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The Second International Conference for Creative Pattern Cutting Abstracts

Original Citation

Almond, Kevin and Power, Jess (2016) The Second International Conference for Creative Pattern Cutting Abstracts. University of Huddersfield, University of Huddersfield. ISBN 9781862181380

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Conference Introduction

The Second International Conference for Creative Pattern Cutting' has been generously sponsored by fashion and apparel solutions specialist Lectra. The overriding theme of the conference is to provide a platform to develop ideas as well as continue reinforcing notions of what constitutes practice based enquiry and the value of tacit knowledge (in this case creative pattern cutting), within a research context. The cut and construction of clothing, which embellishes the human body is the overarching discourse. The papers presented here continue to emphasise how we shouldn't underestimate tacit knowledge and the making process as a form of enquiry. The conference is streamed into four definitive themes, which investigate digital technology, eco-sustainable, pedagogical and fashioned approaches to creative pattern cutting and give researchers and practitioners a platform to share new techniques, ideas and direction with their peers in education and industry.

One of the prevailing themes in this year's conference is the value of "learning by doing" (active learning) and the art of reflection. This has been embedded into all the tracks through professional practice, pedagogical developments and engaging research. The networks developed through the conference underpin some of the strengths of peer learning and moving forward the benefits of interdisciplinarity as a means of creative leading to the introduction of new skills, epistemologies, and creative impact leading to a new era in fashion design.

Conference Organisers:

Dr. Kevin Almond

Dr. Jess Power

Centre for Fashion Thinking

Fashion Thinking Research Centre Director: Prof. Steve Swindells

Fashion Thinking focuses upon four interdisciplinary research areas: Costume and Performance, Pattern Cutting and Technologies, Fashion Ecology, Fashion Economies and Business Engagement; each area is underpinned by long-standing industrial relations, including Burberry, Betty Jackson and M&S.

Staff working in these areas have made significant contributions to the changing role of fashion and costume in relation to design, manufacture, reception and retail management in both local and global environments. Drawing from expertise in design, pattern cutting, 3D digital imaging, sculpture, photography, costume and the performing arts Fashion Thinking promotes interdisciplinary approaches to practice-led research as well as traditional theoretical approaches; engaging with a range of disciplines, including anthropology, ethnography, humanities, social and political science. Fashion Thinking is composed of designers, artists, historians, business and technical experts all of whom are committed to exploring the cultural, social and political ecologies of fashion and costume in contemporary society.

1. Costume and Performance

The fusion of historical and contemporary design, which includes cut and construction techniques used in collaboration with textiles for the following cultural industries: theatre, opera, dance, film, TV, music videos and commercials.

2. Pattern Cutting and Technologies

Pattern Cutting and Technologies Research aims to explore different perceptions of garment making in contemporary fashion and costume making. The group explores different levels of craftsmanship and skills in these areas and how they can be the source of creativity, whether through traditional techniques and/or digital approaches. Staff research focuses upon tacit intelligence and tactile epistemologies within the making process and how techniques and technologies are located in a broader cultural and historical context.

3. Fashion Ecology

From cute culture to formal eveningwear, Fashion Ecology focuses upon the creative and conceptual developments of design with respect to fashioning the body and its associated aesthetics. Staff research explores practical and theoretical approaches to fashion, which includes cultural and social ecologies of contemporary society, as well as focusing upon historical precedents.

4. Fashion Enterprise and Business Engagement

Staff research explores the exchange and integrated practices operating between the creative and commercial aspects of fashion design, production, retail and management. Current research focuses upon the marketing challenges facing fashion companies in the UK and around the world, in particular the conceptualisations of brands and their significance to corporate strategies

Peer Review Panel

Dr. Kevin Almond
University of Huddersfield

Dr. Phoebe Apeagyei
Manchester Metropolitan University

Prof. Susan Ashdown
Cornell University

Sylvia Ayton MBE
Royal College of Art

Dr. Tracy Cassidy
University of Huddersfield

Sean Chiles
Amsterdam Fashion Institute

Hilary Hollingworth
University of Huddersfield

Dr. Betty Jackson CBE
University of Huddersfield

Dr. Julie King
University of Northampton

Janice Mee
DeMontfort University

Linda Orhn Macdaniel
Kent State University

Dr. Jess Power
University of Huddersfield

Dr. Anna Powell
University of Huddersfield

Dr. Timo Rissanen
Parsons: The New School for Design

Bruce Roberts
Heriot Watt University

Dr. Karen Shah
University of Huddersfield

Dr. Annie Shaw
Manchester Metropolitan University

Dr Kristina Shin
Hong Kong Polytechnic

Dr. Pammi Sinha
University of Leeds

Juliana Sissons
Nottingham Trent University

Dr. Lisa Stansbie
Leeds Metropolitan University

Prof. Steve Swindells
University of Huddersfield

Prof. Sally Wade
Sheffield Hallam University

Stephen Wigley
University of Huddersfield

Prof. Angela Woods
National College of Art and Design

Keynote Speakers

Symposium sponsor:

Lectra; The Fashion Technology Specialists The specialist in integrated fashion technology solutions

(Please see the Lectra information 'Intelligent Pattern Making')

With nearly 40 years' experience in fashion and apparel, Lectra's mission is to provide a complete spectrum of design, development, and production solutions to confront 21st-century challenges.

From first creative spark to final product, our professional services address an end-to-end process. We support the day-to-day operations of our customers in over 100 countries for around-the-clock process optimisation. From fast fashion to luxury to ready-to-wear, Lectra's 23,000 customers in markets as diverse as casual, sports, outdoor, denim, and lingerie represent every development and sourcing model imaginable. Beyond suppliers and manufacturers, they are the brands you love and the stores where you shop.

Look in the mirror— chances are, you're wearing something created with Lectra technology.

A NEW ERA IN FASHION AND APPAREL PRODUCT DEVELOPMENT

In the globalized, disrupted and dynamic fashion industry, companies need to evolve to stay in the game. At the crossroads of design and production, product development drives brand consistency in terms of fit and look. Product development has a major impact on both time to market and cost, and of course on customer loyalty.²As fashion and apparel companies produce more and more collections and development cycles become ever shorter, traditional development methods no longer suffice.

Transformation is needed at the heart of the business model. Finding the right balance between newness, fit and geography or target market is a big challenge. Simultaneously developing different collections with several product lines and a range of sizes adapted to each country's specific requirements is the new norm. True collaboration through shared visualization means a better product, an improved way of working and an enhanced creative process. 3D virtual prototyping is the way to optimize resources and preserve brand DNA.

3D virtual prototyping shortens the product development cycle by reducing the need for time-consuming physical samples, manual grading

and physical fit sessions. Technology can enhance creative process and bring new life to age-old traditions.

Solutions Consultant Mark Powell will talk about how Lectra's approach to product development centres around 3D virtual prototyping for right-fit, collaborative process and interactive design.

