‘Weaving Experience Into Memory’: A cross disciplinary project investigating the intersection of Art and Design.

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Abstract

This paper outlines the initial stage of a collaborative research project that began with an artwork, its development into a fabric print design, the creation of a single test garment, and eventually a small collection of related wearable items presented in the form of a public exhibition in District 7 of Ho Chi Minh City, Vietnam.
The project that is the subject of this paper sought to explore several issues: can an artist and a fashion designer work efficiently and effectively together given the seemingly disparate nature of the two fields? What technical resources are available within the local industry here in Ho Chi Minh City?, and how could these resources be employed in order to reduce material wastage as well as manufacturing time and costs? In addition to this, could the project serve as a case study to inspire students?
In order to explore these questions the paper will detail the collaborative process beginning with the conceptual methods used in the initial artwork creation involving walking, observation, the collecting of data, the draft stages and the final digital art print. This will then be followed by a description of the test printing of various fabrics, natural and man-made, the sourcing of local digital fabric printing companies and the creation of an initial test garment. Following the description of this initial testing phase, the paper will then seek to describe the design and construction of the subsequent garments and wearable items for presentation and finally the curation of the public exhibition along with the compiling of the accompanying catalogue.
As the collaborative process is unpacked, the paper will address issues such as sustainability, fabric wastage, 3D virtual prototyping technology and short-run fabric printing technology. The majority of these new developments seek to eliminate the wastage inherent in traditional iteration processes, for example, extended lead times and high sample numbers. The team consciously attempted to adopt a zero waste policy and exhibition items such as the parasol and the wooden information hangers were clad with any useable remnants of surplus printed fabric left over from the garment fabrication.
The resulting exhibition, forming part of the *'Vietnam Festival of Creativity and Design 2020'*, presented the entire creative process with reproductions of notebook pages, paper patterns, fabric samples, garments, footwear, a parasol and a video monitor screening computer simulated apparel designs and a 3D virtual fashion show with avatars wearing multiple variations of the designs on display.

Introduction

The exhibition 'Weaving Experience Into Memory', which forms the central thread of this paper, comprised a collection of related artefacts that were created in response to daily life in Ho Chi Minh City / Vietnam. The project began with the initial creation of a digital art print and this subsequently provided a thread or line of investigation that influenced our ideas, thought processes and decision-making. The development of the initial print work eventually necessitated experiments with different materials and techniques, each of which, in turn, influenced the direction and nature of the overall approach and direction of the work. The project team consciously allowed this working process to run its course.
The exhibition project generated an exploration of the local creative industry that has led to a better understanding of issues such as the availability of fabrics in Vietnam and the accessibility of skills and services, both traditional and digital.

Design approach

The digital print, entitled *'D7 Strata'* (Figure 1), was the latest in an ongoing series of works investigating our immediate environment and our perception of it. Previous works had been concerned solely with formulating a visual language, taking reference from cartographic notation in an abstract sense without reference to any specific location. *'D7 Strata'* on the other hand took an actual block of the local neighbourhood in District 7 of Ho Chi Minh City as the focus for the further development and application of the previous developed visual language.

