Towards the conservation of artisan pleating in Australia: recapturing the art of folding in partnership with Global Pleating and Specialty Pleaters

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George Alexander believed in the notion of 'planting seeds and hoping they grow into pretty big trees'. The programs supported by the Foundation endeavour to support this ideal and as GAF Fellowship recipients go on to contribute to the community, George's legacy and spirit lives on through their achievements.

Fellow's Acknowledgements

Specialty Pleaters has been operating for 98 years on the unceded territory of the Bunurong People of the East Kulin nation. The Fellow would like to acknowledge the Bunurong as the Traditional Owners of these lands and waterways, and pay respects to their elders past, present and future. The Fellow offers thanks to their creator spirits, Bunjil and Waa, and to the Yalukit-willam and Wurundjeri-willam clans who have continued the care and custodianship of the land. She would also like to state her recognition and gratitude for the clan's welcome, generosity and assistance given to the early settlers upon their arrival, and remorse for the damaging colonial interventions that followed. Through this fellowship, she hopes to apply the wisdom from our first nation's peoples, reflecting the power and importance of the continuity of cultural knowledge transmission.

Simon Zdraveski of Specialty Pleaters has been operating as a self taught volunteer for close to a decade. Without his resilience, ingenuity and generosity, artisan pleating in Australia would have made an eventual and irreversible departure from the fashion landscape.

Avril would like to extend thanks to Mohammed Mohammed of Global Pleating, for his efforts and travels abroad to reclaim an ancient practice, and to his sons for stoking its potential with continuing determination and agility.

The two companies and their workshop members have dedicated countless and sometimes thankless hours to the craft and its revival, with their willingness to share and collaborate expecting little in return being the centre of its success so far.

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02
Executive summary

The term artisan pleating often evokes images of Fortuny's finely pleated silk dresses, draped and rippling over statuesque bodies or otherwise elegantly coiled and poised in their boxes. Or maybe a pleated kilt moves closer in memory, before the swirling sunray skirts pleated in the House of Dior, or the optical illusions of breathing, shifting garments from Miyake's Pleats Please. For thousands of years, this undulating movement has created a topology in motion, mapping body with fabric. Its ability to express and interpret movement is stored latent in the folds of stacked and overlapping fabric, and by this very nature of surplus, pleating is often reserved for costume, dress, occasions, rituals, and individuals of significance. Before the advent of mechanised pleating, this form of fabric manipulation was carried out often by methods scarcely known or documented, being passed directly from hand to hand through generations. After the adaptation of autoclaves for the use of pleating, these patterns and techniques were sculpted into large sheets of kraft paper, where imprinted templates of both flat and raised zigzagging pleats provided a kind of cast for the fabric to be set. Since the early 1900's, pleating and heat setting fabrics in predesigned cardboard moulds have featured in many textile mills and dedicated companies throughout Australia. However, the last fifty years has seen a gradual decline in demand for pleating from domestic fashion and textile markets, to the point that only three workshops remain in operation, none of which has the ability to replace the moulds they rely on. As there are no longer any teachers or makers of pleating moulds in Australia, the fellowship exchange came about through a partnership between the Melbourne workshop Specialty Pleaters, and the Global Pleating studio in Alexandria, Egypt.

The exchange was carried out over a year between October 2022 and October 2023, with the Fellow undertaking an informal internship of integrated on the job training with all members in the studio. This was in hope of learning how to replicate the intricate patterned moulds, found both in the archives of Specialty Pleaters and the active catalogue of Global Pleating. After multiple failed attempts and little success finding suitable guidance or tuition online, in books or through self directed learning, it became clear that in person training was necessary. The Fellow had previously completed a Diploma of Fashion Design and Technology, and was halfway through completing a Bachelor of Textile Design and Technology at RMIT before the COVID pandemic brought all studies to a halt. During this time, she did some casual placement and work with Specialty Pleaters, who had ongoing communication with Global Pleating. Instead of completing the degree, the Fellow decided to apply for the George Alexander Foundation scholarship, after the studio had very generously offered to host her with the intention of providing assistance to the Melbourne workshop.

The Fellow is neither a trained, qualified practitioner, established artist, educator or academic. Beginning with an underdeveloped skill set and having limited academic training created inefficiencies throughout the process of documentation and research, however, after the completion of the fellowship, new directions of inquiry have been established alongside a reliable foundation of technical skills. Having spent

a year learning by hand and eye without any dense theoretical background texts, the Fellow has opted to write the report in response to the set of research questions below, rather than trying to extract folding instructions from muscle memory. This would be akin to giving someone their first piano lesson via letter, with no piano to play, and with little experience as a music teacher. So:

- What does pleating offer as a design tool and form of expression?
- Can it be deemed relevant and worthy of investment if it is not a financially self-sustaining practice?
- What has prevented pleating from being practised and documented as extensively as other textile arts, and what measures can be taken to amend this in the future?

The report will attempt to answer these questions by lightly exploring the historical and theoretical backgrounds of pleating, followed by an analysis of major developments in textile manufacturing and education specific to Australia. Making an in depth case study of the Specialty Pleaters studio will provide a point of reference to understand its unique challenges and their possible solutions, as compared to a thriving, well connected studio like Global Pleating. The technical descriptions of the skills development within the studio will be accompanied by photo sequences to better demonstrate the process and practice in motion.

Pleating has the ability to express great complexity in terms of harnessing and manipulating inherent material qualities to construct and reflect cultural identities. The simple and repetitive motion can be arranged in endless variations and combinations, serving as a practical tool for designers of many specialisations to experiment with aesthetic, tactility, material quality, and object behaviour. Craft is often rooted in tradition and custom, connecting many generations through the actions of making, introspection, and intuitive exploration. With the right support, these actions, reflections and explorations can be carried into the future by adapting the existing technical skills, mediums and tools to suit more modern and pervasive technologies.

For this to happen, more intensive training programs should be developed and delivered through tailored internships, to equip new designers with the skills of pattern folding at the scale of the pleating moulds. The Fellow will work towards the adaptation of the techniques learnt throughout the placement to suit training programs for this purpose. The Fellow also recommends that fabric pleating with the use of existing cardboard moulds is made more readily available to students through studio spaces and equipment established in design institutes. This would be complemented well by support from outside organisations who assist in the preservation of any objects and documented references accounting the history and evolution of pleating practices throughout Australia.

03
Fellowship Background

Aims:

This report aims to gather enough of the existing knowledge surrounding fabric pleating through the application of combined research methodologies, in order to draw out its core concepts, functions, processes and historical developments. From these findings, the Fellow intends to articulate new directions of research, refine potential teaching methods with supporting material, and develop an actionable practice of the skill sets which can then be transferred more easily through networks of practitioners, teachers, organisations and educational institutions, reaching through and past fashion and textiles towards other fields of design. The necessity of simultaneously consolidating traditional techniques while pushing out past their known boundaries has been provoked by external shifts in local manufacturing decline, an absence of formalised, structured and financially supported training pathways, paired with sociocultural movements towards sustainability and cross disciplinary design. The latter is an exciting evolutionary step drawing together creative industries with STEM disciplines, encouraging feedback loops between divergent methodological approaches with the intention of reshaping design thinking to keep pace with the ever accelerating development of digital design spaces and their corresponding fabrication methods. However, it's important to remain grounded in the actualities and limitations within the industry in its current state. A thorough understanding of the decline of artisan pleating within different historical and contemporary contexts creates an opportunity to define the most challenging barriers and knowledge gaps dislocating it from the domestic fashion industry. This understanding will assist in allowing for the progression of more focused, intentional pathways towards the conservation and expansion of pleating practices.

Inquiry: materialising pleats and beyond

A pleat in its most simple definition is a fold. Pleating relative to a textile is the process of shaping a flat material plane into a series of folds, which then occupies a three dimensional space. For thousands of years, this form of fabric manipulation has been desirable in costume and dress across different cultures. But unlike long standing textile construction methods such as spinning, twining, knotting, and weaving, or more recently the invention of knitting and crochet, generational knowledge of many pleating techniques have come to pass with the rise and fall of civilisations, and on occasions due to the secretive nature of its artisans. Pleating is unlike the aforementioned processes in that it does not construct a new textile, nor is it an embellishment applied to the surface of textile, such as printing, embroidery, stitching, appliqué, beading and in some cases dyeing. Rather, creasing and folding fabrics through processes like pinning, stitching, gathering, weaving, knitting, heat setting, or wet setting, give the textile new kinds of responsive behavioural traits which aren't necessarily related to the fibre qualities, yarn construction or textile structure. However, it

can be categorised within the broader term of textile manipulation, and viewed in terms of its ability to transform surface textures.

Despite its simplicity, or perhaps because of its simplicity, the undulating movement of a pleat has prompted philosophical explorations of metaphysics, which can be described both in material and conceptual terms by the mathematical branches of geometry. Drawn from the works of philosophers like Deleuze, Foucault, Leibniz, and Decartes, a fold is described as the interiorisation of the outside. The inherent nature of folding to simultaneously manipulate opposites - to turn the inside out and the outside in, to hide and reveal sections of surface through contraction and expansion - has proved a useful metaphor for understanding the function of narrative in historiography. In an article for the *Cultural Studies Review*, Martin Ball (2005), emphasises the parallels between words, language, narrative and history, alongside the tactile and behavioural characteristics of fabric. When considering the etymology of 'text' having evolved from past participle of the latin verb 'textere' - to weave - he defines history as a text woven from threads of narrative, which can be imagined as a fabric representing time, which can subsequently be manipulated or reworked by the same actions: cutting, stitching, seaming, colouring, patching, ripping or in this instance, folding. By picking up a point in time, and folding forwards or backwards, over or under, lies potential to both retell the past from different perspectives, or compel the continuity of existing identities. The Miao people of the Guizouh province in South West China have many variations in their traditional dress categorised by the different geographical settlements. However, a recurring piece across the regions is an indigo dyed, hand pleated skirt worn by the Miao women. These are created using varied techniques, and are finished with embellishments like silk ribbons and cross stitched motifs (Textile Atlas, 2018). These pleated embellishments represent the different elements of the region's geography as well as its peoples' relationship with the land over time, providing a visual record of their history in the absence of written texts, in order to preserve their customs and cultural identity. Guilano Bruno (2003), professor of visual and environmental studies at Harvard University, describes a fold as *'a mutual figuration of mind and matter'*, which, recognised generations ago by the Miao people, *'holds the elastic texture of moving pictures, and thus unfolding is the material expression of our inner world.'*