Dr. Timo Rissanen
Assistant Professor of Fashion Design and Sustainability
Parsons: The New School for Design, New York

Dr. Timo Rissanen has been the Assistant Professor of Fashion Design and Sustainability at Parsons School of Design in New York City since 2010. He holds a PhD in design from the University of Technology Sydney. His thesis, completed in 2013, focused on zero waste fashion design. In 2011 he co-edited the book 'Shaping Sustainable Fashion' with Alison Gwilt; the book arose from Fashioning Now, an exhibition they co-curated in 2009 in Sydney. His book 'Zero Waste Fashion Design', co-authored with Holly McQuillan, will be published by Bloomsbury in December 2015. With McQuillan he co-curated Yield, an exhibition of zero waste fashion design, in 2011. Having lived in Finland, Spain, Australia and the US, Rissanen is interested in local perspectives to global challenges in fashion. Sustainability research is inseparable from his creative practice, and he exhibits his work internationally.

SLOW DOWN! WE ARE CREATIVE

A cut is an act of creation. Celant (1997: 21) stated, "To cut is to think and see." Just as a design continues to design long after the designer has finished designing, pattern cutting creates in myriad material and immaterial forms. Pattern cutting is fashion design. Almond (2010: 15) correctly points out that pattern cutting that we deem creative - resulting in proposals for new solutions - is expensive in financial terms.

When we examine, however, the societal and planetary sum total of the cutting up of fabric into billions of arguably banal garments whose sole purpose is to increase consumption and stimulate an economic system already in its death throes, I argue that the lack of creativity in fashion is expensive, in environmental and complex human terms.

We can no longer afford uncreative pattern cutting as much as we cannot afford the increasing volumes of clothes designed for ever shorter lifespans. We can no longer afford a speed in the industry if that speed disables pattern cutters' and designers' creativity. We must continue

making creative cuts into facets of the industry that no longer serve us. We must cut out un-creativity, to make space for reflection, collaboration and invention. This demand is not a naive denial of reality; the demand is borne out of an economic and societal reality. Sustained investment in creativity in pattern cutting and fashion design, as well as business strategy, can facilitate resilience and flourishing. Continue cutting creatively.

Shelly Fox

**Donna Karan Professor of Fashion and Director of the MFA Fashion Design and Society Program
Parsons: The New School for Design, New York**

Juliana Sissons

**Designer and Senior Lecturer in fashion knitwear and pattern cutting
Nottingham Trent University and University of Brighton**

Shelly Fox is the Donna Karan Professor of Fashion and the Director of the MFA Fashion Design and Society program at Parsons The New School for Design in New York. An award-winning designer, Fox has created numerous experimental and innovative collections that were sold internationally and have been included in prestigious exhibitions at the Victoria and Albert Museum, Design Museum, Barbican Art Gallery, Crafts Council, Institute of Contemporary Art, London, Modemuseum, Antwerp Landed 2001, FIT in New York, Design Museum Holon, and various British Council exhibitions that have travelled through Germany, France, Belgium, Poland, Lithuania, Czech Republic, Denmark, The Netherlands, Russia, Sweden and Japan.

Her work is published broadly in fashion, design, and art journals, as well as academic publications. Fox has appeared as a speaker at The Metropolitan Museum of Art, New York, Barbican Art Gallery, Institute of Contemporary Art, Victoria & Albert Museum in London and recently the World Cities Creative Forum in Shanghai. She has collaborated with creative's such as Tomato, SHOWstudio, Scanner, Michael Clark Dance Company, Random Dance and the Medical Research Council UK. Fox was awarded the Crafts Council Development Award in 1996, The Jerwood Fashion Prize and The Peugeot Design Award for Textiles in 1999, Stanley Picker Fellowship for Design in 2005, and in 2007 she was nominated by the Arts Council England for the Prince Philip Design Prize. Fox served as the main consultant to The Vilcek Foundation in New York

for the 2015 Vilcek Prize for Fashion, of which was awarded to curator, Andrew Bolton for his contribution to Fashion at the Costume Institute, Metropolitan Museum of Art in New York. Recently Fox was selected for the Business of Fashion - #BOF | The People Shaping the Global Fashion Industry in 2014, the most influential and authoritative list in the global fashion industry.

Juliana Sissons is a designer and lecturer in Pattern Cutting; she teaches at University of Brighton and a number of Universities internationally; she also teaches on BA (Hons) and MA Fashion Knitwear at Nottingham Trent University. She was awarded the Crafts Council Development Award in 2003 for her fashion knitwear label which focuses on the development of sculptural techniques and pattern making; her experimental and innovative collections have sold in London and Los Angeles. As a 'Designer in Residence' at the Victoria and Albert Museum, her collections have been exhibited in the galleries as solo displays, as part of larger exhibitions and for the 'London Design Festival'.

Her work has also been included in exhibitions at the Fashion and Textile Museum, The British Fashion Council, The Textile Institute and The Craft Council. Her work has been published in a number of Fashion, Design and Art journals, as well as academic publications; she has written a Knitwear book as part of the collection of 'Basic Fashion Design' books (AVA Academia) and is currently writing a book on Creative Pattern Cutting, for a series of educational 'Course Reader Design' books (Bloomsbury publication) both aimed at Fashion design and Textile students.

Juliana has appeared internationally as a speaker for a number of conferences and for institutions including The British Fashion Council, The Textile Institute and the Victoria & Albert Museum. She has worked for and collaborated with creative's such as Alexander McQueen, Shelly Fox, Andrew Logan and Leigh Bowery and is currently serving as the main consultant to 'sKINship' working in collaboration with the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS). Her ongoing research into different forms of pattern cutting has led her to a collaborative project with 'sKINship' a project that is concerned with creating collaborations between different art and science disciplines and in this case, Reconstructive Plastic Surgeons and Pattern Cutters for Fashion.

The aim of sKINship is to evidence the value that 'making' and materials based knowledge can play in creating a common language across disciplines. Juliana's involvement with this project has given her the opportunity to work as a pattern cutter for fashion in a collaborative way with a number of reconstructive plastic surgeons. Over a period of three

years; these have included Dr. Sarah Pape, Royal Victoria Infirmary, Newcastle upon Tyne; Dr. Naveen Cavale, Kings College Hospital, London; Dr. Stefan Danilla Enei, Hospital Clinico Universidad de Chile and Dr. Mark Cooper, Morrison Hospital, Swansea. She is currently developing innovative pattern cutting techniques for fashion design, based on surgical cut and construction processes and has made a number of sample structures in paper and toile fabric, as well as testing these models in knit.

CUTTER – DESIGNER – CUTTER: CUTTING AS DESIGN

As the title suggests, the fashion design process is an interactive one, dealing with the body as the primary site for investigation, where the designer and cutter (in this case creative toile-ist) work in collaboration to develop the designer's initial concept. This keynote is a joint examination of the both the designer and pattern cutter's working process in the designing of clothing.