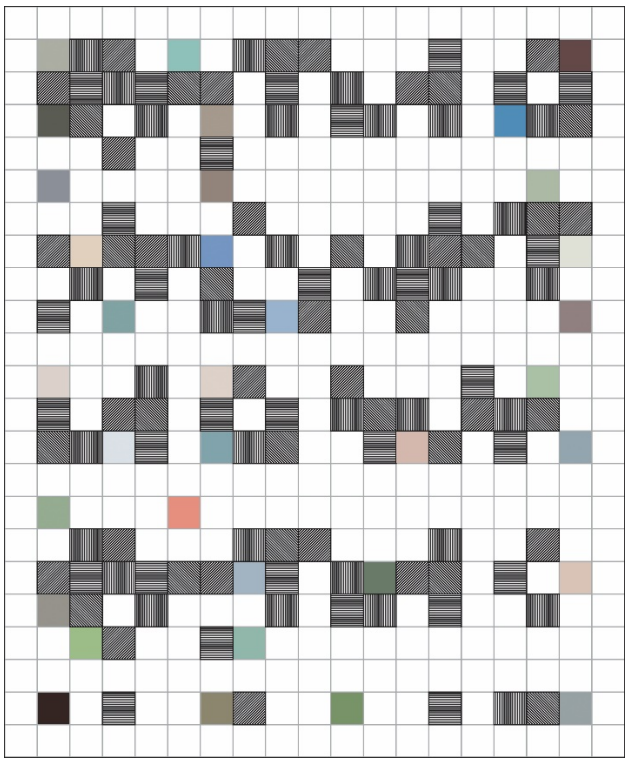

Figure 1: D7 Strata digital print

Taking cues and borrowing from psychogeographic methodologies, the development of the work was initially driven via the physical act of walking through the chosen environment while recording impressions, experiences, discoveries etc. and archiving any interesting observations. This peripatetic approach incorporated the elements of time and movement as a rhythmic substrate upon which ideas could be woven. This was how the initial design of the D7 digital print was created, by literally walking up and down the local streets of District 7 mimicking the action of a weaving shuttle. This metaphor became increasingly more prescient as the project progressed.

Walking as part of a creative practice is increasingly being taken up by artists, writers, poets and others as a medium within which to create their work, or as a catalyst for the creation of work. In the UK, groups and organisations such as the 'Walking Artists Network' brings together practitioners so that they may share work, experiences and perhaps also collaborate. Walking seems deceptively simple and apparently mundane as Qualmann and Hind invite readers of their book 'Ways to Wander', "When the moment takes you, be inspired by the variety of inventive and reflective ideas mapped out here and then simply... wander." (2015:Back cover), but connects to directly to so many aspects of our history and culture, as

“it starts with a step and then another step and then another that add up like taps on a drum to a rhythm, the rhythm of walking. The most obvious and the most obscure thing in the world, this walking that wanders so readily into religion, philosophy, landscape, urban policy, anatomy, allegory, and heartbreak.” (Solnit, 2014:3)
As the walks accumulated more and more information, it was decided to isolate different types of information within separate layers that could later be added one by one thereby gradually constructing a rich and complex study of the chosen locale. The resulting digital print is actually only the first layer of this process, recording ambient colours at each of the road intersections encountered during the many walking trips. The colours were collected via an app called ‘City Palette’, developed specifically to collect environmental colour samples, and were then located onto a simplified, drawn grid of the area under study. The process of drawing the grid and incorporating the colours was completed using Adobe illustrator. The resulting digital print, therefore, is actually a stylized map of the local streets and was printed in an edition of 30 at approximately A3 size.. The work is a combination of focused planning, aesthetic decision making and, surprising to some, a certain serendipity as control over the choice of the colours was partially relinquished and handed over to the mobile technology. The adoption of these types of ‘systems’ to introduce unexpected elements into the creative mix has become a familiar aspect of contemporary art and ultimately provided a good basis for the decision making that was to come during the next stage of the project. In fact, the appearance of the final digital print results from a combination of a ‘systems-based’ approach and some artistic licence that allowed the exact positioning of colours and other small details to be slightly adjusted. (Ford, 2018:7)

Creative influences

When an idea or approach transfers from one medium or technique to another, certain adjustments or modifications naturally need to be made. In order to keep pace with these decisions it is necessary to be aware of new, often unexpected possibilities. It is very easy to remain fixated on the original idea and ignore these new possibilities even when they may lead to a much more rewarding outcome.
Given that the original concept came from the development of an artwork, a balance had to be established between conceptual attitudes and those of a more practical nature necessitated by different materials and techniques in order to arrive at a satisfactory resolution within the work.
Prior to starting the current collaboration, the authors had previously seen and enjoyed an exhibition held at the Fashion & Textile Museum in London, focusing on the work of the fashion house, Missoni and the textiles of Ottavio and Rosita Missoni. The project team were deeply impressed by how the wonderful textile work on display had been influenced by the artwork of the modernist masters, also exhibited in the same space. Masterful works by Lucio Fontana, Sonia Delauney and Italian Futurist Gino Severini were exhibited alongside Otavio and Rosita’s wonderfully vibrant textile work. The authors kept this wonderful experience in mind when an opportunity arose that could allow them to explore their own collaborative Art / Fashion Design investigation.

