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ANIMATING FASHION DESIGN CONCEPTS

FASHION | ILLUSTRATION | DESIGN | ANIMATION | IDEAS

ABSTRACT

THE FOCUS OF RESEARCH, IN THIS PAPER, IS THE INITIAL ILLUSTRATED
DESIGN CONCEPT OF A FASHION COLLECTION AND HOW THIS COULD BE
COMMUNICATED BY ANIMATION TECHNIQUES TO ENHANCE THE DESIGN
DEVELOPMENT PROCESS THAT FOLLOWS.

The research is aimed at the young fashion designer or student designer in terms of developing
a tool for early prototyping that enhances the illustration and development of design ideas.
Any resultant tool needs to be easy to use and apply to the fashion design process. This paper
reviews changes in the fashion industry that prompted the research enquiry, with particular
reference to a selection of designers who work at the edge of the commercial side of the
industry and the issues that they face with a new season.

The project has been undertaken from a research through design perspective, using reflective
practices, in the development of a case study that aims to investigate the potential of
animation in the early fashion design process. Traditional and digital animation are not new

processes, but experimentation with movement and time could form a valuable part of the future fashion design process. Reference is made to computer aided design (CAD) and three-dimensional (3D) software services offered to the fashion industry, which cover a range of needs in the fashion design and production process. Reference is also made to the 3D animation and motion capture work of Jane Harris, in the field of virtual textiles and, from an idea generation point of view, the work of Simon Thorogood, who uses digital technologies to create novel fashion design processes. The research explores techniques in two-dimensional (2D) animation software. The animation experiment seeks to form a closer link between research inspiration and initial idea generation. Through a process of reflection, the possibilities and limitations of the experiment will be highlighted.

INTRODUCTION

This paper is part of a larger PhD research project, in the exploratory stages of development. The focus here is the initial idea generation of a fashion collection and how this could be communicated by animation techniques to enhance the design development process that follows. The research is aimed at the young fashion designer or student designer, in terms of developing a tool for early prototyping for those who wish to work at the 'edge'. In 'Fashion at the Edge', Caroline Evans (2003) describes 'edgy' as fashion that is sharp, urban, knowing, experimental, unsentimental, she continues by describing it as being at the 'edge' of commercial mass production. The experimental element describes the space where this research resides.

There are a number of pointers that suggest that fashion, in general, is becoming much more homogenised and less experimental. There are three models currently operating in the fashion industry (Corner 2014). One model is fast fashion – the low priced trend-led product that has a short life span. Then there is slow fashion – occupying the couture market which is finding many new customers, offering well crafted, quality, high end, timeless, luxury and upcycled sustainable fashion items. In the middle exists the traditional fashion system, which offers neither speedily produced fashion at low prices, nor fine craftsmanship. Corner (2014) suggests that fashion designers are producing new looks faster than ever before, through limited edition ranges, pre, resort and capsule collections, in addition to twice yearly seasonal collections. Primarily due to the sharing of ideas on websites and rapid global communication of the latest fashion collections, (which are copied as soon as they appear in the fast fashion system), fashion is becoming bland and homogenised, where there is little that is new or different. Corner (2014: 36) asks 'where are the inventions and radical ideas in fashion?'.
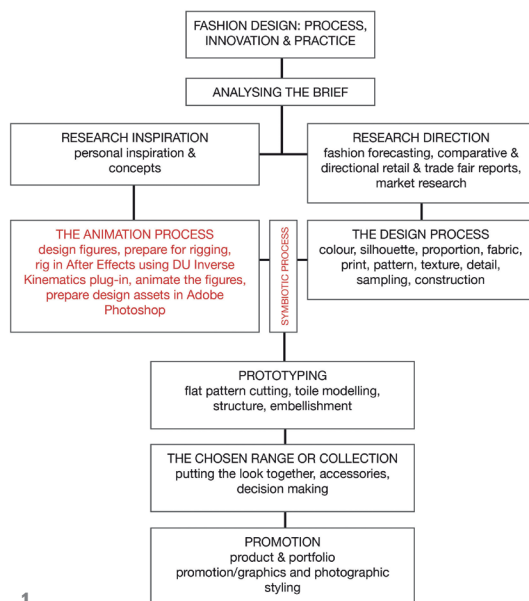
Some high-end fashion designers are finding it increasingly difficult to produce new and innovative work. For example, Rei Kawakubo, founder of groundbreaking fashion label *Comme des Garçons*, remarked in *Womenswear Daily*, about her ongoing mission to create clothes that never existed before: 'As the weight of experience piles up, it has become increasingly difficult to find yet new ways of thinking and to make new things.' (Socha 2012: unknown). Similarly, Jean Paul Gaultier announced that he had ceased to produce his ready-to-wear collection in 2014 to concentrate on haute couture: 'For some time, I have found true fulfillment in working on the haute couture and it allows me to express my creativity and my taste for research and experimentation' (Tsjeng 2014: unknown). Iris van Herpen comments, in Talking Fashion, that the acceleration of fashion production makes it difficult to appreciate what is being continually produced, she wonders how designers find the time to look around and be inspired anymore (Kedves 2013).