This in itself already suggests that the garments are not designed until the process of cutting / toiling begins and that the initial starting point is only an idea necessitating this process.

Through the referencing of specific collections from the Shelley Fox clothing archive, both speakers will attempt to communicate their working process through highlighting of key topics. Shelley Fox and Juliana Sissons have worked together since 1995 until the last collection, *Negative* in 2006, which was presented both at the Victoria and Albert Museum in London, and thereafter during London Fashion Week.

The presentation will be supported with visual imagery, which will include the initial concept ideas, toile processes, actual patterns, and fittings to final outcome. It will serve to illustrate the complex process that occurs in developing ideas in clothing; highlighting that communication, trust and openness are critical in achieving the end results. The notion of interpretation is central to creative pattern cutting and is key to the building a new visual language in silhouette and shape. Samples and prototypes emerge throughout the design development of cutting and draping, which then in turn, informs an individual creative design process, placing the body, materials, structure and form at its core. This conversation will serve as a deeper understanding to the fashion community, including academia and students, the complexity as well as the possibilities that occur in building a working relationship in with designers and pattern cutters.

Abstracts

Kevin Almond, University of Huddersfield

Jess Power, University of Huddersfield

The Progress of Creative Pattern Cutting.

This paper documents the journey of several research initiatives, which focused upon creative pattern cutting. Instigated by a peer-reviewed, journal paper entitled, 'Insufficient Allure: The Luxurious Art and Cost of Creative Pattern Cutting' (Almond, 2010), the endeavors attempted to elevate concepts of tacit knowledge and the making process as a form of legitimate, academic enquiry. The projects culminated in the first peer-reviewed conference dedicated to the discipline: 'The First International Symposium for Creative Pattern Cutting', held at University of Huddersfield in the UK, in February 2013. To trace the impact of the research initiatives, we consider how the skills of the pattern cutter, clothe the body with a myriad of shapes and silhouettes. We discuss this in relation to the different pattern cutting techniques that can be utilized to realize three-dimensional form and ways in which the research enterprises have arguably elevated the professional position of the cutter in terms of esteem and remuneration. In order to assess the impact of these initiatives, both within the fashion industry and in the emerging arena of fashion research, we identify some of the different research approaches utilized in practice-based enquiry and how results can be arrived at from hands-on experience, inspiring us to develop new ways to pattern cut.

Susan P. Ashdown, Cornell University

Fang Fang, Donghua University

Xiao Ping, Donghua University

Xiao FengYao, Donghua University

Jumpstarting Creativity in the University Setting: An Exercise in Creative Silhouettes

Teaching creativity to beginning apparel patternmaking students is challenging, as they lack the skills to work quickly that are necessary to develop fluency and flexibility in pattern creation, attributes essential to creative practice. Unlike quick sketches, creating garments takes time and effort. To address this issue, we conducted a one week class in creative patternmaking for 21 undergraduate students using half scale dress forms, in which students created silhouettes by pinning to the form. The use of half scale forms has been common in apparel for many years, but

traditional forms do not accurately reproduce the body shape. The Alvanon dress forms used in this workshop are created from a body scan, and are scaled precisely from the corresponding full-scale form. Garments created on these forms can be digitized into a CAD system, scaled up, and printed out full scale. Students designed three different models in one week, each model responding to a different challenge. Most of the students produced increasingly creative designs. Assessment of their designs, their responses, and faculty responses indicated that they gained a better understanding of creative patternmaking. The students returned to their classes in technical patternmaking both inspired and encouraged by this experience. Several students digitized and scaled up their patterns, although this was not required, demonstrating that they felt their work was significant.

Tony Brotheridge, Northumbria University
Gael Henry, Northumbria University
Bruce Montgomery, Northumbria University

The White Shirt (An Exploration into the Influence of Geometrics in Fashion)

In 1871 Brown, Davis and Co of Aldermanbury registered the first shirt style, which opened all the way down the front. Keers P (1987).[1] This research explores a contemporary form of pedagogical self-expression that challenges the relationship between dress, pattern making and the body. Utilising a new method of learning and teaching, geometric shapes are used as the inspiration for a basic white shirt. Japanese Designer, Yohji Yamamoto provides inspirational words:

“Allowing space between the garment and body is of tremendous importance... it gives the wearer the possibility of inhabiting the garment naturally, without being restricted by a predetermined form...”

The authors worked with fashion students in 3D and 2D .The only constraints were that the shirt must contain the standard neckline with a 2-piece collar, a straight shirt placket and a cuff .The garments tell a visual narrative that questions proportion, silhouette, volume and movement, and develops tactile knowledge.

Helen Burbidge, De Montfort University

Creative Cutting for Underarm Fit: An Analysis of Vintage Clothing to Advise Tacit Knowledge and the Making Process

The study of vintage clothing was used as a legitimate form of research enquiry to reveal pattern-cutting techniques that could not be found in published literature. The aim was to discover how to cut a close fitting underarm for a sleeve that is cut as part of the main bodice of a garment. Options for achieving this through shaping with gussets, seaming and panels was found from a range of designer, high street and unlabelled vintage pieces. These garments were not tested because of fragility and body shape differences, so replica pieces were made and tested. The making process was integral to the validity of the research, as the garments had to be worn to reveal how well they performed and what techniques offered the greatest arm mobility. The findings reveal crucial considerations for pattern cutting sleeves and fitting the underarm and will be beneficial to pattern cutters, fashion designers and those in education.

Lyn Caponera, Parsons: The New School for Design

The Side Saddle Skirt

“Queen Victoria Reviewing Her Troops in 1837” was seen in the oil painting by Sir Edwin Landseer in 1838 wearing a jacket and side saddle skirt a top a horse. Recorded in that painting was the sport of horseback riding, formerly only for a man, and now a woman too could partake and enjoy. Though the dress has changed, the sidesaddle skirt still holds a mystique, more than the modesty it was intended to preserve. A solemn female rider set outside of St Paul’s Cathedral for the memorial of Prof. Louise Wilson as recently as February 2015 wearing a riding habit. The iconic riding habit was composed of a jacket (the style of which was adapted from the male coat), and a sidesaddle skirt. The skirt was designed to cover both legs while they were placed together and to the side while seated a top a horse, speaking to the modesty of the woman. In my presentation, I will offer the possibility that the side-saddle skirt was the first “creatively cut” garment, developed at a time when information on pattern cutting was scarce. When walking, an interior pulley controlled the additional length and width that had been added to the pattern to accommodate the unusual “seated” orientation of this skirt. This amorphous silhouette remains provocative, with a pattern and history still to be studied and shared.