Moving away from the introspective immaterial folds and towards the physical confines of space brings us to another long established artform centred around folding - origami. Unlike the unbounded variations of narratives overlaid and tucked into history and identity, the language of origami design is grounded in a few simple mathematical rules. These simple rules can give rise to great complexity in three dimensional patterns and objects. So far, pleating has been described in terms of its ability to emphasise and conceal segments of a complete design which occupies a flat plane. Origami crease patterns act in the reverse direction, releasing a design which in its completed form occupies three dimensions, into an ordered set of instructions laid out across two dimensions. Thinking of pleats through a lens of fashion and textiles most often evokes images of parallel folds in fabric arranged in binary sequences of over and under to achieve box, knife and accordion pleats or combinations thereof. It's also common to shift this parallel alignment into radial or a-line angles to achieve well known garment styles such as the sunray skirt. The vertices in origami are what transform a flat folded design like knife pleats, into (more obvious) three dimensional forms, creating height by changing the direction of a sheet material as opposed to creating thickness through the layering of the sheet material. These vertices arise at the point of converging edges, whose direction and length are determined by proportional overlays of circle stacking and grids. This point of difference is significant as it can separate our conceptual and material ideations of pleated textiles versus origami objects. The accessibility and proliferation of origami design principles and its practice in more recent decades has had far reaching effects on many industries spanning health, medicine, engineering, architecture and space exploration to name a few. If these technological innovations have been driven by the codevelopment of origami design with the structural and behavioural properties of different

materials, it seems natural that this should extend to the fashion design - especially in consideration of the fact that there already exists an ancient textile art practice of folding and setting fabrics. While discussion of topics like origami folding principles, ethnic groups in Guizouh or the immaterial folds of interiors may seem far removed from pleating production in Australia, taking time to understand more broadly what a pleat is (or what it can be), and what it does (or could do) helps to establish a broader perspective in search of unrecognised or missing connections that have slowly but surely isolated the practice from other creative industries both within Australia and throughout the world.

The Australian context: decline of textile industries and manufacturing

Since the early expansion of settler colonies, to the inception of the states as we know them today and continuing into the 20th century, the textile industry has played a significant role in the evolution of Australia's economy, as well as its myriad of rich, overlapping cultural identities. As accelerating technological advancements and access to the earth's natural resources continually shift global geopolitical relationships, Australia in its geographical isolation has had to tread a fine line between self sufficiency and reliance on larger economic powers. This has demanded a constant recalibration of state and federal fiscal policy with foreign and trade policy, in order to balance the protection of local industries with establishment of new cultural and economic partnerships instigated by globalisation more broadly. By tracking major developments related to domestic and international textile manufacturing, preceded by the analysis of individual case studies in primary textile industries, the Fellow hopes to highlight and compare some of the influences, opportunities and challenges which exist in modern contexts, with a particular focus on identifying potential strategies to support the continuation of artisan pleating.

The cycles of growth, stagnation and evolution of textile manufacturing in Australia post 1778 have been influenced by the interaction of fiscal policy, foreign policy, external conflicts, government-assisted immigration programs, private and government funding programs or incentives, and partnerships between textile technology education facilities and their counterparts in industry. In the early decades post settlement, textile production in the colonies had relied on the existing skills of convicts and early immigrants as well as infrastructure like spinning wheels and hand looms provided by the British government to meet Australia's domestic needs for cloth. The industry was soon subject to trade restrictions dictating the quality of wool and function of garments, which were designed to protect English and Scottish exports from any competition. As expansion and immigration continued and the development of agriculture and farming practices allowed for a more stable supply of raw materials, wool processing mills were established in NSW through privately funded ventures, government funded business grants, or a combination of both. Machinery was either imported from overseas or built locally by workers and engineers previously employed in British textile mills. As the states of NSW, Victoria, South Australia and Tasmania were granted self governance, all except NSW imposed intercolonial and overseas import tariffs to protect local manufacturers, which allowed for the commercial textile industry to expand interstate (Fergusson, 2023). Victoria became the centre of textile manufacturing as the Gold Rush slowed and there was a greater need to provide employment for the growing regional populations and continuing immigration. After federation in 1901, government investment in textile production and facilities was coordinated in a way that pushed the country towards self-sufficiency in the provision of defence textiles. The industry benefited once again from government supported immigration programs post WWII, with a newly diversified and skilled workforce of textile technicians incentivised to live and work in regional areas of Victoria. Enough of the infrastructure and machinery in existing textile processing facilities throughout the country were able to be adapted or else upgraded to accommodate the production of synthetic textiles during and preceding the two world wars. In tandem with the processing of wool, cotton, flax, rayon, acetate and nylon, the industry continued on a trajectory of growth and specialisation in relation to the quantities and varieties of textiles it could

produce for export and domestic markets. However, the shift in global trade partnerships and Australian foreign policy in the 1970's saw reduced import quotas and tariffs, paired with the rising value of the Australian Dollar, push the industry into an ongoing contraction. Without protection from competitively priced alternatives produced overseas, the next three decades saw the gradual merging and closure of a majority of Australian textile manufacturing companies and facilities. Companies surviving or newly establishing themselves throughout this transition found success through the strategies and pathways listed below. These were taken from an extensive analysis by Fergusson (2023), in his Doctoral thesis recounting an entire history of the Australian textile manufacturing industry, describing company histories and their unique specialisations, challenges and successes as summarised below.

- Private or government support given in the form of funding, or the relocation and conservation of equipment and workshops through historical societies. (National Wool Museum, Sovereign Hill Museum)
- A focus on value adding existing products into niche and high end markets. (Creswick Woollen Mills)
- The adaptation of existing machinery or the acquisition of new infrastructure to accommodate the production of schoolwear and other uniforms (polyester/viscose), or technical and non-woven textiles in the medical, hygiene, defence and automotive industries. (Daytex - defence, Textor - hygiene)
- The relocation of equipment and facilities to countries where lower wage costs allow the products to remain competitive with similar imported goods within the same local markets. (Geelong Wool Combing, Filigree Textiles Geelong)
- Increasing automation within vertically integrated companies to streamline wage and production costs. (Defab Weavers)

Through the recognition that the cost of labour of onshore manufacturing simply cannot compete with quantities of imported textile products from overseas within the dictates of existing trade agreements, we are presented with an opportunity to acknowledge and respond to the transition taking place. The report will recount the challenges faced by Australian pleaters in navigating this transition, as well as new teaching pedagogies and philosophies emerging in textile education curriculums, which ultimately aim to equip designers with technical competency that is more closely integrated with a capacity for complex problem solving and adaptability within the context of interdisciplinary collaboration.

The Australian context: artisan pleating

Currently, there are four pleat workshops operating out of Australia, three of which have a workforce of one to two employees. Paris Pleating based in the Sunshine Coast region, is a family run business offering hand pleating services in a small range of basic styles. Specialty Pleaters in Melbourne offers a more extensive range including decorative origami patterns, but has recently ceased its machine pleating operations. Rado Pleating in Sydney offers both hand pleating and machine pleating services, but has more recently lost some of its larger commercial clients throughout the Covid pandemic. Perm-a-pleat in Perth is the only remaining company with the capacity for commercial and industrial scale production, having an integrated workshop which oversees all stages from pattern making to quality control. However, their specialisation in uniform design removes them from the wider fashion industry and are inaccessible to other independent labels. It's important to make the distinction between machine and hand pleating, in terms of material consideration, production quantities, and their relevance to different designer and consumer categories.

Mechanised pleating

Machine pleating works by feeding lengths of fabric between two heated rollers, where a knife blade presses along the width of the fabric in the sequence of the chosen pleat pattern. This heat and pressing combination is applied to the fabric while it is protected either side by a thin, flexible but strong tissue-like paper. Some machines are purpose built for single pleat types, which can be programmed to varying sizes and spacing. For example, Specialty Pleaters owns a (decommissioned) crystal pleat machine, which shapes accordion-like folds at specified intervals into the fabric, but is not suitable for knife, box, accordion or combination patterns. This is a special case where the fabric is manipulated by two blades edged with blunted comb-like teeth, one of which holds the paper in place while the other pushes a small length until it folds back onto itself from the midpoint. This results in a softer undulating series of folds as opposed to the sharp creases of accordion pleats.

Below is the crystal pleating machine in the Specialty Pleaters workshop, with the tissue paper showing the exoskeleton of the final pleated fabric.