It is this kind of thinking and the general homogenisation of fashion in the industry that prompts this research, which investigates and proposes a tool to generate new/fresh fashion ideas, early in the fashion design process.

RELATED RESEARCH AND RATIONALE

Research into technological developments, relevant to the project, revealed *Marvelous Designer*, the fashion design software originally created by *CLO Virtual Fashion* in 2009. With a simple, user-friendly interface, it is possible to design with simulated fabric on 3D figures exploring draping, folding and gathering techniques. WETA Digital, who provides visual effects in feature films, has appropriated this software. According to James Moore (2013), Senior Modeller for *WETA Digital*, digital characters replaced actors in dangerous scenes in *The Hobbit*. They were modelled in *Marvelous Designer* to convincingly create photorealistic clothing and actors, essential to the feature film. However, photorealistic representation is not the aim of this research. Although, *Marvelous Designer* software is worthy of further exploration as it is adaptable to a more stylised approach. Other software solutions researched were those by *Lectra* and *Optitex* providing similar services, such as fabric simulation on illustrations, the creation of pattern cutting, customising models with measurements for a

FASHION DESIGN: PROCESS, INNOVATION & PRACTICE

ANALYSING THE BRIEF

RESEARCH INSPIRATION
personal inspiration & concepts

RESEARCH DIRECTION
fashion forecasting, comparative & directional retail & trade fair reports, market research

THE ANIMATION PROCESS
design figures, prepare for rigging, rig in After Effects using DU Inverse Kinematics plug-in, animate the figures, prepare design assets in Adobe Photoshop

SYMBIOTIC PROCESS

THE DESIGN PROCESS
colour, silhouette, proportion, fabric, print, pattern, texture, detail, sampling, construction

PROTOTYPING
flat pattern cutting, toile modelling, structure, embellishment

THE CHOSEN RANGE OR COLLECTION
putting the look together, accessories, decision making

PROMOTION
product & portfolio promotion/graphics and photographic styling

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perfect fit, changing poses and using 3D turntables to display different product colourways. These services are aimed primarily at large fashion production companies, who wish to solve problems before they cost money. These programs are priced $3000 plus, though a personal license to *Marvelous Designer* can be purchased for a monthly subscription of $60. These solutions require some knowledge of 2D or 3D software and/ or pattern cutting skills and it is likely that further software training will be undertaken. They are prohibitive due to cost and students and young fashion designers would probably lack the necessary 3D software skills.

Fashion students tend to learn *Adobe Photoshop* and *Adobe Illustrator*, during their studies, and use these to create, for example, illustrations, working drawings, colour palettes and ideas for print and pattern. All of the *Adobe Creative Cloud* applications are available for £46 per month. For this project *Photoshop* has been used for creating design assets, *Illustrator* for

drawing and setting up the fashion figure for rigging and *After Effects*, for compositing and animating, plus rigging the fashion figure using the DUIK plug-in.