Exhibition venue and timeline

In the Spring of 2020, a call for proposals was issued from RMIT University Vietnam, calling for ideas and proposals for creative work, talks, events etc. that staff members were working

on and that could be brought to fruition for participation in the planned Vietnam Festival of Creativity and Design 2020. The project team read through the proposal submission information with great interest and decided to submit a proposal for an exhibition that would be held in November of that year during the VFCD 2020 event. The team decided to create a garment collection that was made in response to the experience of living in Vietnam. As the D7 digital print had already been made within the parameters already explained in this paper, it seemed a logical step to adapt the print's aesthetic configuration and rework it as a fabric print so that it could be manipulated and transformed into wearable items.

Practical approach - methodology

In order to transfer the *'D7 Strata'* design (referred to simply as *'D7'*) onto garments, an international digital printing company was consulted and an initial 3 meter length of man-made fabric was printed using a sublimation printing process. In this process, a paper sheet is printed onto which pigments representing the intended print pattern is fixed. At this stage the printed paper sheet resembles a pale version of the final design. The paper sheet is then run through a hot roller-press together with a length of the chosen fabric (Figure 2). The heat from the press turns the pigment on the paper sheet into a gas and simultaneously opens up the pores of the fabric, allowing the gas to penetrate the fabric and become bonded with it. This process results in a very durable printed length of fabric. The Korean company that was consulted for this project were conveniently based in District 7 and specialized in sublimation printing. They agreed to sponsor the fabric for the exhibition project and therefore the choice of fabric was made for the team.

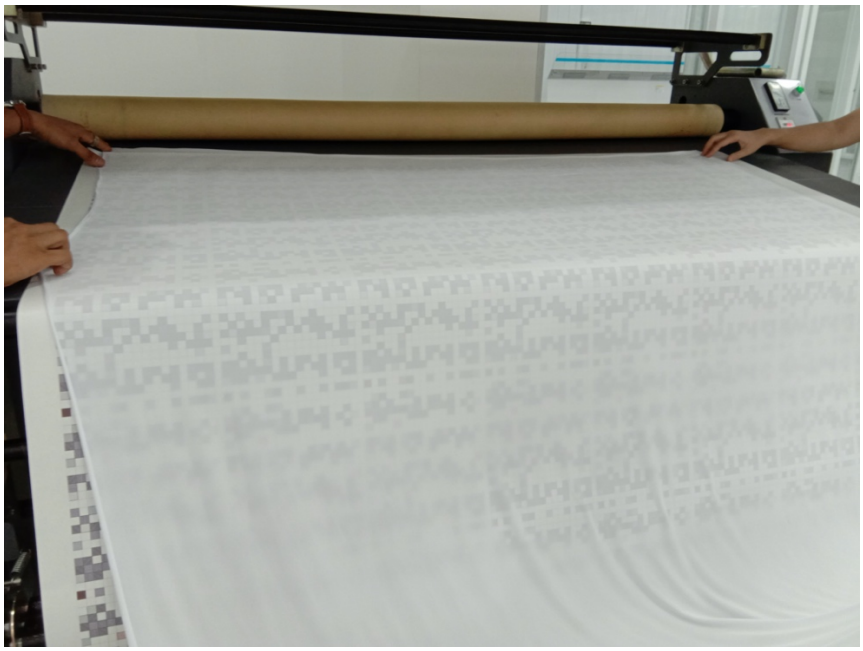

Figure 2: Sublimation printing in progress

As the project was being realised in Vietnam, it seemed logical that the first garment to be considered in the project would be the Ao Dai dress, identified with Vietnamese identity and nationhood and today, more often with ideals of women's empowerment and beauty. (*Thủy Nguyễn: An Everyday Dream*, 2020:5) Considering that the print pattern arose from a

conceptual map, it seemed fitting that wearing the Ao Dai would be to symbolically wrap oneself in the local environment.
The print sponsors also arranged with a local tailor to make up the Ao Dai using the newly printed fabric and the first garment of the project was born.
The completed Ao Dai (Figure 3), provided the basis for subsequent decision making and the overall direction of the collection. The scale and orientation of the print pattern were both determined by evaluating the results of this first experiment. These evaluations were critical as subsequent garments in the project would be made by a member of the project team.