Elizabeth Carr, Kent State University

Linda Ohrn- McDaniel, Kent State University

Archana Mehta, Kent State University

Changing Perspectives in the Patternmaking and Draping Classroom

How do we best take advantage of digital tools in the patternmaking and draping classrooms? The hands on nature of these topics often make us favour traditional demonstration approaches. However, what if digital tools could help us change the student's perspective? What if we could give the student the opportunity to experience the demonstration from the same perspective as the patternmaker/drafter rather than viewing it from an opposing vantage point? Through this study we are looking at how the students understanding and success in the classes are improved through a new perspective of the demonstration. In order to obtain this new viewpoint we have created a demonstration situation where the student is placed in the position of the expert through digital recordings placing the camera perspective from that of the instructor. The focus is to give the student the opportunity to experience the demonstration through the eyes of the expert in order to get a more realistic perspective.

Melanie Carrico, University of North Carolina

Sizing up Zero- Waste Patterns

Zero-waste fashion design (ZWFD) is a sustainable practice and creative challenge. Integration into mainstream fashion, though, requires executing the designs in multiple sizes. Recent literature has expressed these concerns but offered no solutions. Traditional pattern grading methods are unworkable in ZWFD because pattern shapes lay flush against each other with no room for expansion or contraction. Cut and sew fashion production uses standard fabric widths, and a zero-waste designer must work within those widths. Since patterns typically grade more in width than length, opportunities to expand pattern shapes are prohibited across the width of fabric in zero-waste situations. While rotating the pattern shapes would allow growth along the fabric length, what are other alternatives? This paper discusses utilizing lace insertion in ZWFD to achieve size differentiation. The garment grades (grows and shrinks) due to the varied widths and lengths of the laces used while pattern shapes remain constant.

Tracy Cassidy, University of Huddersfield

Tom Cassidy, University of Leeds

Hye Won Lim, University of Leeds

New Approach to the Dress Forms for Korean boys aged 7- 10 by Body Size and Shape Analysis

A dress form is an essential tool in the clothing making process used for pattern block development, draping, and quality inspection. Most clothing manufacturing companies have spent unnecessary time to adjust dress form for solving fit suitability problems. Much of the researches undertaken thus far tend to only focus on body type analysis and more accurate representation using new technology to create enhanced dress forms. This study is aimed at suggestion of the optimized dress form for Korean Female in 2-30s. To accomplish this aim, this research provides interviews of pattern makers to determine their satisfaction and expectation of dress forms and the results of interviews are analyzed using content analysis method. In addition, body size and shape of targeted age group are analyzed statistically and ideal body shape with aesthetic perception are considered. Finally, the researcher's dress form is developed after their body size and shape analysis with adjusting industries' requirements.

Harah Chon, Lasalle College of the Arts

Adrian Huang, Lasalle College of the Arts

Jeremiah Tan, Lasalle College of the Arts

Growing and Sustaining Creative Pattern Cutting as a Recognized Profession in Asia

There has been a gradual shift in apparel production from China to parts of Southeast Asia, allowing fashion designers to leveraging lower labor costs and raw material resources during sampling and production. These cost-saving benefits have impacted the overall perception of quality, as designers frustratingly come to realize the poor levels of pattern cutting knowledge within the region. The current challenges portray the existence of a regional gap in manpower for well-trained pattern cutters to support the designers wishing to produce their collections in Southeast Asia. Pattern cutting is traditionally seen as a secondary by-product of the fashion design discipline, rather than its own professional career pathway. Against the Asian context, pattern cutting is considered to be a vocational operation that requires very little formal education. However, the introduction of Creative Pattern Cutting as a specialism within tertiary design education is beginning to challenge existing misconceptions and reshape the role of pattern cutting as an extension of fashion design. This paper aims to review the current value of highly-skilled pattern cutters in Southeast Asia through discussions of

educational support and potential production capabilities within the region.

Greg Climer, Parsons: The New School for Design

Parsons New Curriculum

In 2013 Parsons launched a new curriculum, which has cross-disciplinary work, creative making and reflective practice underpinned by research at the core. The curriculum is a restructuring of the traditional Bauhaus design education. Traditional Bauhaus design education involves one foundation year followed by three years in a selected discipline. Parsons has shifted to a four-year structure that updates the Bauhaus model for the new challenges modern designers face. In My roles as a departmental coordinator, associate director of first year education and as a teacher I observe a shift in the way fashion students approach design challenges. This paper will compare these observations to a broader study of the Students in the “new curriculum.” This case study focuses on the how the changes in curriculum have impacted on the student experience, particularly how students approach pattern cutting and design as a symbiotic relationship. The case study uses interviews with students and faculty and a study of the internal annual curriculum assessment.

Tanya Dove, Hong Kong Polytechnic

Stretch to Fit – Made to Fit: A comparison of stretch jersey and woven apparel garment block creation, with an innovative technical experiment to increase the bust girth, by adding bust cup grading into the front body pattern

It is widely recognized that elastic fibres (spandex and lycra) are used to impart stretch to fabrics. The amount the apparel *stretches to fit* depends on the elastic fibbers characteristics and recovery properties, in providing pressure comfort and ease of movement. *Made to fit*, by comparison, is the construction of 2-dimensional non-stretch pattern blocks using body darts to denote the 3D form. Building patternmaking theory can lead to a better understanding of the body to garment interaction, and the fit of apparel.

This investigation commences with the identification of garment block construction methods for woven and jersey apparel, and corresponding

garment fit expectations, comparing two published patternmaking methods. It proposes a system of adding bust cup grading into non-stretch garment blocks. The experimental results indicate that the proposed method would be easy to implement and could generate patterns with an improved bust girth fit. The purpose of this paper is to show that a new grading system would better serve the female population than the system currently in use. This system would also be more efficient as it would reduce the consumer time spent in fit identification as labelling would also indicate bust cup sizing.

John Earnshaw, Manchester Metropolitan University
Georgina Housley, Manchester Metropolitan University
Edmund Keefe, Manchester Metropolitan University
Jayne Mechan, Manchester Metropolitan University

Defining a Theoretical Model - The Application of 3d Printing as a Disruptive Technology, Explored Through an Analysis of the Process of Creative Garment Development

With fashion brands such as Pringle and designer Iris Van Herpen utilizing the technology to create innovative garments, 3D printing in fashion is playing a pivotal role in the reinvention of both material and structural processes (Braddock Clarke & Harris, 2012). Whilst the technology itself is not new, its use within commercial fashion is more recent where, typically the approach to design is through collaborative partnerships, reaching across other non-fashion disciplines. This project was initiated through the research and development of learning materials for undergraduate Fashion Design and Technology students new to this process. The model aims to facilitate their understanding of how the technology can be applied within, across and outside of the boundaries of creative pattern cutting, including experimentation using 3D software. The factors affecting implementation of conceptual knowledge is discussed and applied to the model. The role of 3D printing integrated within creative pattern cutting, design, product development, textile design and product modelling/engineering is explored. The outcome of the research is the proposal of a theoretical model to inform teaching and learning.

