/christopher-raeburn-fashion-designer-london-collections-men-ss17> [Accessed 31 July 2018].

Marvelous Designer (2019) Marvelous Designer Website [online]. Available from: <https://www.marvelousdesigner.com/> [Accessed 6 April 2019].

McKelvey, K. (2018) Recycle/Upcycle [online]. K McKelvey PhD. Available from: <http://kmckelveyphd.tumblr.com/page/4> [Accessed 6 April 2019].

Northumbria University (2018) Northumbria University Website [online]. Available from: <https://www.northumbria.ac.uk/study-at-northumbria/courses/fashion-ft-uuffhn1/> [Accessed 5 November 2018].

Optitex (2019) Optitex Website [online]. Available from: <https://optitex.com/products/2d-and-3d-cad-software/> [Accessed 6 April 2019].

Raeburn, C. (2018) Christopher Raeburn. Innovative and Responsible Fashion Design [online]. Available from: <https://www.christopherraeburn.co.uk/> [Accessed 31 July 2018].

The Fabricant (2019) The Fabricant - Digital Fashion House – Showing the world that clothing does not have to be physical to exist [online]. Available from: <https://www.thefabricant.com/> [Accessed 6 August 2019].