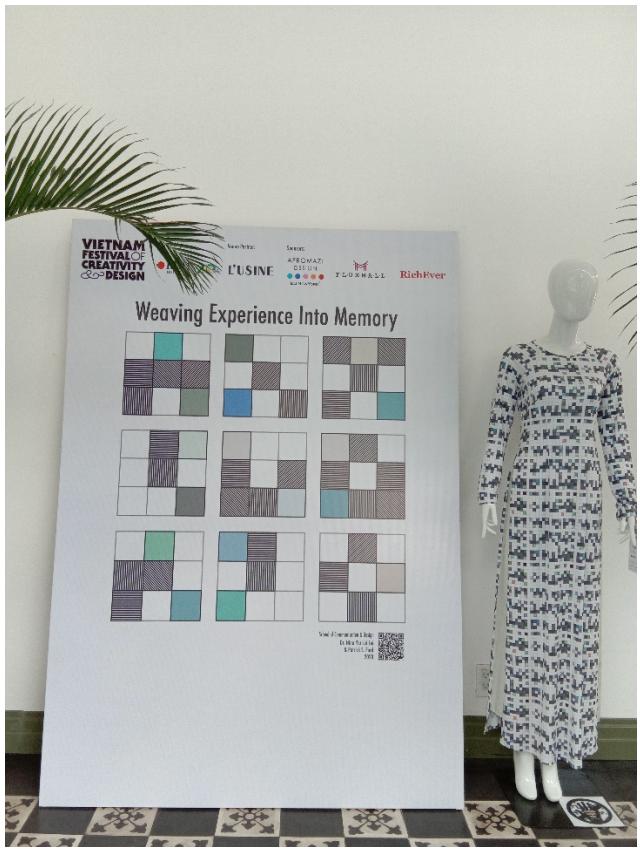

Figure 3: Ao Dai displayed on mannequin

Following the realization of the Ao Dai, the scope was widened to include other items of clothing, both casual and formal. Different tests were conducted during this stage of the design process, examination of various fabrics including cotton, silk, wool, polyester and also investigations into techniques such as digital fabric printing, hand and digital embroidery, weaving and silk colour dyeing.
Further lengths of fabric were then printed in the three scales, in total an extra 9m of fabric, gradually adjusting the size of the print. The varying scales were then assembled in mix and match configurations on the garments as they were designed, with the variations in the print pattern being used to emphasise aspects of the garment construction. Following the Ao Dai test sample, all subsequent garments were made in-house including all pattern making, cutting and garment construction.

Findings

The sample yardages were significantly saved from the originally intended vertical printing lay plan of the D7 print (15 m x 1.5m) when the new diagonal printing lay plan of the D7 (9m x 1.5m) went ahead, printed at three different scales. A mixture of the collection's lay plan was used, employing fabric printed at different scales for each garment. It was estimated that 40% of fabric consumption for the garment collection was saved.
In fact, to meet certain MOQ in mass production, such as 3,000 metres per colour per pattern, the impact recorded would be even more significant. The success resulted from the team (an artist and a designer) aiming towards the zero concept before the teams printed the fabric, as they cut the fabric, sewed the garment, and identified any wastage on the cutting table.

Educational feedback

One of the issues that the project team was able to feed back into the classroom, was the expanding issue of sustainability. The team had discovered first-hand how, by utilizing digital technology, it was possible to visualize the printed fabric being tailored to fit an avatar wearing a multitude of variations of the considered designs. Following this virtual stage, after construction of the actual garments had begun, it was also possible to print fabric as required, in short runs, for specific garments. This could help to minimize unused fabric. Rissanen (2013:x) estimates that approximately 15% of the cloth needed to make a garment is wasted, while Runnel, Raihan, Castle, Oja & Bhuiya (2017:7) put that figure as high as 25% and it has been estimated that around 148 million tons of fashion waste will be being generated by 2030. (Kerr & Landry, 2017:12) It has been stated that approximately 120-150 billion new garments were made every year. (Runnel, Raihan, Castle, Oja & Bhuiya, 2017:6) These figures are alarming and press home to students the crucial need for sustainable practices within the fashion industry. Rissanen (2013:2) goes on to argue that although the wastage is prevalent at the manufacturing stage, it has already been determined at the design stage and this is where the problem needs to be addressed.
The usual assumption is that the most effective approach to reducing fabric waste is to focus upon the pattern cutting stage, when the various parts of the pattern are laid out on the fabric to most efficiently utilize the length of fabric (marker making). Agreeing with Rissanen, McQuillan (2020:2) has described how sustainable practices could begin earlier in the process, at the design stage, by employing the use of 3D virtual design and prototyping software that could be used in industry as well as in design institutions with the overall target being zero-waste fashion design. She also outlines the problem of certain designers not fully understanding the pattern-cutting process, creating a 'knowledge-gap' between design and manufacture.
It is somewhat surprising that these 3D technological approaches have only recently been incorporated into the apparel industry considering that they are already well established in other industrial sectors such as architecture, automative, aerospace and industrial design. (Papahristou & Bilalis, 2016:1) It has been suggested that this relates to the inherent complexities in reproducing fabric construction and the corresponding physical characteristics such as dropping and stretching but also due to the different types of fabric such as weave and knit. (Papahristou & Bilalis, 2017:1)
Following the team's introduction to sublimation printing, their next decision was to explore the potential of 2D/3D software to both generate multiple iterations of their designs and to reduce the fabric waste that would be normally be consumed during this process. In industry this can be a very expensive iterative process. (Papahristou & Bilalis, 2016:1)