Figure 1. Decommissioned crystal pleat machine

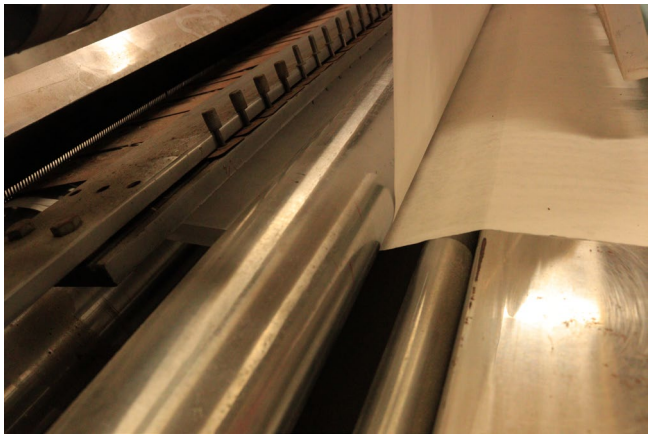

Figure 2. Protective tissue paper being drawn into the machine

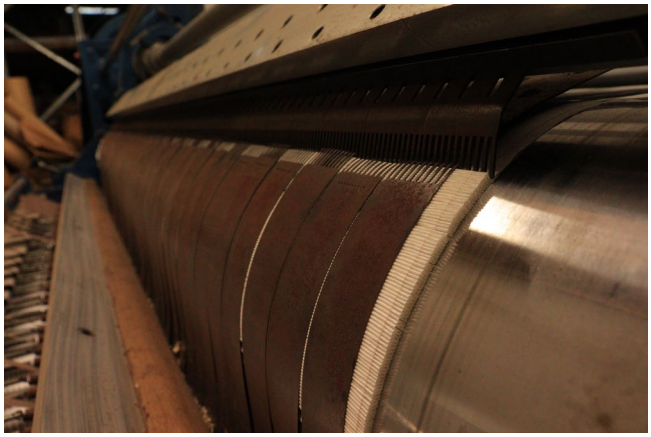

Figure 3. Crystal pleats after being heat treated and would onto a back roller

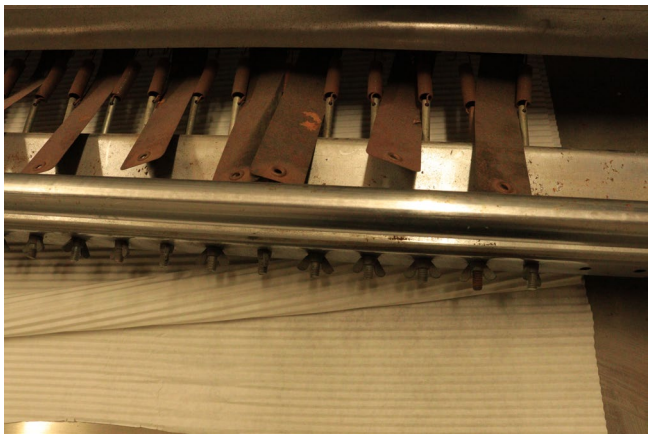

Figure 4. Damaged pattern cards

Machine pleating is continually advancing in terms of the intricacy, fineness, and speed at which it can pleat fabric. The machines themselves are reminiscent of looms which throw rows of yarn across sequenced and grouped warp threads to create textured patterns. Like the punch cards used in jacquard looms, the blades and thin sheet metals can 'instruct' multiple kinds of pleats in a single row, and even layers of pleats moving at different angles across the fabric. The images below show a collection of sample fabrics at the Specialty Pleaters workshop, however, many more styles, combinations and variations exist for garment and furnishing fabrics.

Figure 5. Machine pleated bamboo fabric

Figure 6. Jacquard sample of alternating knife pleats

Figure 7. Pleat pattern blades

As the Fellow's work placement focused on hand pleating with cardboard moulds as suited to the existing workshop setup at Specialty Pleaters, the Fellow only received a small amount of exposure to the machine pleating workshops in Alexandria and Cairo, and is not well informed to discuss the mechanics and programming of newer machines of competing brands beyond a rudimentary analysis of fabric samples. The main advantages of machine pleating are the speed and quantities at which fabric can be pleated, suitable for commercial and industrial scale garment manufacturing, interior and upholstery fabrics, air filtration systems, and medical textiles. However, in some cases, due to the speed of the heat setting process and the force of the blade, the range and fluidity of motion across the whole fabric can be inhibited by the rigidity of the individual folds. In other cases, the pleats are not set properly and are released into slightly rounded and less elastic folds. This is dependent on the quality of the machine's engineering and its intended purpose, as well as the material and structural qualities of the fabric. Without significant initial capital investment or demand for large runs of pleated fabric from domestic manufacturing sectors, and considering an absence of trained engineers and technicians to maintain the equipment, there is little incentive to purchase and import new machines.

Hand pleated

Hand pleating can encompass many different approaches and techniques, and often designers, workshops and artisans have their own variations on tools and practices. Texturing and shaping fabrics with crease patterns can be achieved using tie resist dyeing techniques like shibori, as well as combinations of gathering, tensioning, stitching, wrapping and compressing before heat setting or simply fixing the folds in place with pins, thread or other surface embellishments. Pleating can also be embedded in the structure of woven and knitted fabrics, however this is a relatively new area of discovery and experimentation requiring well honed technical skills and time consuming hand sampling.

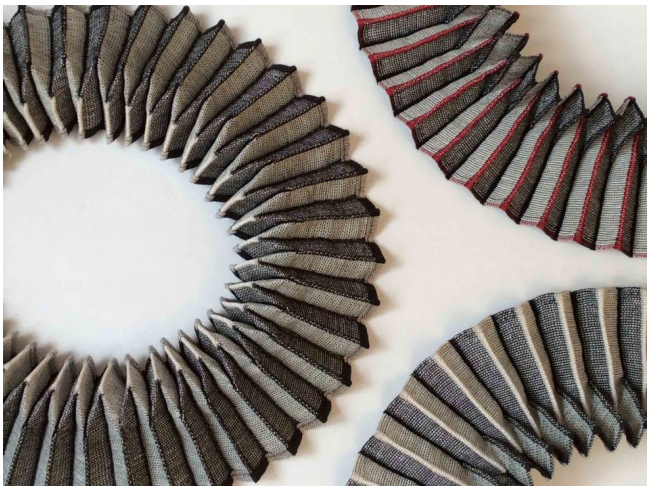

Figure 8. Ann Richard's pleated collar in Weaving, Structure and Substance

Figure 9. Anne Selby chevron scarf using shibori tying

Figure 10. Knitted chevron sample by Drew McKevitt

Figure 11. Hand stitched pleats from Sophia Baquerizo Atelier

Figure 12. Dress with knitted curved chevron, Drew McKevitt

Figure 13. Issey Miyake SS/23, look 24, whole garment knitting production

Figure 14. Barrel pleating technique used for Miao traditional costume

Figure 15. Miao pleated skirt depicting the three rivers - Huang He, Chang Jiang, Qingshui Jiang

For the purposes of this report, artisan pleating will refer to the process of heat setting fabric using folded pattern moulds which are steamed in an autoclave, as is used by Global Pleating and Specialty Pleaters who hosted the fellowship placement. The pleat pattern is folded into two separate but identical sheets of card, which can be compressed or collected together exactly. To pleat the fabric, the moulds are first extended flat then separated, before the fabric is placed on top of the lower layer. The upper layer is then fixed in place along one of the edges of the lower layer, and pulled across until it rests in alignment with the entire lower layer. Depending on the design, light planks of wood and weights hold the mould in place while it is pushed, pulled, and collected. The mould is then fastened with ties or planks ready for steaming. The photo sequence below shows the process of pleating a half circle panel of fabric in a decorative sunray mould. The 'Gucci' mould has alternating rows of elongated chevrons folded along the length of the accordions, rather than rows of chevrons folded side by side at an even distance from the centre, known as a border pattern.

Figure 16. The top layer of the mould is rolled back

Figure 17. The lower layer is extended fully

Figure 18. The fabric is laid out in position across the mould

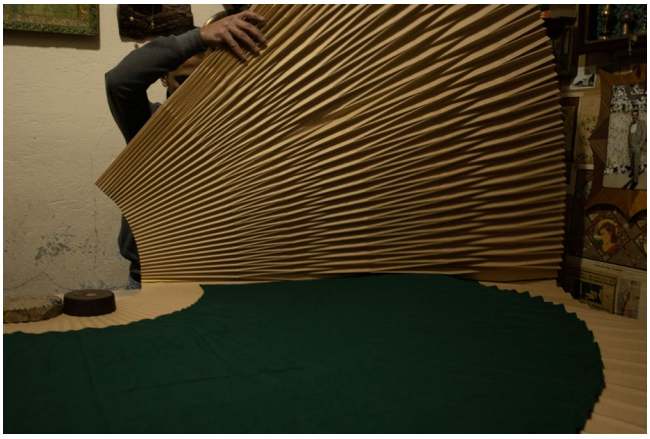

Figure 19. The upper layer is extended back across the mould

Figure 20. Centre points of both layers are aligned

Figure 21. Both layers are drawn to full extension

Figure 22. Collecting begins from first edge

Figure 23. Collecting continues by pushing and drawing the folds together

While the thickness of the cardboard places restrictions on the scale of folds and the finished lengths of fabric that can be pleated, there is much greater freedom and flexibility in terms of design placement, and the variety of ‘molecules’ that can be combined, rotated and tessellated. This makes hand pleating more suited to garment embellishments, one off pieces, or smaller production runs, and is more accessible to students, designer-makers, ateliers, costume designers and artists.

Material considerations

Steaming pleats into different fabrics requires particular temperatures and time settings. The thermoplastic qualities of many synthetic fabrics mean that the creases mould into shape, creating 'permanent' pleats. The material properties of natural fibres like silk, though allowing for equally and sometimes more expressive pleats, create a memory of the fold which can be altered and released more easily with wear, moisture, movement and improper care. The fibre, yarn, construction method, weight, density, finishing, drape and direction of grain line of any one fabric will interact in its own unique way with a pleating pattern. Some fabrics and pleat patterns are more suited to one another, however, this is also determined by the intended use of the finished piece. George Kalijian of Tom's Sons International Pleating in New York co-authored a book with his father detailing the many considerations fashion designers must make when designing with pleats. *Pleating: fundamentals for Fashion Design* (2017), details the effects of pattern cutting and calculations, grainline placement, pleat combinations, fitting, finishing techniques, and print placement to name a few. Having a reference which clearly but concisely layers these choices alongside their interaction with each other, supported by visual references, diagrams and calculated examples has the potential to assist designers in approaching these overwhelming possibilities.

Specialty Pleaters

'I've been open for seven years in terms of working with anybody and everybody in order to create different opportunities with this workshop.'

- Simon Zdraveski, Linear

Specialty Pleaters is an artisan workshop located in Williamstown North, Melbourne, and has been in operation since 1925. Eight years ago, Simon Zdraveski purchased the business from its previous owner to prevent the company from closing and the subsequent loss of its moulds and machines. However, with no previous skill or experience in the fashion industry, as little as a few spoken instructions passed on from the previous owner, and no substantial support from external funding, it has been a challenge for Simon to keep the business open to the public. It has involved learning a craft that is at best documented in short, fragmented video clips on YouTube and Instagram. Advice from other pleaters can be piecemeal and vary between practitioners, as each workshop has its own unique history, culture, partnerships, suppliers, and demands from within local markets. Simon has taught himself to pleat fabric with the existing moulds in the workshop, and until recently ran one of the working machines for knife, box, accordion and combination or 'treebark' pleating. This machine has since become too difficult to run and repair. Without the proper knowledge of the processes to mark, score and fold the patterns by hand at scale, neither Simon nor the Fellow were able to accurately replicate existing moulds. While attempts have been made to adapt laser cutting and printing methods to overcome these issues, they resulted in significantly less durable and ultimately unusable moulds. Despite this, Simon has made many attempts to promote the business by building new partnerships within the industry. This has included running workshops every year which cover the company's history, pleating processes, fabric considerations, garment care and available moulds, all in an effort to expand design knowledge related to its applications. In 2018, an article published in Broadsheet by Emma Do, journalist and previous editor of Frankie Magazine, recounts her conversation with Simon:

'This has generally always been father-to-son stuff,' he says. 'There's no specific trade course for it. It's always been a family oriented type of business, so a lot of places suffered from lack of succession planning.'