Other existing research relevant to the project includes 3D computer generated animation by Jane Harris, who completed her practice-based PhD in the year 2000. Harris' research continued by using animation in creating virtual textiles derived from original historical garments, where their fragility meant that they could not be handled when exhibited (Bunnell 2004). Harris' work continued with the *Empress's New Clothes* exhibition, shown at the *Museum of London* in 2004 using collision detection, 2D/3D texture mapping and unedited motion capture techniques, using dancers and actors for motion capture (Hemmings 2007). She continues to produce work using 3D animation and motion capture in collaboration with computer graphic operator, Mike Dawson and fashion designer, Shelley Fox, where they represent believable

digital clothing and fabrics, which are becoming increasingly sophisticated as technology develops (Braddock Clarke & Harris 2012). This project attempts to build on Harris' work by utilising animation for visualising fashion concepts and idea development, to create new fashion ideas.

The work of Simon Thorogood (2015), an artist/designer interested in creating innovative experiences that generate design ideas and enrich more established methods of fashion practice is also relevant to the project. In particular, the 'Planar' project, a collaboration with artist/designer Chris Ratcliffe, where Thorogood (2008) sought to engage audiences in 'a novel fashion design process', where ideas for fashion may be found in unusual ways by using digital drawings of aircraft parts as design elements. Users could manipulate the elements by moving them around over a drawn female figure. Thorogood (2008) also used die-cut paper shapes of aircraft parts, to be manipulated on a screen, over a female figure, users could position lamps to cast shadows, which resulted in potential inspiration for new garment silhouettes. Thorogood's (2007) *Soundwear* took a synaesthetic approach where musical instruments were represented as shapes, colour, line and layering. These elements were then programmed to run as a series of sound plays generating visuals; users interacted through the project website, as part of the process (Thorogood 2007).

A fundamental difference between Thorogood's (2008, 2007) approaches and this project is that audience participation is not expected to be part of the experience of designing; the capturing of moving elements is also different. Thorogood (2008, 2007) used stylised 2D fashion illustrations, which had design elements superimposed upon them. Also Harris

has never illustrated the human form in her work, only indicated its existence through the movement and shaping of the textiles recreated.

FASHION DESIGN PROCESS

As mentioned in the introduction, the research investigates and proposes a tool to generate new fashion ideas, early in the fashion design process. This paper describes one experiment that contributes to the development of that tool. The experiment applies a similar collage effect to Thorogood's interactive methods, animated onto stylised figures. The tool will be referred to as the Animation Process.

The Fashion Design Process diagram (figure 1) shown below was initially created for fashion students and published in *Fashion Design: Process, Innovation & Practice* (McKelvey & Munslow 2011). The original diagram has been adapted to indicate the proposed positioning of the Animation Process and the initial research experiment, it would be a symbiotic process, where fashion figures for animation and assets/design elements are developed alongside the normal process for designing.

New ideas for fashion design are traditionally generated through research, which needs to inspire and inform the design development process (Seivewright 2007). Sketchbooks are used to collect primary research such as drawings and photographs from museums, galleries, exhibitions, historical and cultural influences and new technologies (Faerm 2010). Secondary research material is also gathered from fashion forecasting services, books, the Internet and magazines (Seivewright 2007). Concepts or themes are developed by organising the resultant research material and mind maps can be used to generate further ideas and creative thinking (Gaimster 2015).

Seivewright (2007) suggests that there should be a bridge from the research phase to the development phase. He discusses using a technique of collaging research onto figures by photocopying or scanning research pages and cutting out elements, then applying them in various ways on the figure, for the early visualisation of design ideas, quite similar to Thorogood's methods but without the digital interactivity. He suggests that the technique could generate ideas for silhouette, colour, print and pattern (Seivewright 2007).

The Animation Process research experiment approach is discussed in the following methodology and is also described as a case study. This experimental case study builds on the collage ideas of both Seivewright and Thorogood, to connect research inspiration (which still needs to be undertaken) to design idea development, by adding movement through duplication, scaling, rotation, change of opacity, positioning and animation of the design elements and periodic animation of the figure, over time and in two-dimensions.