A Korean software, CLO, had been introduced to the team's teaching institution and here there was now an opportunity explore its potential. This software had already been adopted by many industry giants such as Ikea, Adidas, Patagonia, Helmut Lang and Amazon, but mainly as an extension of their merchandising and marketing pipelines. (McQuillan, 2020:4)

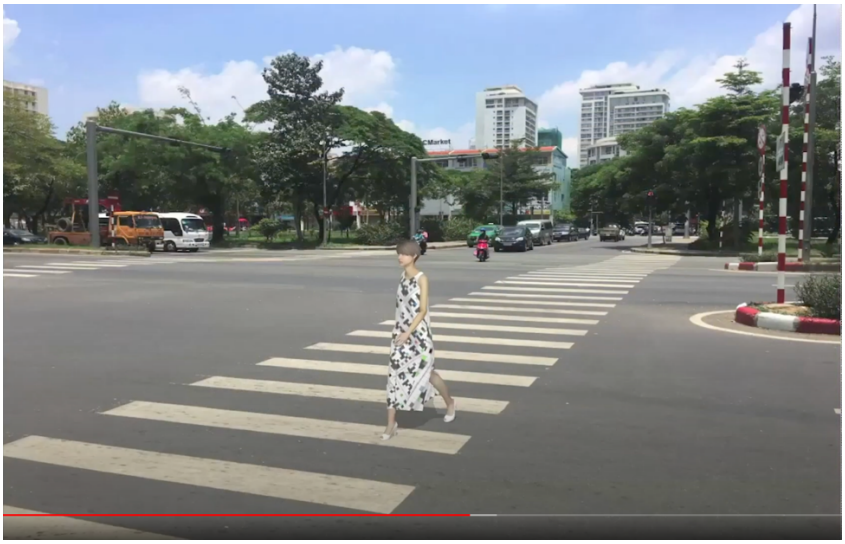

Figure 4: Virtual Avatar created in CLO

The possibilities for the software's use in education had already been identified, with at least 58 international institutions already utilizing the software in their teaching programmes. (McQuillan, 2020:4) Students are able to allow their imagination to explore possibilities within their designs and the programme assists in maintaining a connection between the aesthetics of the design and the practical nature of the pattern would need to cut and made into a garment. Students are also usually careful about fabrics, as they cost money and software such as CLO can assist in keeping costs down by testing out their ideas virtually before moving onto garment construction. (McQuillan, 2020:7) It seems surprising now that previously for so long, industry has been using 2D technology to design 3D products. (Papahristou & Bilalis, 2017:1)

This software also enabled the construction of virtual settings in which computerized avatars walked within locally captured environments in order to gauge the visual impact of the designs (Figure 4). The ability of the software to recreate the natural draping of the fabric (presenting the scale and direction of the *'D7'* pattern) and helping to reduce fabric consumption was particularly useful. CLO is able to reproduce accurate draping of different fabrics through the application of collision detection, which is how computers are able to detect the intersection of objects in various applications such as robotics, computer graphics and computer games. (Papahristou & Bilalis, 2016:4) (Papahristou & Bilalis, 2017:3)

As subsequent designs were developed and applied to other garments, the idea of a collection came to the fore, which in turn stimulated the consideration of an expanded range of products such as scarves, footwear, bags and even a parasol. Experiments were conducted along these lines and prototypes were designed and constructed.

One test garment was made using 'Direct to Garment' (DTG) printing (Figure 5). Unlike the rest of the collection, this garment was made in 100% cotton and so a trial was made of the DTG printing method, which is better suited to natural materials. The team felt that the process was very successful and within the project inventory, the garment was referred to as

the ‘green top’ as the pattern had been adapted from a previous top made from green-dyed linen.