She then continues, capturing the state of pleating and the workshop at the time which remains relevant moving into 2024.

The Maroney family founded Specialty Pleaters in 1925. In the '60s and '70s, the business pleated thousands of school uniforms, in addition to orders from Australian fashion brands. But by the turn of the millennium, those clients were dwindling. Trade liberalisation in the 1980s had knocked down prices

of imported clothing, so Australian brands went offshore to remain competitive. Specialty Pleaters refocused to serve niche clients with small runs: custom orders for high-end designers, couturiers, young fashion labels, fashion students, costume departments, plus the occasional bus or plane curtain. For Specialty's small-scale clients, pleating locally is more cost effective than sending work off to machine-led factories overseas where minimum orders can start at ten times the volume. There's also the ability to keep a close eye on quality control.

Simon has on multiple occasions engaged in collaborative projects to promote the company and test the boundaries of its production capacities. These projects were co-developed with Melbourne labels, recreating timeless pieces in contemporary settings. Despite the high quality of the products, constraints on lead times, labour costs, and the final retail price severely impacted the financial sustainability of relying on the income of similar projects in the future. A brief recount of these collaborations is given below.

Hokum Indiegogo crowdfunding, 2018

Penolope Gibbs, a textile designer, illustrator, and founder of the Hokum label, partnered with Specialty Pleaters in an Indiegogo campaign designed to raise awareness of the company's precarious situation. All profits were to be donated to the workshop in support of its continuation. A selection of specially designed prints were digitally printed on silk scarves, sewn in her local studio, and finally machine pleated in continuous 6mm knife pleats. In order to make them more accessible, the scarves were priced at a fraction of the cost of similar pieces of high fashion labels. While there were no delays in the collection selling out, after accounting for the labour, time and overheads, the campaign broke even.

Figure 24. Simon feeds fabric between the protective tissue paper before it is pleated

Figure 25. Custom 90cmx90cm Hokum print on silk scarf

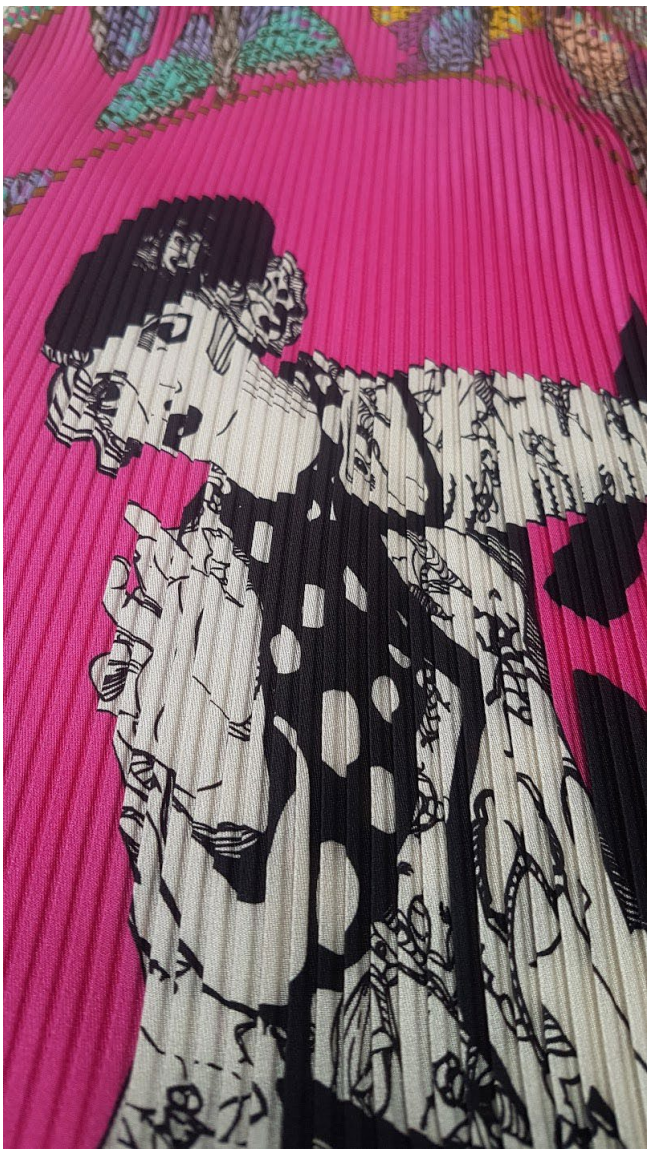

Figure 26. Hokum scarf pleated into 6mm knife pleats

Aaziel x Net-A-Porter, 2020

In 2020, Aaziel ran a capsule collection as part of the Net-a-Porter NET SUSTAIN program, which curates products designed to meet their own criteria of sustainability attributes. With only half a dozen moulds of the chosen style, it took two months to complete the order. The collection was successful in its promotion of collaboration between luxury labels and local artisans and makers, as the pleated fabric was then sent to CGT Manufacturing in Brunswick. Ultimately the lead time and labour cost over the two month period were barriers to the partnership continuing.

Figure 27. Tapered knife pleated skirt by Aaziel

Cocoflip x Specialty Pleaters, 2023

Cocoflip is a lighting and furniture company whose small batch collections are designed in collaboration with local makers in support of their quality craftsmanship. The results are a testament to 'Australian made', and their work with Specialty Pleaters was no different. The *Linear* lighting capsule of pleated linen framed in stands of reclaimed timber captured *'the material contrast emphasising the delicate, nuanced, and ephemeral nature of pleating,'* (Cocoflip, 2023). Accompanying the launch was a short film by Silky Jazz Films, which captures beautifully the quiet details of the paper and machinery around the warehouse against the narration of the duo's design philosophy, as well as providing a glimpse into their own exploration and prototyping of pleats. This project was an example of traditional crafts remaining relevant in contemporary design spaces and in fields outside of fashion, and resulted in the production of a thoughtful, sensitive and intriguing short film which will expose Specialty Pleaters to other designer-makers. However, to sustain itself financially, Specialty Pleaters would rely on a continuous stream of similar projects and partnerships.

Figure 28. Model from the Linear series, styled by Bec Sheppard and photographed by Lillie Thompson

Recontextualising craft in higher education

Fabric pleating can be considered as part of secondary industries of textile manufacturing, most often being applied after the initial processes of preparing raw material to convert into a textile. Alongside a thriving wool industry, in house pleating workshops and equipment were more prevalent Australia wide and particularly in Victoria and Sydney, with the capacity for industrial scale applications in garment, furnishing and automotive textile finishing. In 1941, the first textile course was delivered at the facilities of the Gordon Institute of Technology in Geelong, to meet growing demands for skilled technicians and designers to work in the textile mills. This course was the result of an inquiry into the wool manufacturing industry in 1924, conducted by Alfred P. Barker, Emeritus Professor at Leeds University. Its recommendations addressing *'Educational Requirements of Industry*' and '*Textile Research and Trade Standardisation'* encouraged government bodies to design textile training programs which were to be closely coordinated with industry (Fergusson, 2023). Students learnt through practise and making, on machines recommended by the companies they would go on to gain employment with. In 1941, the first textile course was offered at the Gordon Institute of Technology in Geelong. In 1949, the Melbourne Textiles Trade School was opened at the West Melbourne Technical School. By 1991, the school had been renamed the Melbourne College of Textiles and was operating out of a custom built campus in Brunswick, with some of its operations continuing in Pascoe Vale (Fergusson, 2023). In 1995 it was once again renamed the Melbourne Institute of Textiles, and entered a partnership with RMIT. Two years later it merged with the RMIT School of Fashion and Textiles.

RMIT Fashion and Textiles departments currently offer Vocational Education courses spanning Certificate III to Advanced Diploma qualifications, as well as Bachelor degrees, and Masters and PhD programs. Their courses offer many specialisation streams in fashion and textile design, including styling, merchandising, entrepreneurship and business. Students can also take a combined Fashion and Textiles Bachelor degree with a particular emphasis on sustainable innovation. UTS offers an integrated fashion and textile course in the School of Design, and in 2021 entered a collaboration with TAFE NSW to establish the Centre of Excellence for Sustainable Fashion and Textiles. UNSW offers Bachelor of Integrated Design which pairs courses in fashion, textiles, graphics and 3D visualisation with broader topics like object, interaction and experience. While there are many other universities and private institutions offering fashion and textile courses, RMIT, UTS and UNSW have a longer evolution in their fashion and textile training programs, and for this reason they have been chosen as a small sample selection to gauge some of the overarching trends and changes to fashion and textile design curricula. Conducting a detailed evaluation of government requirements in educational curricula and their delivery, alongside the teaching pedagogies and course structures of the aforementioned universities, would require a separate report in itself undertaken instead by trained academics and industry professionals.

For the purpose of this report and due to the lack of expertise, the Fellow will draw from some of the published works authored by researchers and teachers at these institutions (as well as research from similar international universities), to explore possible connections between textile design in higher education and the practice of pleating.

Neocraft as the term implies, is a recent evolution in perspectives on the value, function and potential of craft practices and their histories. While there are not yet any exact definitions or strict criteria attached to neocraft, it can refer more generally to two phenomena. The first being the observance of new feedback loops between traditional craft techniques, technological advancements, and emerging design movements. The second entails a reevaluation of the hierarchical distinction between art and craft, which raises the criteria of utility (more commonly attached to made or crafted objects), on par with the aesthetic and analytical criteria more commonly associated with art pieces (Treggidon, 2018). *In Weaving: Contemporary Makers on the Loom*, designer Phillipa Brock is profiled in reference to her adaptation of an industrial Jacquard power loom to weave three dimensional fabrics through the use of computer aided design and manufacturing software. *'My woven pieces self-assemble through yarn and structure interactions when tension is taken off the loom.'* Though the digitisation of design processes and automation of hand skills is carving new pathways forward into neocraft, there is equal consideration for the role of tacit knowledge and its potential to form incorporeal networks permeating user experience, emotional connection, community interaction, cultural movements, designed objects and material environments. This has led to the development of research methodologies and teaching pedagogies which legitimise the body, subjective experience, introspection and personal reflection as empirical data points (Hannula, 2020). Furthermore, these methodologies are not relegated to academia, but are suited to researchers, practitioners, teachers, and students alike. Surrounding the emerging methodologies developed for artistic research, practice based research and practice led research, is the desire to create systems of inquiry and analysis which place individual, subjective experiences in a meaningful, coherent format that can then be accessed, interpreted and understood from other perspectives also formed within individual, subjective experiences (Koeltzch, 2021). More simply, research is drawn from ways of knowing captured in bodily experiences that are more deeply embedded in our nervous system (like touch or movement), and which can often be difficult to rationalise or articulate.