April Elisha Stanley, Iowa State University
Ellen McKinney, Iowa State University

Brianna Plummer, Iowa State University
Whitney Rorah, Iowa State University
Katherine Thompson, Iowa State University

Tacit Magic: Understanding the Principles Behind Nakamichi's Creative Pattern Cutting

Tomoko Nakamichi is globally renowned for her creative pattern cutting techniques presented in the Pattern Magic books (2010, 2011, & 2012). The goal of this research inquiry was to uncover tacit knowledge in Nakamichi's techniques. Understanding the tacit principles behind her patterns may inspire pattern cutters to create innovative techniques and designs. Researchers conducted a structured inquiry into 50 different patterns in the Pattern Magic books to create a framework of principles. Each pattern was drafted, the principles contained therein analyzed and then applied in a new garment location to test the principles' universality. Our inquiry began with traditional block-based pattern cutting principles of Joseph-Armstrong (2010): Dart Manipulation, Added Fullness, and Contouring. In addition to creative uses of these, we found principles which we termed: Adding 3D Geometric Shapes, Creating Shape through Extensions, Extending 2D Shapes from Seams, Geometric shapes become 3D with the Body Inserted, and Versatility by Design.

Elena Etheridge, Manchester Metropolitan University

Pattern Making for New Fabric Joining Technologies

Traditional garments such as the Japanese kimono are simple in construction and use few, geometric pattern pieces. Fit is achieved through wrapping, draping and tying the garment on the body. Expanding on these principles and through exploration of this approach, design ideas can be generated three-dimensionally. Alternative fabric joining methods such as bonding and welding have developed over several decades and more recently have mainly been used in sports clothing, performance wear and lingerie. These technologies have unexploited potential in fashion garments and can benefit the manufacturing process by reducing machine operations and seam components. This paper documents a design practice-based research project. Approaches to creative pattern making are explored, developed and adapted to consider new fabric joining technologies in contemporary fashion. This methodology incorporates issues of sustainability into the design and manufacturing processes and the use of innovative pattern cutting approaches create new design possibilities.

Phionna Fitzgerald, Bradford College

Cuts and Construction: Challenging Perceptions of 19th Century Women's Costume

This research investigates the progress of the making of 19th century women's costume through the cut and construction of garments held within an archive. There is a lot of research on the history of women's fashions in this period although this is mostly based around visual references or design features and there is little focus on manufacturing. The few studies that discuss the history of construction and pattern-cutting methods are inclined to focus on 20th century techniques. The aim of this investigation was to explore and question the progression of construction methods and processes in women's clothing throughout the 19th Century. The methods used for this research started with the documentation of over 30 pieces of costume held within Bankfield Museum's collections, followed with experimentation of construction techniques and reconstruction of four pieces. This was further corroborated through interviews with costume/textile curators and reviewing existing literature. The investigations found a significant amount of progression within all aspects of manufacturing although these changes were mainly within the latter part of the century.

Simeon Gill, The University of Manchester

Ellen McKinney, Iowa State University

Proportional Myths and Individual Truths in Pattern Construction Methods

Proportional rules in pattern construction are not well documented, though they directly influence the resulting pattern shape. Historically, many measurements were difficult to determine using existing equipment. Therefore, based on experience, individual practitioners created and adopted proportional rules. In some cases these were guided by eight head theory, which influences considerations of the human form in western culture. Developing tools, like body scanning, provide opportunities to capture new data from populations and to create pattern construction methods with less reliance on proportional rules. This research explores proportional rules within existing pattern construction methods and contrasts these with dimensions established from

populations using body-scanning methods. Proposals are made for incorporating individual measurements defined through scanning to replace proportional rules within current methods of pattern construction. These methods build toward the creation of more individual blocks in the true realisation of made to measure garments recognising individual form, proportions and dimensions.

Emma Grain, University of Huddersfield

3d Printing: Virtual Draping the New Mouflage

This practice-based enquiry aims to examine design and manufacturing possibilities using 3D CAD and 3D printing and to systematically test a range of materials in order to establish those appropriate for 3D printing fashion. The feasibility of draping and sculpting materials virtually onto the body using Rhino (3D CAD software) will be explored. Unlike former virtual 3D modeling where a pattern could be made from the draped fabric on an avatar, this enquiry will explore whether printing the material directly from the software can eliminate the need for traditional pattern cutting in this process. Since 2012 3D printing has emerged as a new method of manufacture for clothing. This is mainly evident in experimental sculptural forms for women. Working in collaboration with 3D Systems (the founding company of 3D printing), will ensure precise and well-informed results and these will be fed back through this investigation.

Lee Harding, Birmingham City University

Abstract Approaches to Creative Cutting

“I think perfection is ugly. Somewhere in the things humans make, I want to see scars, failure, disorder, distortion.” – Yohji Yamamoto

This project evaluates the effectiveness of new creative cutting methods used with second year undergraduate students. Historically learners are increasingly found to be lacking in confidence with regards to three-dimensional exploration and technical realization that enables them to forge an individual design aesthetic. The study embarks on reviewing a series of workshop that focus on garment distortion, exploding and projection techniques. The practical workshops encourage learners to forge a new perspective to three-dimensional thinking and understanding, not traditionally found through conventional flat pattern

cutting methods. The research will reflect upon case studies and practical sessions that build the confidence of the learner by offering different and dynamic new approaches and to foster a new relationship with 3D design. The key focus of the workshops is the breaking down of pre-established concepts and boundaries surrounding dress, thus challenging students to form a new aesthetic. Through the project I hope to ascertain if the sessions have a lasting impact of the learning experience of the undergraduate design student.

Laura Hardingham, Robert Gordon University, Gray's School of Art

How Can a Box Become A Garment

This paper analyses fashion students pedagogical understanding of three dimensional pattern making and garment construction through the project How Can a Box Become a Garment, a project implemented as an alternative novel approach for students new to pattern construction in how to transform 2D material into a 3D garment creating unconventional shape and form. Using flattened boxes, as a substitute for pattern pieces and working in pair's students were briefed how there was no right or wrong response, but rather to focus on creating interesting 3D form. Working with a minimum of two boxes cut out in calico students were encouraged to progress organically alternating between stitching random edges together and analyzing the resulting shape on a mannequin until they felt their garment was complete. The research gathered for this paper highlights how alternative teaching approaches to creative pattern cutting can be complimentary to traditional pattern construction skills, in particular to students who find this area challenging.

Hilary Hollingworth, University of Huddersfield

Myths, Mysteries and Legends that Surround the Development of Pattern Cutting

This paper explores how techniques of measurement have developed influencing approaches to pattern making through history. The research also considers how the available technologies, attitudes, cultural differences and beliefs at various points in time have contributed to the way the discipline developed. The origins of western style pattern cutting are by trial and error with individual systems being established though

always not recorded. Tracking the development of measurement is a little different as it is important some that a means of recording the individual lengths is established. The relationship between measuring the body and making patterns for garments that work with the body is one that is flexible. Examining publications on the topic of pattern cutting published over the years it appears that many books on the subject are concerned with providing instruction with minimal theoretical underpinning in a way that suggests there is only one correct method - therefore creating a myth.