Figure 5: DTG Test on cotton, ‘Green Top’ (on the right)

Discussion points

Of course, it is not expected that anyone would choose to wear a top, dress, skirt, high heels, wrap espadrilles, bag or parasol treated with the same print design all at the same time. On the contrary, the collection presents a range of garments and accessories to be selected from according to specific needs. The range aims to explore different potential tastes and so, in accordance with this aim, the garments were tailored using three different scales of the *‘D7’* print design. The ‘regular scale’, when seen from a distance, could be taken for a traditional check pattern while the details of the fabric design in this case are only appreciated at close distance. By comparison, other garments employ the ‘medium’ and ‘large scale’ thereby presenting a bolder, more fragmented version of the design. Each of these options could appeal to diverse tastes and the choice would be driven by the wearers’ own personality. Despite the project not being conceived as a commercial operation (it was actually a collaborative research project), it was necessary to follow the logic inherent in the process by reflecting upon the national market in a hypothetical manner with regard for the customer’s preference, creating easy-carry styles and asking our students such questions such as ‘What would be a reasonable price?’, ‘How could a fashion brand be communicated satisfactorily here?’, ‘how could these products be generated for sale in the market here?’.

The design of the clothing focuses on clean silhouettes, neckline cutting, armhole movement, a cut & sewn approach with details such as pleating, racerback detail, hidden pockets, wrapping elements and draping all featuring the *'D7'* print design. The underlying consideration is an interweaving of different print scales, how the fabric grainline is to be centered and how the direction and interaction of the print pattern activates the colours, vertical, horizontal and diagonal lines. Each of the scales plays a metaphoric role in the interpretation of the walking map, adopting a panoramic or more detailed view of the neighbourhood.
Unused pieces of the D7 fabric were used to make the 'parasol' (Figure 6) or were adapted to be part of the display so as to minimize the wastage of the printed fabric. We discovered that the instinctive reaction to even small amounts of wasted fabric was echoed in the attitude of contemporary designer Zandra Rhodes, "...I always consider what is left and try to make it into another part of the dress. I can't tolerate waste and use every inch". (Rhodes & Knight, 1984 quoted in Rissanen 2007:4)