In the same way that neocraft is in the process of defining itself, structures within artistic research, practice based and practice led research are still taking shape. This is partly due to the scope of the art and design specialisations it approaches, but also due to its repositioning within academic contexts as a legitimate means of collecting and assessing primary data for new knowledge construction (Koelsztch, 2021). As mentioned previously, textile design courses evolved from a more immediate need to train a workforce ready to enter established mills and factories. Knowledge of the machinery, processes, networks, business practices and trajectories within the industry was more clearly defined. As the term textile comes to encompass a much wider repertoire of materials fabricated from ever more sophisticated and futuristic technologies, it also references the extensive global supply chain networks that connect the raw materials to end users. By the same comparison of two machines - one using cogs to transfer a chain of instructions, and the other using coordinated systems of electrical circuits to simultaneously relay signals - technical textile skills isolated from critical thinking, independent and collaborative decision making, and open ended problem solving are less able to respond sensitively to changes within the incredibly complex social and technological internetworks that form global textile manufacturing industries. In her recent Master's thesis, Lucy Adams (2023) references her own experience as an educator in discussion of the potential to adapt teaching pedagogies and student learning experiences for the advancement of sustainable futures, which, along with participatory design, have become recurring themes in fashion and textile courses. As a reaction to the changes in trade policy in the 1970s which saw many textile manufacturing jobs made redundant

or moved offshore, national training packages for vocational education were implemented in the 1980s which equated skills training outcomes directly with the needs of the labour market. This is referred to as competency based training (CBT), and in her thesis, Adams describes her experiences exploring alternative student centred learning (SCL) approaches and their applicability to sustainable design solutions. Modes of practice led research like autoethnography, reflective writing, and interdisciplinary, collaborative art practices require the individuals involved to communicate experiences which are of an embodied, affective, cognitive and social nature. These SCL training activities emphasise the need for integrated knowledge and enriched understanding of professional practice. The integration of training and research methods which connect tacit knowledge (embodied), with emotional awareness (affective), to cognition (skills development, critical thinking) and participatory design practice (social nature), enable designers to consider more deeply the role of objects in shaping collective values, and the impact of their life cycles' on the possibilities of sustainable futures.

'Nobody, however, is prepared to say where workmanship ends and ordinary manufacturing begins.'

- David Pye (2008, p.24)

When a skill is only viewed in terms of its ability to meet the needs of the labour market, its value is then measured by its usefulness in affecting financial outcomes. When the term handcraft becomes closely associated with techniques and tools predating the industrial revolution, it becomes relegated to a past era, accessible only by sight, ideation or hobbyists' recreations. As new dichotomies emerge and hierarchies shift, the poles between design and making, hand making and machining, standardisation and customisation, art and craft become less forcefully repelled. David Pye's theories of the workmanship of risk and certainty attempt to position this spectrum which determines the quality of made objects along technic-phase timelines, instead of fixed relational arrangements in alignment or opposition to one another. Very succinctly, the theory states that risk in making refers to the inability to guarantee a predetermined outcome, regardless of apparatus (or lack thereof), or its power source (Pye, 2008, p.24). Predetermined outcomes have become closely associated with mass produced (implying speed of production), and therefore machine made.

'Is the result predetermined and unalterable once the production process has started?'

- David Pye (2008, p.28)

This automatically implies certain connotations in the reverse of hand made or custom pieces. But because *mass* (quantity) cannot be confined to an exact numerical value, and there are varied definitions of *machine*, making it problematic to include or exclude particular apparatus, there lies an opportunity to view alternative relationships of meaning between risk and certainty, encouraging the development of new hybrid practices which accept the incremental and overlapping nature of evolutionary technic-phases. The Fellow would like to experiment with the concept that risk and certainty are not necessarily determined by quantity, automation, or the assistance of tools, but by a reliance on the maker to align material with process, judgement with skill, intention with action. This is in the hope of reframing what are considered outdated or traditional techniques, in light of their not being competitive with more modern machining processes, but at the same time without labelling predetermined, mass produced, or machine made as being inferior quality or reflecting less meaningful social connections. When we look at artisan pleating in context of the intricate patterns of folds achieved both by hand techniques and machine processing, rather than asking which is better, it may be more useful to ask, 'in which components of the processes does tacit knowledge contribute to the quality, intention and skill of the workmanship?' This presents a new direction of inquiry exploring use of artistic research, practice based research and practice led research for the formation of integrated knowledge systems, which also account for the highly refined and specialised skills required to employ the use of more modern software and machinery (such as Phillipa's powerloom). By releasing any prejudice

towards risk, certainty, hand crafted, machine made, contemporary and traditional, there is new space to select the processes, tools, qualities and quantities in whichever combinations work best towards achieving sustainable and socially responsible design. Below is a series of garments, sculptures, samples and installations showing pleated samples expressed in a variety of mediums using multiple techniques.

Figure 29. Machine knitted sample of vertical pleats from designer allessandrina.com

Figure 30. Cahaya studios combination pleats, machined knife pleats set in a basket weave mould

Figure 31. Glass desert sculptures, rendered using MidJourney by Joshua Vermillion

Figure 32. Bust of Ramses II, statue dedicated by the courtier Wesermaatra

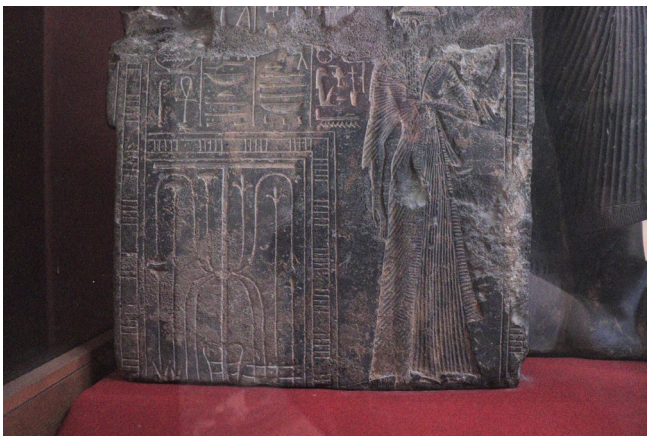

Figure 33. Depiction of Nefertiti on base of RamsesII statue

Figure 34. Dress detail of RamsesII statue in the Egyptian Museum, Cairo

Figure 35. Display at entry of National Museum of Egyptian Civilisation

Figure 36. Bust detail of draped pleated dress

Figure 37. Lower detail of hanging pleats over body

Figure 38. Pleated detail of 4000 year old dress at NMEC

Figure 39. Garment detail of disintegrating pleats

Figure 40. Unravelling textures reveal fine pleats along the width of the fabric

04
Fellowship Learnings

Skills enhancement in context:

To quote the promotional video for the recent Polaris dress from ArdAzAei in collaboration with the Lognon pleat workshop, *'it's one thing to fold in thin paper, and another to manage the folding moulds used for delicate fabrics.'* The design of the decorative accordion-chevron and sunray moulds were based on the molecular structure of amethyst crystals, with the intent of visualising light refractions within the crystal.

Figure 41. Polaris dress, look 24 from Ardazaei couture collection 2023

This is a succinct and precise description of the need for in-person tuition in the design and folding of large pattern moulds for fabric pleating. In the *Linear* short film, Simon also offers a description of the pleating process from the perspective of a self taught practitioner.

'The pleating process is in some ways a simple process, but is also a complex process. You sandwich the fabric between two layers of craft paper. You roll it up and put it in a steamer and it comes out, stays 24 hours to dry out, and then you take the fabric out. The more intricate side of things is actually the mould making. The intricate moulds are quite complex and quite difficult to achieve….It's almost impossible to tell in the pleat process whether something is working 100% or not. With your hands over time, you basically develop a feel for whether something is working or not.'

The usefulness of attempting a written description of 'developing a feel with your hands' can be lost in long winded detailed instructions which are difficult to visualise, especially without personal experiences to cross reference. For this reason, the Fellow believes it is more useful to share the technical processes in a more generalised sequence which address the main challenges that instigated the work placement training. Furthermore, the tools and methods used for all stages in the design and making processes vary between studios, between individual practitioners, and between each particular pattern. Throughout the report, the Fellow has tried to emphasise the significance of context in understanding how best

to replicate, apply, evolve and transfer the technical skills used for the many methods of fabric pleating. Drawing comparisons between the two studios (Global Pleating and Specialty Pleaters) may help to better grasp the upcoming obstacles in transferring skills from one fashion system to the other.

Global Pleating is a second generation family run business. The Founder Mohammed Mohammed (Mimi) undertook an informal apprenticeship with a small studio in Greece before it ceased operation. Returning to Alexandria with a handful of designs, Mimi opened his own workshop offering fabric pleating services as well as making custom moulds for use in other pleat workshops. Over a number of decades, he evolved existing patterns, designed his own unique range of moulds, and trained his sons alongside close family friends. His sons and the community have helped to evolve his work, scaling their capacity for production of machine pleated fabrics, hand pleated fabrics and pleating moulds. They are truly experts in their field, particularly in mould making, supplying studios around the world as well as catering to a constant stream of local orders. Their work spans the making of single customised pattern moulds for couturiers, to orders of 1000 sunray moulds for larger fabric suppliers and garment manufacturers - all made by hand, with a studio of fewer than 10 core members. Throughout the placement, the Fellow was lucky enough to spend time working with every member and becoming familiar with their strengths and specialties. However, she spent more time working with one of the designers and folders, Shady Mohammed. When asking which particular techniques they would like me to withhold from the report for their own business interests, I was informed that anything learnt in the studio was free to share. They are in constant communication with other pleaters around the world who are looking for advice or insights about their own ventures, offering informal training, sample patterns, templates or referring practitioners, suppliers and manufacturers to one another. Shady had explained that their workshop's ethos is not necessarily to propel their own success through the protection of trade secrets, but rather to freely pass techniques and advice to practitioners who they know are seeking to expand and elevate the craft. The Fellow hopes to continue on this trajectory, finding new collaborative networks, students and teachers interested in learning the skills or adapting them to other areas of specialisation. This is where investment in detailed description and instructions will be most useful.