Kiwy Huang, London College of Fashion

Computational Fashion - The Digital Approach to Pattern Making

Despite advancing software technology, this has not significantly improved the efficiency of pattern making, whereas fabric draping simulation, catwalk presentation simulation software has been a primary focus of various software firms. This research project aims to implement an innovative digital approach to the pattern making process in fashion design. Main approach is to visualize the designed garment (combinations of front, side and back technical drawings) in a three dimensional environment then unwrap the three dimensional model to flat two dimensional pattern blocks. By utilizing software technology and implementing mathematical algorithm, this project is aiming to improve production efficiency and economic compatibility for fashion designers. This project also discusses the importance of pattern making knowledge and expertise to the fashion industry. It does not encourage the pattern making process to be entirely replaced and conducted by software.

Karen Jessen, ESMOD

Lucia Mors de Castro, ESMOD

Teaching of Creative Pattern Making in Today`s Higher Education

This project aims to reflect on the teachings of today`s educators in the field of creative pattern making in higher education. The research is focused primarily on the educational aspect of pattern cutting, the teaching staff, the different teaching methods used and their effectiveness. Through observation and participation, we aim to investigate and compare the different teaching methods and their effectiveness - this paper explores with specific examples how

appropriate each method is in securing the desired learning outcomes. By interviewing and analyzing the educators didactic approaches, on how to teach their knowledge of the principles of pattern cutting and the further developing into an embodied design method, we aim to capture the orientations of the educators in the following fields:

1. How relevant is creative pattern cutting? In designing? In the future, in the fashion industry?
2. How to raise and maintain the motivation of the Student, of themselves?
3. Which tools and media do they use in their classes?
4. How important is the presence of a teacher? E-learning?
5. How much self-reflection is practiced?
6. How are decisions about methods taken and did they change over the last years?

The documentation of visually interesting, effective exercises and experiments will form the practical part and result in a publication, which will be a unique reference book.

Anna Kuznia, Heriot Watt University

Alana M James, Heriot Watt University

Bruce Munro Roberts, Heriot Watt University

Transforming the Sequential Process of Fashion Production: Where Zero- Waste Pattern Cutting Takes the Lead in Creative Design

This paper pushes the boundaries of what is commonly perceived regarding the traditional fashion production process. When producing garments utilizing zero-waste pattern cutting methods, it can be seen that the design and make process has to be transformed in order to create garment designs, both desirable and achievable. Through a series of experimentation, data has demonstrated that it is the pattern cutting process that ultimately dictates the garment aesthetic. Moving interchangeably between the stages of the process results in flexibility between pattern creation and design. When applied, this transformation will encourage closer collaboration and parity between the roles of the designer and the pattern cutter. Zero waste pattern cutting, often closely associated with sustainability, has the potential to spark creative collaboration in the design team, resulting in a commercially viable production model for the fashion industry.

Jonas Larsson, The Swedish School of Textiles

Rickard Lindqvist, The Swedish School of Textiles

From Roll to Bag

From Roll to Bag Horizon 2020 project aims to accelerate and support the growth of European creative fashion industries. A continuous 'from-roll-to-bag' demonstration production line that combines existing digital printing technology, consumer driven digital ordering system, mass-customization and laser-cutting with the recently developed Kinetic Garment Construction method will be demonstrated during 2016. This merge of basic research in garment construction with digital print technologies explores and exemplifies design possibilities for an alternative production process through a number of garment prototypes. The development of such a design concept, with garments patterns in one single piece combined with for example markings being embedded in the print design, opens up for more efficient manufacturing, lower fabric consumption, enhanced functional possibilities and unseen expressional values.

Rickard Lindqvist, The Swedish School of Textiles

On the Relationship Between the Shear Forces in Human Skin and the Grain Direction of Woven Fabric

The prevalent utilization of the grain line vertically in pattern cutting is arguably connected to the tailoring matrix, the theoretical approximation of the body that is derived from horizontal and vertical measurements of the body in an upright position. As woven fabric generally is anisotropic i.e. rigid on the straight grain and flexible on the bias this utilization lack of dynamic qualities in interaction with the moving body. Langer's lines utilized in surgery denote the skins anisotropic qualities and is thus also a notation of the movements of the body. Through concrete experiments by cutting and draping fabrics on live models guided by Langer's lines this research explores and defines possible congruence's between the shear forces of human skin and the anisotropic qualities of woven fabric. Suggesting, through a number of garment prototypes, how the utilization of fabric grain may shift across the body.

Ellen Mc Kinney, Iowa State University
Whitney Rorah, Iowa State University

Katie Thompson, Iowa State University

Integrating Textile Design & Surface Design into the Pattern Cutting Process Incorporating the Use of Multiple Technologies

Page (2013) found that technology enhances creative pattern cutting. This study explored the capabilities of two relatively new technologies to the fashion industry to enhance creative pattern cutting: a Mimaki-tx2 1600 digital textile printer and a Trotec Speedy 400 laser cutter. To create four garments, original pattern designs drafted in Opti-tex CAD pattern software were exported into Adobe Photoshop where textile prints and engraving designs were engineered onto them. Pattern pieces were printed directly on fabric using a textile printer. That textile was transferred to a laser cutter where the engraved surface was etched and then pattern pieces cut prior to sewing. Advantages realized by incorporating these technologies included: (a) creation of print and surface designs to specifically enhance the garment patterns, (b) high accuracy and decreased time in textile cutting, and (c) decreased used of paper. Integrating multiple technologies opened the doors to endless opportunities for creative pattern cutting.

Holly McQuillan, Massey University College of Creative Arts

Print as Encoded Way Finding a System for the Creation of Garment Form

This paper discusses MakeUse, a multi-disciplinary research project exploring 'User Modifiable Zero Waste Fashion'. In particular, it addresses the use of colour, line and pattern to facilitate the cognitive and creative processes involved in the transformation from two-dimensional to three-dimensional form. The MakeUse project centres around the development and testing of an embedded navigational system by which users can formulate a functional understanding of the form and construction of a garment and its opportunities for manipulation. It questions how the encoding of navigational clues and markers into a garment might aid in its facility for creation and modification by the user, thereby enhancing emotional investment and connection, and extending its functional life. This paper specifically explores the interplay between textile mark making and garment form creation. It outlines the advantages this symbiotic relationship can have for the facilitation of understanding and risk taking in the context of collaborative textile and zero waste fashion design.