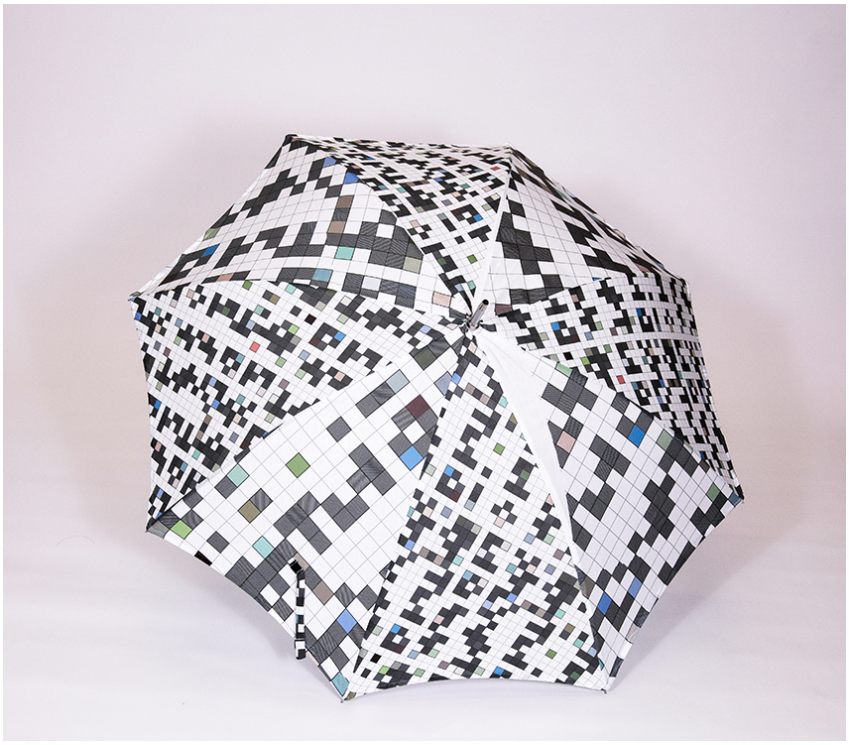

Figure 6: D7 Parasol

The merchandise now formed a collection that could be assembled and presented to the public. Further tests and samples were made towards this end including fashion accessories. In order to progress these designs a national company specializing in footwear production for the international market was consulted and prototypes were constructed using the *'D7'* design pattern. The samples included high heels and wrap-espadrilles.
The collection naturally needed to be displayed and it was thought logical and highly appropriate that the merchandise should be first displayed in the neighborhood where the *'D7'* print pattern was created. An ideal venue was located within District 7 that could provide a sympathetic environment for the exhibition (Figures 7 & 8). A mixed retail / F&B establishment representing a fashionable lifestyle brand within Saigon that proved receptive to hosting this presentation of art and fashion collection.

Figure 7: ‘Weaving Experience Into Memory’, installation image A

Figure 8: ‘Weaving Experience Into Memory’, installation image B

Conclusion

Based on the success of the exhibition and its overwhelmingly positive reception, the team proved that an artist and a fashion designer can work efficiently and effectively together by focusing on the nature of collaboration, seeking to identify and elaborate on the intersections of the two approaches.

As a research project, ‘Weaving Experience Into Memory’ has been enlightening. The transformation from art to design and from conceptualisation to realisation, took the project team on a creative journey that proved to be an invaluable learning experience. The availability (and scarcity) of different fabrics in the local market, the presence of local and international manufacturing industries open to collaboration and providing support, companies employing digital printing and visualization software is invaluable knowledge that can be passed on to our students, designers and local enterprises. As local creative industries grow and develop they will drive the demand for well-designed and well-made products and at the same time will drive the growth of the industry overall.

In the past, advances in technology have been targeted primarily at deceasing labour costs, reducing the number of people involved in a particular production line. Processes that were once manually performed can now be performed virtually due to the advances in design software. (Ogulmus, Ureyen & Arslan, 2015:7) More recently, however, it is sustainability that is the main consideration when considering which design or manufacturing option to choose.

Often the term sustainability is discussed as though it were the invention of the current generation whereas in previous generations many of the issues being talked about such as preserving resources and energy were acted upon on a daily basis, whether that was in the form of taking a large bag when buying fruit and vegetables at the market or buying a sturdy pair of shoes that would be re-soled and re-heeled countless times. Contemporary designers are now beginning to discuss the prospect of products that are intended to be repaired. As McQuillan (2016:4) states, this is “ a notion our grandparents may find familiar”.

In those days, even children in the UK would buy sweets (candies) in shops that were stored in large glass jars. The sweets would be dispensed using scoops into paper cones, individually wrapped chocolate bars etc. being regarded as expensive and therefore rare luxuries.

Today, what is markedly different from those days, of course, is the currently available technology in many walks of life.

The increasing use of 3D apparel technology fulfills more and more company’s desire to engage in green practices and ultimately leads to fewer chemicals being used in the preparation of fabrics and, of course, reduced waste. (Papahristou & Bilalis, 2016:5)

The results and findings from this project can be fed back into education and be of great benefit for the students, the designers and entrepreneurs of the future. Problems can arise if institutions are not aligned to these findings, or not sufficiently equipped to conduct relevant training. Sometimes, even the teaching staff may not have the same knowledge or mindset on the new software set-ups and uses. (Papahristou & Bilalis, 2016:5)

To be effective and to be adopted seriously by students it would be better if sustainability could be embedded into every course / module, whereas the topic is often taught as an elective thereby leading the students to assume that sustainability is something extra or optional. (Rissanen, 2015:207)

There are also potential problems within industry if commercial partners use different 3D software, with the potential for critical information to be lost during transferal, say from headquarters to the factory even when both parties use .dxf files. (Papahristou & Bilalis, 2017:5)

Although the project team could not claim to have adhered 100% to the mission of ‘ZWFD’, Zero Waste Fashion design, as a ‘...garment designed through such a process contains all of the fabric that was used to create it, with pre-consumer fabric waste eliminated through design’ (Rissanen, 2015:201), the team did strive to minimize wastage as much as possible through digital trials and experiments as well as deliberately working any off-cuts from the garments into other accessories such as the ‘parasol’.

It is hoped that this project may also illustrate how creative ideas can arrive from a variety of sources, not always from conventional ones. Sometimes, our personal experience of a particular place can be the catalyst for ideas that merely need the space to develop, if we allow them to.

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