Over the year spent in the workshop, the training was delivered through an informal internship where the Fellow would engage in one on one tutorials, assist with the preparatory stages for folding, practise folding simple patterns at different scales, before moving to more intricate patterns on small sample sizes. As the patterns and techniques became familiar, the Fellow was given sections of larger moulds to fold into shape. There were no predetermined timelines or units of learning, as the training was integrated with their workflow, allowing for a very gradual, organic layering of technical development and understanding. In the initial months of placement, the Fellow was given more spoken instructions and direction. As the individual components of the process became well understood, she was given small projects to follow independently to completion. Gradually, these projects were scaled up, and in this stage - moving from small sheets of paper to 2m patterns - was the steepest learning curve where verbal instructions offered limited guidance for action. The designers themselves, having been somewhat self taught, encouraged me to find my own methods for folding by 'listening to the mould'. This entailed training a new spatial awareness connected to tacit knowledge, predicting how flat visual patterns would fold up into their three dimensional forms, by understanding how to navigate the transfer of tension around a large, inelastic piece of card. It is in this stage of folding that the necessity of accuracy and consistency becomes more deeply realised. The photo series below provides a visual sequence of the techniques in use from the first stages of design and preparation to a finished pleating mould, taken from multiple models to demonstrate the subtleties and variations between them.

Pattern design and card preparation:

An existing design will be selected from a catalogue, otherwise new specifications will be drawn up or digitally rendered. Even within the same pattern, small changes to the fixed ratios can have noticeable impacts on the final result. A small sample is marked, scored and folded to check that the crease pattern is correct and the scale of the pattern is suitable. Before the pattern is scaled, two layers of card are cut to the same length.

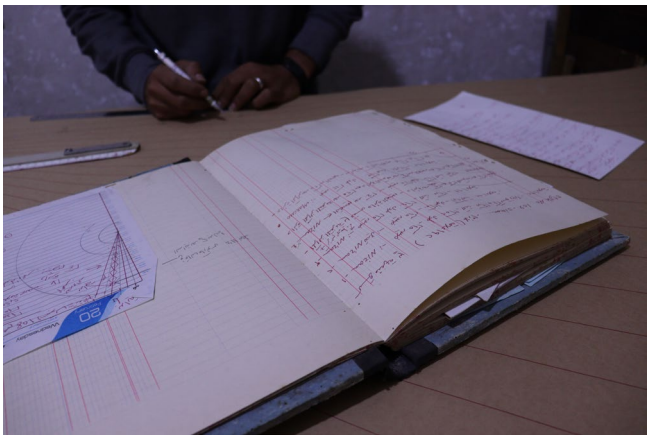

Figure 42. Sunray catalogue with instructions

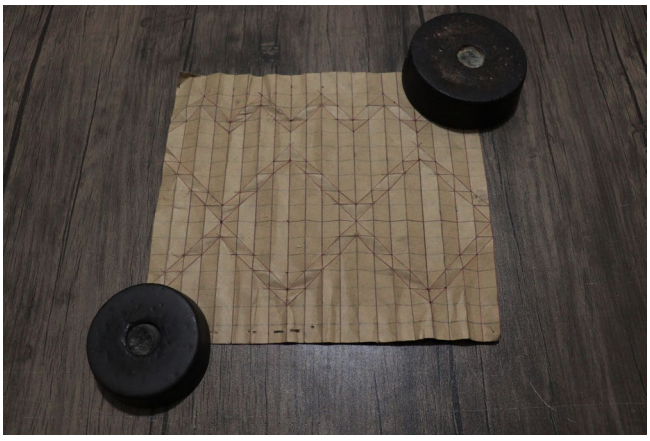

Figure 43. Chevron and pyramid combination score lines

Figure 44. Chevron and pyramid combination folded sample

Figure 45. Mimi cutting pattern card from its roll

Pattern marking:

The pattern border is indicated on both layers of the mould, and the intervals are punched into the card using a sharp scoring tool like an awl. Pencil grids are often drawn up using these intervals for the correct placement and spacing of the pattern.

Figure 46. Marking border and mould dimension

Figure 47. Custom built frame for marking sunray moulds

Figure 48. Multiple circles are drawn across the mould

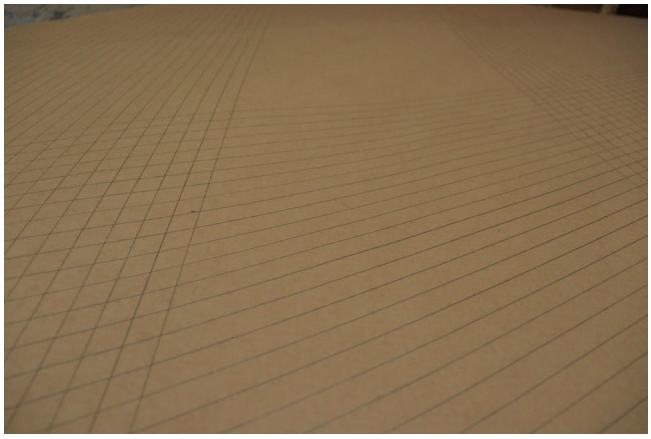

Figure 49. A pencil grid used to guide the pattern scoring

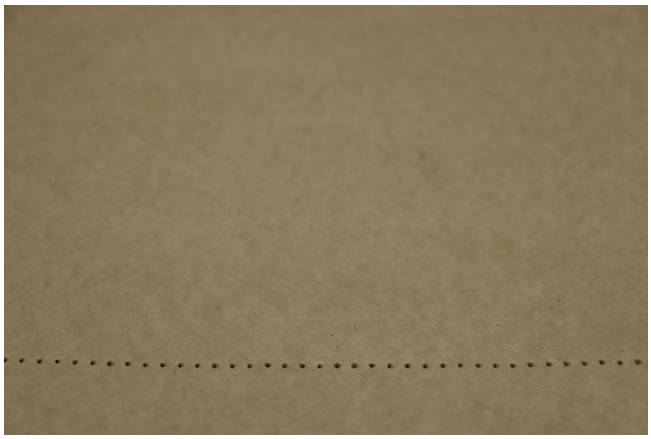

Figure 50. Detail of 5mm intervals

Pattern scoring:

Scoring is often the most time consuming phase, with some designs containing thousands of scorelines angled in different directions. Every practitioner finds their own orders and pathways across the mould. Both faces of the mould must be scored with the correct pressure - not so much as to damage the paper, but enough to encourage the paper to settle into place during the folding process. Many different tools can be used for scoring. Marks from bone knives and embossing tools are hardly visible on the final mould and have slightly rounded edges which run smoothly across the card. Global Pleating members use ballpoint ink pens due to the quantity of scoring that takes place, and so that it's easier to coordinate multiple orders at once across the workshop. Embossing tools break too frequently for their use, and bone knives require regular sharpening and reshaping.

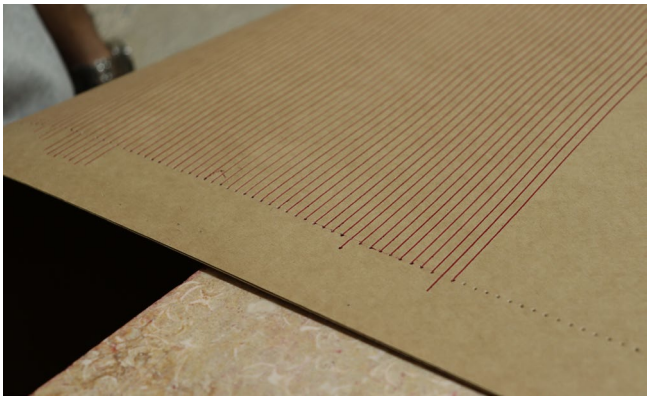

Figure 51. 5mm intervals with scoring

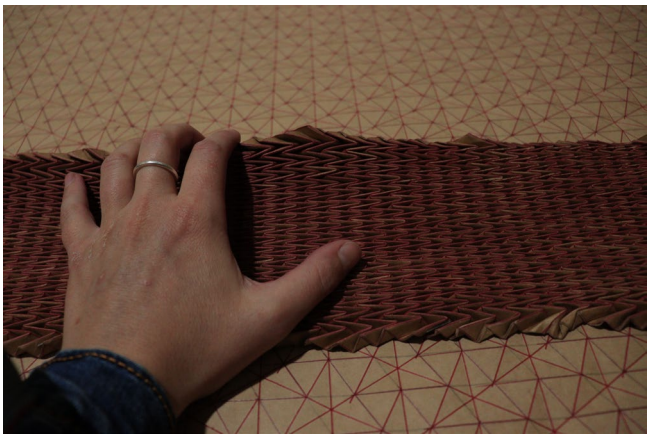

Figure 52. Collected chevron mould resting on top of unfolded three point star pattern (aka Mercedes)

Figure 53. Pattern rows scored around a decorative sunray mould

Figure 54. Pattern row markers scored around a decorative sunray mould

Folding:

Folding is the most challenging stage of the process. While standard pleat styles like accordion, sunray and knife are straight forward to fold, they still demand a certain degree of *developing a feel with your hands* to fold at speed, especially in the case of the finer accordion ridges at the inner circumference of sunray moulds. While there is some overlap in the foundational folding orders between certain categories of the decorative moulds, in general they are approached as unique in their character and challenges. Not having any kind of background in maths or physics, it is difficult to explain the forces which provoke the curling, snapping, contracting, twisting movements the moulds follow throughout the folding process. Internally, it is necessary to understand how manipulating one small part of the mould will affect the rest, as each section of the pattern is connected to the whole through the network of scorelines. Being able to know where fluid pathways exist becomes easier to sense with repetition and experimentation. However, there are times when the practitioner will need to force the mould into place, and at other times it's best to move on to another section before revisiting. Knowing and feeling this process reflects the principles underlying the workmanship of risk, where the maker is following a sequence of steps, but must exercise judgement and skill throughout the whole making process.