Nuno Pinto Nogueira, FA.UL

Ines Simoes, FA.UL

The Influence of Seams on Body Posture

In *The Tailor's Philosophical Transfer*, Thomas Oliver (1849) stated that a tailor's primary job is to improve, when necessary, the appearance of the body by "filling up deficiencies, hiding monstrosities, and giving [it] a contour of elegance." Based on this precept and knowing that the body, dressed or undressed, is a system that always seeks its own balance, eight shirt patterns were created with torsions and angles of seams different from the usual ones, as a method to investigate their influence on the posture of the body. Two participants wore a control shirt plus the distorted ones for a few hours to analyse their postural adjustment with the garments. Research tools like visual somatometry and interviews were used to obtain quantitative and qualitative data before and after wear. After the results were outlined, experts in the area of physiotherapy were invited to contribute for the validation of this research project.

Linda Ohrn-McDaniel, Kent State University

Exploring the Knit Stitch as a Means for Shaping Pre-made Textiles

The history of the knit stitch is believed to date back to around 200A.D. Initially the technique evolved in direct relation to the development of the sock, an article of clothing known for few seams and close fit. Today the knit stitch serves a multitude of purposes, both as an inspiring form and as a technique and material with many advantages such as comfort, flexibility and minimized waste, the list goes on. This paper explores a group of designs created practice based study utilizing an untraditional and sustainable approach to the knit stitch starting from pre-made textiles, both knits and wovens. Some of the textiles are up cycled and some are cut with a zero-waste pattern approach. Through the design examples, which were created as a basis for the study, the focus was on the shape of the basic stitch as a prominent feature and starting point in the design.

The goal was to explore how a technical component such as the stitch can be utilized both for its aesthetic value and the ability to be part of the shaping of the garment.

Brianna Plummer, Framingham State University

Scaffolding Creative Pattern Cutting throughout the Traditional Patternmaking Curriculum

Building on previous research focusing on the pedagogical presentation of creative alternatives to traditional patternmaking within an undergraduate fashion design program, this paper explores the potential benefits of introducing creative pattern cutting techniques earlier in the university curriculum. Today's students may not be familiar with customary paper patterns. How much traditional patternmaking knowledge is needed to provide the foundational skills required for successful creative pattern cutting? Is it possible for the patternmaking novice to be more conceptually creative in zero-waste designs, reverse engineering, up-cycling, and Japanese-style pattern cutting even though their abilities to execute the design may not be advanced? Through a new special topics course comprised of students with various design, construction, and patternmaking skills this research investigates the creative decisions and innovative applications to propose a scaffolding framework of when to introduce and experience creative pattern cutting throughout the curriculum to enhance creativity in all aspects of design.

Alison Rastetter Rasch, Independent Researcher

Measuring Access

A proposal for the development of an inclusive digital network of sizing information based on the principles of bespoke tailoring, specifically in regards to the use of unique personal measurements and pattern blocks. 'Inclusive' indicates that this resource is meant to work with any type of body shape, including those that are outside conventional sizing standards for any reason. As an online database resource, this system confidentially stores and organizes measurement data used to generate personalized size profiles. Data can also be used to create personalized pattern blocks and custom designs for made-to-measure garments via the online system. By beginning with the specific needs of the end user, this clothing resource aims to offer more than what is currently available online. Access to custom clothing designs would be further improved with opportunities provided by developments in technology such as

CAD/CAM pattern software, 3D body scanners, 3D printing, laser sintering, etc.

Rebecca Ryder- Caddy, Coventry School of Art and Design
Anastasia Vouyouka, FTI, Telestia School of Clothing Design and Technology

Toy Box or Tool Box; Is Fashion Education merely an Expensive Hobby?

The chasm between Fashion education, and the Fashion industry is expanding: recent articles indicate that current qualifications aren't preparing graduates for the real requirements of the Fashion industry. Historically, education and industry were both bound as one area, focused on strong pattern cutting and technical skills to drive design and progress forward. In recent years, changes in education, the high street and the fashion world have encouraged students and graduates to specialize in aesthetic areas and in many cases to abandon more technically challenging content. This study is part empirical, part explorative and considers previous enquiries in the context of how Fashion Education could better serve the needs of the industry and the student. Students, educationalists, retailers, pattern makers, designers and consumers will all be considered as we seek to open up the size and depth of the problem; is Fashion Education offering merely a proverbial toy box to students, or can graduates still leave education with a brimming toolbox ready to work?

Kirsten Schaefer, Ryerson University

Holistic Zero- Waste Model: Beyond Pattern Cutting

Sustainability in apparel design is not simply a matter of material substitution after a functional prototype is achieved; it must be incorporated from the very conceptualization of a product. Zero Waste Pattern Cutting (ZWPC) is a pattern development method that offers designers ways of addressing the challenge of eliminating waste at the source. To be successful at this method, apparel designers must develop products that utilize every ounce of the selected materials. This would ensure that the average 15% fabric waste in traditional pattern cutting is mitigated. However, scant resources exist to guide practitioners on how to implement the ZWPC approach into their apparel design explorations.

Thus, the challenge can be daunting, and may result in design compromises that do not fully benefit from a zero waste strategy. This paper provides a detailed, auto ethnographic account of my implementation of ZWPC integrated into the development of a zero waste, modular wedding gown. It is the goal of this paper to expand on the empirical and theoretical body of knowledge about the use of ZWPC so that it may become more accessible to other apparel design professionals and applied more often.

Dr. Karen Shah, University of Huddersfield

From Skip to Catwalk: An Investigation into Viable Pattern Cutting Techniques for Recycled Clothing

The utilization of discarded and so-called 'waste' textiles in the construction of garments is nothing new. Typically it has done, amongst other reasons, out of necessity, preference and a sense of caring for the environment. Methods for extracting these textiles and transforming them into new garments in the name of reconstruction, recycling, up-cycling etc. vary but at their core is often a deviation from traditional block pattern cutting to something that resembles a bricolage of techniques ranging from moulage, fabric manipulation and a repositioning of the garments around the body often using key design details of the original garments. This paper, drawing on some 20 years of recycling clothes, proposes a number of reconstruction techniques of both clothing and textiles that have the potential to be up-scaled for relevance to mass production techniques.

It is hoped that this investigation will generate debate into both the aesthetic of recycled clothes and also the potential for techniques of reconstruction to become more mainstream and accessible to a wider demographic.

Donna Sgro, University of Technology

Making Trans'form'ative Cuts Fashioning Dynamic Form: Experimental Making to Evolve Design Practice

This paper introduces a fashion design approach initiated in the author's current practice-led doctoral research. The research explores the concept of metamorphosis to transform the design process. This has involved exploring the idea of dynamic form as a method of fashioning garments. This approach questions the separation of form and material encountered when design, pattern cutting and making are considered independently. Exploring dynamic form is a risky activity that implicates taking time, slowing processes of making by integrating critical thinking and reflection; slowed fashion. It involves exploring opportunities for change by responding to material and visual properties, with a mix of intention and curiosity, the outcomes of which are improvisational. What these explorations might lead to one cannot exactly predict, however, this type of experimentation as a process can benefit from documentation and dissemination, to understand the ways in which research led by making for fashion design is possible.