METHODOLOGY

The research experiment case study was carried out using a research through design approach by experimenting directly with animation in the illustration phase of the fashion design process. Animation, in this context, means any movement of figures or assets in the development of design ideas. The assets are also referred to as design elements in the case study. 'Reflection-in-action', that is, thinking whilst doing (Schon 1987), was employed in the development of design ideas using a combination of the design elements, creative application and animation techniques. The design elements required a period of reflection-in-action as their production and construction was key to how the design ideas might finally look. 'Reflection-on-action' was employed to review, analyse and evaluate the success or emergent issues (Schon 1987) of the resultant experiment, through describing positive outcomes and limitations. 'Reflection-for-action' (Grushka et al. 2005), also took place, as any recommendations for the Animation Process needed to be easy


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to implement and apply to the fashion design process, if it is to be utilised by fashion students and young designers to enhance their idea generation and communication.

CASE STUDY – *MECCANO* ANIMATION

The experiment forming the case study was created over two days. The idea was to produce a rapid prototyping tool using *Adobe After Effects* to test idea generation through a moving collage process. A trend direction theme called 'Elevated Everyday' (derived from WGSN for Autumn/Winter 2015/16) was researched. The trend suggested the appropriation of everyday materials having more significance or beauty, when rearranged or elevated in usage. *Meccano* was chosen for its geometry, with nuts and bolts fixings. It could also be reinterpreted as laser cut printed textiles, though drape and fabric manipulation techniques were deliberately not explored, the experiment was about generating new ideas for silhouette and structure. So,

Meccano was manipulated digitally to construct more complex shapes in *Photoshop*, the elements were imported into *After Effects*, see figure 2.

To create a fashion figure to animate, the researcher used *Inverse Kinematics* in *After Effects* (a process that relies on a hierarchical joints system to rig and animate the figure fluidly). The researcher used *Adobe Illustrator* to create the separate figure elements. It was necessary to draw each limb, the head, neck, pelvis and body separately and create a new layer for each element. All of the resultant layers were imported into *After Effects*. It was necessary to install the DUIK plug-in (http://duduf.net/?page_id=151), which can allow for automatic rigging of a figure in readiness for animating. Figure 3 shows the initial drawn figure outline with joint overlaps in *Illustrator*, in the second drawing, the figure is coloured and each layer is labelled, the last two drawings show the rigged and then animated figure, though the rigging is invisible.
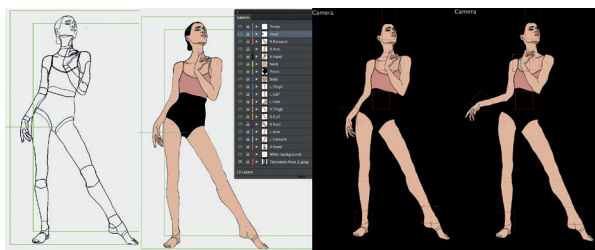
In animation, the walk cycle is a fundamental method of illustrating the traits of a character. A walk cycle has not been generated in this experiment, as gestures and shifting poses were considered adequate to communicate the traits of the fashion figure and target market. Small movement of the figure was included in the animation to allow for design elements to follow the changing body shape. *The Study of Pose* publication (Sebring & Rocha 2014) was referred to, this shows the fashion model, Coco Rocha, in 1000 different poses. Front and side view references were selected that offered sequential movements.

In the animation composition, in *After Effects*, the figure was animated first using key-frame animation on the timeline, the design elements were applied to the figure. The screen was designed to have moving front and side view figures as well as a palette of design elements as an aide memoire for designing, see figure 4.

During this experimental design process the designer can now consider the shape of the body in movement and therefore focus more on how designs might work, see figure 5.

REFLECTION – POSITIVE OUTCOMES

The *Meccano* Animation experiment allowed for the ability to change garment proportion, with all permutations being recorded and was a fairly speedy process for idea production, contrary to initial thoughts on animating. Coloured and scaled patterns were achieved easily, as opposed to re-sketching and colouring drawings using traditional design methods. It was possible to continuously develop design elements during the design process as it was non-linear, that is, the timeline in *After Effects* can be revisited and design elements supplemented at any stage.