Figure 55. Walid and Shady prepare the radial folds of a sunray mould

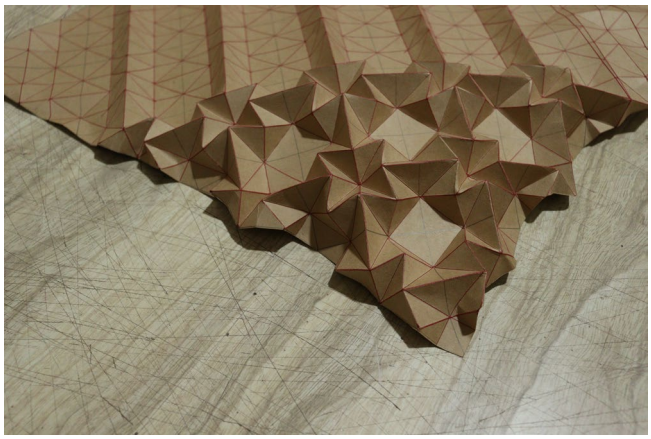

Figure 56. The first two stages of the flower pattern

Figure 57. Tiny pyramids folded across a fine a-line sunray

Figure 58. The early stages of the corset mould, a new design adapted by the fellow from an existing mould

Figure 59. Shady demonstrating the order of folding

Figure 60. The mould curls in on itself as the rows progress

Figure 61. Shady folding a fishscale mould designed by the Fellow after she had given up for the day

Figure 62. The Fellow folding a small chevron panel after instruction from Mimi

Figure 63. Mimi demonstrating chevron folds with grace and ease

Collecting:

Collecting refers to the compression of the mould into its smallest size and greatest density, which generally means that the folds are as close to each other as possible. This process can be very challenging, as the mould has been folded but not yet fixed into place by steam, so the creases hold more latent energy. Some moulds are compressed in a single direction, like accordion folds being pushed towards one another. Others must be placed on a roll between another sheet of card to hold them from extending in many directions, being fixed in place from both the top and bottom layer as opposed to being pushed towards the centre from edge to edge. These collecting processes can be adapted using different aids so that two people can work alone, which will be necessary in the case of Specialty Pleaters.

Figure 64. Decorative sunray held in place while it is fixed with wooden planks

Figure 65. Chevron borders puckering

Figure 66. A basket weave mould is pushed in four directions requiring many hands

Figure 67. The mould is rolled in between a sheet of card before steaming

Figure 68. A 5m mould of 5mm accordion pleats is prepared for steaming

Final samples

At the completion of the placement, the Fellow was able to work to the same capacity as the other studio members at all stages of designing and making - though not to the same speed and consistency where each member specialised. Below are some examples of the moulds which were made in the studio and brought back to the Specialty Pleaters studio - the lower image of the sunray mould was designed by the Fellow, being adapted from an existing pattern and technique in the Global Pleating catalogue. The design is an interpretation of the overlaid curved striations of colour and texture visible on different species of venus clams. This demonstrates an evolving capacity for the design and creation of original patterns.

Figure 69. Some of the origami inspired tessellated moulds made throughout the placement and training

Figure 70. A stacked chevron pattern, designed for garment embellishment

Figure 71. A spiral mould, based on even intervals on curved pleats

05

Personal, Professional and Sectoral Impact

Personal:

The fellowship in its entirety has been an uncomfortable, challenging, satisfying and rewarding experience. Being taken on as a family member by the Global Pleating workshop has instilled in the Fellow a new set of priorities and values, being able to observe the unwavering compassion, generosity, commitment and work ethic which is indistinguishable between their design and moral philosophies. Having worked alongside highly adept artisans in the same field has removed previous doubts about the usefulness of pleating, and encouraged the Fellow to move away from relying on qualitative indicators of success. Having new technical capabilities that would not have been possible without this particular training, the Fellow feels confident about the process of honing and expanding these skills so that they are on par with the world's best, before applying them to new creative pursuits, and further adapting these experiences into new training programs.

Professional:

Throughout the placement, the Fellow was exposed to a global network of pleating studios. This provided useful insights and inspiration for finding new applications and methods of pleating, as well as establishing momentum for collaborative projects in the future. As mentioned in the opening sections of the report, the Fellow was neither an educator, academic, nor skilled practitioner when applying for the fellowship. Having a new and clearly definable skill set, accompanied by a small portfolio of work has provided a basis for connecting with other professionals, practitioners, academics, artists, students, and more. Throughout the placement and report writing process, the Fellow has been able to identify further knowledge and skills gaps in her own repertoire, and subsequently new directions for research and training. The Fellow is by no means an expert, having only truly been learning the craft for the timeframe of the placement, however, the quality of work she was able to achieve in that time bodes well for future development. The more integrated the Fellow's research and practice become, the more easily she will be able to identify networks, people, and organisations to connect with.

Sectoral:

Industry partnerships:

The pleating 'sector' in Australia consists of three small workshops and one vertically integrated uniform design company, all operating out of different cities and with limited communication with each other. So far these interactions have not led to any substantial partnerships. While there are only a few pleaters in the country, the little demand that exists results in an absence of regular work, meaning that the three smaller workshops often run at a loss or are supplemented by another source of income. The

limitations of being under-resourced, lacking access to training, new machinery or moulds, relying on a small intermittent stream of work, and being located at great distances from one another has meant there is little incentive or ability to form a collective. Outside of education, textile crafts survive through the efforts of artists, teachers, enthusiasts and hobbyists. Throughout these networks, a culture of shared, open-ended learning is informed by a wealth and diversity of experience, expertise and creativity. Creating a partnership between the workshops which is mutually beneficial and founded on trust will rely on the association of outside organisations like the ISSI, with an emphasis on the need for education, training, collaboration and skill sharing for the purpose of generating more demand within their consumer base, as well as expanding their own operational capacities. The Fellow believe this is an important progression in the conservation of pleating in Australia. However, drawing from observations of the relationships between other pleating studios around the world during the placement, there is more often than not a guarded and transactional quality in their interactions, with the interests of protecting their own brand and operations. It will be necessary to offer a proposal outlining potential principles and goals defining the group's purpose, negotiating a framework that does not provoke dissonance between their competitive alignments. After solidifying her own practice and partnerships with supporting organisations, the Fellow will be better positioned to confidently approach and engage with other pleat workshops with the intention of creating supportive networks.

Specialty Pleaters continues to maintain a strong partnership with Global Pleating, which offers the potential to upscale production capacities for both machine pleating and mould making. Not only does Specialty Pleaters cater to a very niche market of designers, but is also limited by the quantities, prices and range of pleating styles it can offer. Within the cyclical confines of insufficient demand, meagre revenue streams, maintaining overhead costs and accounting for wages, there is little room for risk or investment. Despite the fellow having the skills to replicate the many moulds within the workshop, undertaking this task would be an intensive and time consuming process, and may not fulfil the more pressing task of anchoring the practice in outside organisations. It will be more efficient and cost effective to outsource the making of a selection of popular styles of moulds to Global Pleating, leaving the design and making of custom moulds for smaller local orders and time sensitive productions to remain in the Specialty Pleaters workshop.

Pilot programs:

Not long after returning to Australia, the Fellow co-hosted a workshop with Simon at Specialty Pleaters.

This provided an opportunity to showcase the fellowship learnings specifically within the context of Specialty Pleaters' evolution, and to gauge the audience's interest and motivations in attending the event. As this kind of informal teaching often qualifies as a useful form of practice led research (Huang, 2020), the Fellow intends to refine the content, activities, resources and structures presented within the workshop so that they can be rerun throughout 2024. Though these workshops may not have far reaching impacts in terms of their engagement (the previous workshop having only five attendees), they provide ongoing opportunities for networking, experimentation within new research developments, the consolidation of technical skills, as well as the piloting of future training programs and content. The evolving workshop programs will be based on the premise that the manipulation of surface textures is a powerful tool in shaping the identity of materials, well suited to pushing original design concepts and creative innovation within fashion and textiles education (Gong & Shin, 2013). They will aim to shift the perspective that the artistry of niche textile crafts is restricted to the realms of couture and luxury apparel (Burns, 2022), in favour of democratic design thinking which encourages the adoption of and experimentation with specialised techniques through more diverse communities. They will draw from the studies of other fashion and textile design educators pushing new pedagogical approaches within higher education, to better understand the specific placement of pleating within these programs. By identifying training exercises within relevant projects, the skills and fabric manipulation

techniques related to pleating can be adapted and placed in a framework that fulfils the development of students' technical competency and conceptual reasoning, within methodological approaches of existing pedagogies, which ultimately reflect the more central values of the broader curriculum - i.e. sustainability, innovation and collaboration.

Conservation:

During this first workshop, the Fellow was approached by a member of the Rare Trades Centre of Lost and Forgotten Arts (RTCLFA), which was established as a partner organisation of the Sovereign Hill Museum in Ballarat. They have recently opened a workshop with multiple spaces and equipment purpose built for woodworking, leatherworking, metal smithing, and most recently for fashion and textiles. The Fellow was generously offered an opportunity to host one of the Specialty Pleaters workshops through their organisation, with the potential of designing a multi day program to present later in 2024. The Fellow will also present at their Pecha Kucha evening in March, which brings together artisans, practitioners and educators from many different fields to share their work and establish stronger ties within their community of members. This workshop provides a platform for hand crafts to be actively practised, documented and archived, bringing together a truly diverse collection of professions. Being exposed to the personal recounts and reflections from within this community will help to personify and ground the theoretical analysis of practice based research and teaching pedagogies. Viewing some of the same challenges through the lens of other craft practices may also help to clarify new priorities moving forward, learn from others' experience, and the opportunity to absorb the detail, quality, thoughtfulness and ingenuity in the workmanship applied to other mediums. The centre has also offered their archival space should the moulds from the Specialty Pleaters workshop require housing, in the instance that the studio is not successfully relocated within the next year. This possibility prompts a more thorough cataloguing of the array of moulds in the Specialty Pleaters' workshop. With a number of the moulds predating the 1950's and as far back as the 1930's, there is a genuine need for storage in the correct conditions so that they are preserved and accessible as a reference. There are upwards of a thousand moulds stacked in the workshop's industrial shelving, which are very loosely organised and potentially untouched for decades. Allocating time to analyse, document and catalogue the styles, techniques, and branding of the moulds will be necessary for the preparatory stages of the eventual downsizing and relocation of the workshop.