Jeanne Tan, Hong Kong Polytechnic University

Photonic Patterns: Fashion Cutting With Illuminating Polymeric Optical Fibre (POF) Textiles

Creative pattern cutting with conventional textiles can often achieve a diverse variety of effects ranging from the sculptural to minimalist simplicity. Conventional textiles have few limitations and can be manipulated to adhere to the creative demands of the designer. Current research of POF textiles have resulted in the creation of a hi-tech textile, which is pliable, and possess high tactile quality. However, the fundamental nature of the fibres is brittle thus susceptible to breaking when abruptly bent. In addition, the textile is dependent of the continuous structure of the POF to transmit light.

Using the researcher's practice as the main case study, this paper will explore the challenges of designing and pattern cutting POF textiles to create dynamic fashions, which are adaptive and serve as a sustainable and alternative platform for communication.

Adrian Thornton, Leeds College of Art

Pattern Drafting for Diverse Body Types

'We ask educationalists why training on an immovable bust stand who can't speak and give them guidance and feedback on what the design actually feels like, transferring the design to a model who is paid not to speak and stand to attention rather than sit and lounge, is considered to be a rounded training when there is no 'body,' involved in the process. How can students of fashion learn empathy as they are not given the opportunity to engage with the human process and consequences of their design?' (1) This paper looks to debate how within fashion education we can address body size diversity awareness through the delivery of innovative pattern drafting courses. Through case studies of teaching pattern drafting to a diverse range of learners, developing their knowledge and practical experience through drafting for the real body, the work addresses future pathways for UK manufacturing.

(1) Caryn Franklin from All Walks Beyond the Catwalk in conversation 21.1.2014.

Plenary

Dr Jess Power and Dr. Kevin Almond

The conference opened with an insightful and inspirational key-note from Dr. Timo Rissanen “Slow down – we are creative”. In this presentation the importance of tacit knowledge within creative disciplines was emphasised.

Slow the pace and value the workmanship involved in crafting the 3D garment form.

Dr. Rissanen re-defined copying, as a means of learning, providing inspiration, rather than reproduction. After all what is innovation? Electric powered vehicles are perceived as new and novel – but the humble milk float has been around for decades. Innovation is quite often taking what currently exists and transforming it through a new application. Re-inventing the old with a contemporary twist – a concept that we embrace wholeheartedly in the fashion industry.

Dr. Rissanen challenged the misconceived perception that technology is not creative and recognised that there is a movement away from fast fashion, which allows time, but more importantly space to explore and experiment leading to new insights, perspectives and approaches. Again this was re-enforced through the pre-dinner conversation with Shelly Fox and Juliana Sissons. Discussing the successful relationship between the designer and pattern cutter. Another theme carried through the conference as we are moving to design teams with shared ownership for design, development and make. Dr. Rissanen emphasised the role fashion plays in society as a whole – Interdisciplinarity is becoming more important and it is paramount that we prepare our learners for this step change. Design Council, Royal Academy of Engineering, Institute of Management and Research Council UK are all talking about this. Again a theme carried through the conference streams through, fashion and wellbeing, apparel for disaster resilience and health applications (to name a few).

The 2016 creative cut conference provided a mirage of ideas and novel concepts in creative pattern cutting, which upstaged the previous gathering both in terms of theoretical rigour and innovative practice. The conference highlighted some re-occurring themes such as the use of unconventional methods to create 3D forms. This was supported from both a pedagogical perspective and by theorising practice based approaches. A few highlights include the analysis of how a box can become a garment. The presentation identified the frustration of design

students when learning technical patternmaking skills and expressed the view that new styles of learning are required to ensure talented creative students reach their potential using an array of pattern construction techniques including those that are deemed to be non-traditional and unorthodox. Many authors called for an exposure to a variety of creative pattern techniques as standard in fashion design education; since learner will find a method, technique that resonates and underpins later theoretical development.

Such approaches in creative pattern cutting have been presented in the last two days. What about the “kinetic garment construction theory” which challenged the conventional tailoring mix. This newly developed theory studied the intersection between fabric and the human form, using the grain of the fabric ingeniously to take creative pattern cutting to the next level. Other work has been presented that highlights the pressing issue of inconsistencies in the sizing of fashion and apparel and identifies this as one of the most influencing factors in clothing dissatisfaction, often leading to high levels of garment returns. The over-reliance on material properties to solve fit issues has been criticised: since fit issues could be solved using creative pattern techniques. We have also explored the recent growth in zero-waste construction. Case studies have been presented to ascertain if the zero-waste approach is transferable to commercial production in different sectors. It is of no surprise that in this presentation the relationship between the designer and pattern cutter was discussed in some detail regarding creative ownership and equity. Within the conference it has been quite rightly recognised the creative contribution of both, and many have suggested that new methods of creative pattern cutting are required which require a creative partnership with new epistemologies.

We have explored traditional construction techniques used by Japanese designers including, deconstruction and origami (to name a few). This has resulted in a new understanding and theoretical perspective in creative design and an appreciation of different cultural approaches. Argument have been presented that creative pattern cutting should be a specialism and not part of a broader fashion design curriculum, a view gaining esteem with some universities now offering this as an academic discipline. It has been recognised that a seamless integration is needed between the designer and pattern cutter to reach new heights in apparel, fashion and clothing construction. One of the prevailing themes in this year’s conference was the value of “learning by doing” (active learning) and the art of reflection. Bringing us back to the value of tacit knowledge and its importance within our discipline.

This was embedded into all the tracks through professional practice,

pedagogical developments and engaging research. The networks developed through the conference underpin some of the strengths of peer learning and moving forward the benefits of interdisciplinarity as a means of creative development will be an emerging theme, leading to the introduction of new skills, epistemologies, and creative impact leading to a new era in fashion design.

So we leave you with a synthesis of the 2016 creative cut conference:

We require:

- Time to create
- Space to network and collaborate
- Vision to inspire learners to explore

The challenge is to think differently - what is innovation in creative pattern cutting? The conference has opened much debate and we hope that this provided the foundation for further research and collaboration in our discipline and beyond. We certainly enjoyed this year's conference and look forward to reading in more detail some of the conference presentations that are to be published in a special edition of the International Journal of Fashion Design, Technology and Education in July 2016.

Acknowledgements

Conference Chairs

Dr. Tracy Cassidy
Charlotte Goldthorpe
Hilary Hollingworth
Dr. Natalie McCreesh
Dr. Jess Power
Dr. Karen Shah
Stephen Wigley

Conference Organization and Coordination

Rachel Mountford
Sharon Baines

Organization Team

Sophie Phillips

Technical Team

Stephen Calcutt
Edward Dawson-Jones

Marketing Team

Rachel Mountford
Hannah Stephens

Website and Design Team

Abby Butcher
Tommy Britton