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In this 30-second animation, at least 10 full colour and patterned silhouette designs were achieved, see figure 6. Full looks and silhouettes were altered quickly by scaling and changing the opacity of the *Meccano* shapes. The figure was also animated; when the pose changed the designer could reconsider the use of the design elements. Effects could also be used in the animation to suggest solid fabrication, the *Wiggle Rotation* effect, for example, suggested the idea of a wobbly circular framed skirt. The rigged figure template may be used iteratively to design.

REFLECTION – LIMITATIONS

From reflection upon the *Meccano* Animation experiment, an additional software skill is required to be learned by students and young designers and applied at a point where ideas need to flow naturally in the design process – this could prove to be time consuming and limit idea generation. It takes more time to create the design elements to use, in designing, than to animate them, for example, about one days work. It is difficult to judge the design elements required in the early stages of development; this is why research inspiration and mood boards are still essential and why the non-linear process is helpful in editing in new design elements. The animation experiment is not yet versatile enough in technique for a range of design approaches, such as developing draped garments or communicating more complex fabric properties. Fabric drape particularly is not so easy with this process unless design elements are prepared at the research stage, even then they will not move easily without adding more software skills to the process. The figure takes time to prepare for animation (about one days work) and it is very difficult to design whilst the figure is moving. The key poses have to be considered

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before designing begins, as references for movement are essential and so the target customer needs to be well considered at the mood board stage to generate relevant gestures.

CONCLUSION AND FURTHER RESEARCH

The proposed tool, defined in this research experiment, uses 2D animation to explore the generation of new ideas, in the fashion design process. The new ideas are generated by manipulating and superimposing design elements through such movement as; duplication, scaling, rotation, translucency and positioning, over time, on the compositing timeline, on an illustrated female figure. The production of the design elements

and figure adds at least two full days to the design development process, though the development of the initially static design elements from the design research inspiration could help to link the research more closely and explicitly to the subsequent development of design ideas.

When generating new ideas, Seivewright's (2007) suggestion of bridging the gap between design research inspiration and idea generation, by literally using a collage technique, was very helpful to the basis of this experiment, it is another way to show students and young designers how to make the most of their design research inspiration.

There are issues with the versatility of the proposed tool from this experiment, fabric drape and performance are critical considerations when designing. Further investigation into the workings of *After Effects* would be valuable to understand how its more complex tools could help to support the development of animation for fashion. For example, there is a Puppet tool that allows for movement of characters, this could be appropriated and applied in further fabric drape experiments. The use of a moving figure in the animation should not be underestimated, the changing pose allowed for a different point of view. Studying sequential poses and perhaps shooting 'live' footage of a moving model would support the designer's understanding of the human body.

Finally, there is an element of fun contributing to the generation of ideas using this process, whilst this is subjective, the fun factor cannot be underestimated in its value. In the words of Csikszentmihalyi (2013: 350) 'to keep enjoying something, you need to increase its complexity' the experiment does not deliberately set out to do this but by introducing a process from another domain – the Animation Process – it may contribute to the enjoyment of designing by adding complexity through the use of the tool (not the learning of the software). Csikszentmihalyi (2013: 291) also says that 'creativity generally refers to the act of changing some aspect of a domain'. New idea generation has been the aim of this experiment, in changing an aspect of the fashion design process – a domain – if it has potential to enhance creativity then that would also be worthy of further research.

The *Meccano* animation described in this paper is the first experiment in a series of proposed experiments to explore the idea that animation could enhance the early idea development process in fashion design and subsequently support the production of a tool in the Animation Process. These experiments will form a series of case studies, each building on the previous, that will be viewed and analysed. They contribute to a larger PhD project that will also seek to explore the world of 3D animation and its potential benefits in this process, as well as 2D.

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FIGURE CAPTIONS

Figure 1: The Fashion Design Process incorporating the Animation Process, adapted from McKelvey & Munslow 2011: 2.

Figure 2: The Meccano developed as design elements using scale and transparency creating more figurative shapes, 2015.

Figure 3: Joint overlaps, disguising the overlap with colour, post rigging and movement, 2015

Figure 4: Full screen of front and side views with design elements, 2015

Figure 5: Stills of the animated side view showing a full skirt, 2015

Figure 6: 10 silhouettes created from Meccano Animation, 2015.