06

Recommendations and Considerations

Context: considerations

These recommendations and considerations are given under the circumstances. Though the Fellow has a solid foundation of technical ability and theoretical knowledge, she will need to dedicate time and effort towards continued training throughout the period of 2024. Having returned from Egypt four months ago, the Fellow has had adequate time to reflect on her learnings from Global Pleating's studio, as well as trial some possible strategies to translate these within local contexts. The following areas of focus should be considered moving targets, from which priorities will become more well defined through a process of experimentation, collaboration and reflection. These suggestions are given alongside the following considerations which have been described in more detail throughout previous sections of the report.

- The success of onshore textile manufacturing is usually dependent on specialised sub-sectors within which there is little competition, and which are well connected within other local supply chains.
- There are no formal or informal training programs delivered in Australia which specialise in developing theoretical knowledge or technical skills related to fabric pleating, and in particular artisan pleating with the use of cardboard moulds. This includes the design and folding of the cardboard moulds.
- One off collaborations with local designers have not been successful in providing an income stream large enough to support the continuation of Specialty Pleaters without reliance on volunteer contributions, though they have been successful in promoting the business throughout similar networks of local designers.
- Textile design education in Australia is evolving in response to the environmental degradation and social injustice which often accompanies the linear manufacturing supply chains which were largely moved offshore after the initial period of trade liberalisation in the 1970s. A shift towards responsible, circular design networks is being led by new sustainability criteria within higher education curricula, which encourages cross disciplinary collaboration, and a recontextualisation and evolution of textile fabrication methods.

New directions: recommendations

Skills enhancement, adaptations:

- Identify areas for digitisation to address cost barriers created by wages and time consuming processes including:

  a) prototyping material behaviour and folding patterns using CAD software

b) revisit experimentation with large scale printing so that score patterns can be printed directly onto kraft, eliminating the need for marking and pencil templates

- Draw from whole garment fabrication processes such as those used by Issey Miyake and Drew McKevitt, in an attempt to create new custom patterns which are tailored more specifically to the body's movement and proportions, rather than serving primarily as a decorative visual effect.
- Dedicate time towards developing a personal practice moving towards designer maker, in search of new techniques and applications for pleating. In particular, using textile sculpture as means of experimenting with pattern making, draping techniques, composite fabrics, and combined fabric manipulation techniques.

Recontextualising: conservation, collaboration, sustainability

- Seek out new partnerships which approach pleating from multiple perspectives: both as an ancient practice worth preserving and recreating for its historical and cultural significance, and as a sophisticated fabric manipulation for which traditional techniques can be adapted to new software and textile fabrication methods.
- Continue collaboration with RTCLFA, which may offer their facilities in the conservation of existing moulds in the instance of the Specialty Pleaters workshop ceasing operation.
- Continued collaboration with RTCLFA as a location to host pleating workshops with the intention of establishing new connections between Specialty Pleaters and other designers, artisans and educators.
- Create physical and digital copies of existing moulds in the Specialty Pleaters workshop to be compiled into a catalogue format.
- Identify areas for change moving towards sustainability and best practice. For example, seek out local fabric suppliers using recycled synthetic fabrics, certified natural fibres or ethical leather for recommended use in the Specialty Pleaters workshop.

Education and professional development:

- Seek out the possibility of grants, funding and supported apprenticeships to further the training of a studio member. Without the promise of guaranteed paid work, unpaid internships exclude anyone who is not in a position to support themselves in the process. The Fellow was lucky enough to be able to access the ISSI grant funding throughout her placement, and would like to provide training under similar circumstances.
- New notations for a tacit language: begin the process of adapting origami design principles, diagrams and instructions to the constraints of mould making and crease pattern design, which can be tested throughout the year by students participating in RTCLFA and Specialty Pleaters workshops.
- Continue exploration of art based research methodologies, implementing them alongside the Fellow's personal practice as well as the training delivered in the form of workshops (with potential to extend toward one on one tuition).

Case studies

Lognon, Paris:

Chanel's famous le19M is a dedication to the preservation of artisanal fashion and textile hand work, housing workshops of the embroiderers Lesage and Atelier Montex, the goldsmith Goossens, the hatter Maison Michel, the feather workers Lemarié, the shoemaker Massaro, ERES, Paloma, Studio MTX, and the pleaters of Lognon. The workshop was founded in 1853 by Emilie Lognon, whose original work used irons to set pleated patterns, gradually evolving towards the use of moulds over the next two generations. Now a multi-faceted studio of pleaters, pattern makers, and designers with access to upwards of 3000 moulds, continues the dialogue between hand, paper, heat and fabric.

With the recognition that there are no schools that teach pleating, they emphasise the need for interns and training programs to equip the next generation of artisans, with the intention of creating archives which can be accessed a hundred years on.

Brooklyn Lace Guild:

In 2015 Elna Kanagy-Loux received a grant from the Fashion Institute of Technology after having difficulty finding trained lace makers, teachers or courses to assist with continuation of her practice. After traveling to 14 countries over four months and undertaking short placements with seven lace making schools, she returned to Brooklyn to build a community for existing lace makers. The guild was founded with two other members, one of which has 50 years of experience as a lace maker, and volunteers at the Metropolitan Museum of Art, being responsible for cataloguing their 5000 piece lace collection. Elna also works as a collection specialist in the MET's Antonio Ratti Textile Centre, which receives funding from the Antonio Ratti Foundation, David H. Koch Charitable Foundation, Toyota, and the National Endowment for Humanities. After returning from her travels, Elna worked full time, established the lace making guild while providing an ongoing stream of classes, courses and lectures, as well as completing a masters degree in costume design. She recounts that over eight years she has dedicated more time to teaching than her own practice, and has been limited mostly to making small sample pieces of lacework.

Final recommendations

What these institutions offer is a place to do research by viewing historic references that are accurate, that can then be applied to art practices in the outside world. What is common between the preservation of these practices are the highly adept artisans who are willing to push the limits of their skills, contributing many hours of volunteered time and effort collating fragmented knowledge with the purpose of forming new networks of students, educators, artists, conservationists and historians among many other fields of expertise. What is necessary for drawing out these individuals into a collective is a well equipped and often externally funded space, which can function as a private workshop, open studio, or a hybrid of both. The cost of maintaining a workshop as extensive as le19M, combined with the exclusive nature of Chanel's collections, prevents a craft like pleating from moving beyond the world of luxury or below a surface level engagement with the public. The incredible, time consuming, highly intricate and detailed work of lacemakers is taught in a handful of schools throughout the world. Due to the complex nature of both the techniques and the shifting arrangement of stitch sequences, classes, both online and in person, must be able to accommodate students and their unique challenges and interests. Despite great success in documenting, conserving and archiving lace samples from the last half century, the small group of lace makers that are experienced, qualified, or well placed to teach are limited in the number of students they can foster at any one time. Pleating is unique in the way that designers can access the full spectrum of pattern and fabric combinations without having to invest time honing their folding skills or understanding principles of origami. The final pleated fabric functions as a kind of paint, with which the designer can express any number of shapes, colours, textures and concepts. Integrating small workshop spaces equipped with a range of moulds within design institutes would create direct access to continuing streams of students from varying fields including fashion, textiles, architecture, industrial design and visual arts. Support from well established fashion entities and the dedication of museums and textile centres are crucial for the conservation of pleating, however, its perpetuation and evolution will hinge on its appeal and accessibility to new generations of designers.

Figure 72. Illustrations of measuring and marking tools used for pleating patterns

07
Conclusion

The fellowship in its entirety has provoked a shift in the Fellow's perspectives on the role of conservation towards the preservation of artisan pleating, and hand manipulated textile processing more broadly. Though somewhat rudimentary classifications, viewing conservation in terms of 'active' and 'passive' divisions of practice helps to more clearly define and understand their strengths and useful application towards this pursuit. Fabric pleating and mould making are distinct but complementary disciplines. The pleating of fabrics with the use of cardboard moulds does require training, however, it is the post processing techniques applied to the pleated fabric which offer endless varieties of material expression through the manipulation of form, tactility and material behaviour. The folding and design of the cardboard moulds demands a finer dexterity that is trained over many more series of repetitions. The possible varieties of pleat patterns are also endless, however they are confined within the ratios which organise smaller units of folding across the meta structures in the pattern. In the same way the paper is the medium of origami artists, pleated fabric can be viewed as a useful medium across many fields of design.

Active conservation encourages innovative reinterpretations of traditional mediums and techniques. For this to be possible, the mediums and techniques should be accessible to as wide a network of designers as possible, as well as being viewed as robust and having adaptive qualities. This would be best achieved by establishing small studio workshops within universities or design schools, exposing students to the practice and offering it as another design tool at their disposal. Passive conservation refers to the processes involved in preserving or recreating techniques, tools and mediums as closely as possible to their previous iterations. Being able to compartmentalise and classify these elements in relative isolation allows for a more scientific analysis of the cultural identities and technological developments propelling the craft's evolution. This is achieved through the documentation and organisation of objects, references and descriptions connected to the craft, stored and accessible in archives, historical societies and libraries. Interpreting the contents of these collections is aided by trained practitioners who are also capable of passing on their expertise. Together, the two approaches combine a deep understanding of cultural foundations and an in depth knowledge of fashion and textile history, with a mastery of techniques and an appreciation of the role of tacit congisance in pushing innovative design processes. Both the active and passive conservation of pleating will rely on the combined efforts and networks of artists, designers, students, educators, administrators and facilitators, backed by institutional support and funding. This is arguably a worthwhile endeavour, as the value of tools and techniques that allow for the manipulation of the tactility of any surface is emphasised in different design and creative theories. Pleating contributes to this repertoire, also offering the unique ability to alter the behavioural and expressive qualities outside of a static aesthetic and tactility, by giving materials the ability to express themselves and reflect their environment through movement.

Figure 73. After more than 20 years in the workshop, the three Mohammed brothers and Walid move in unison.

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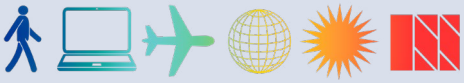

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