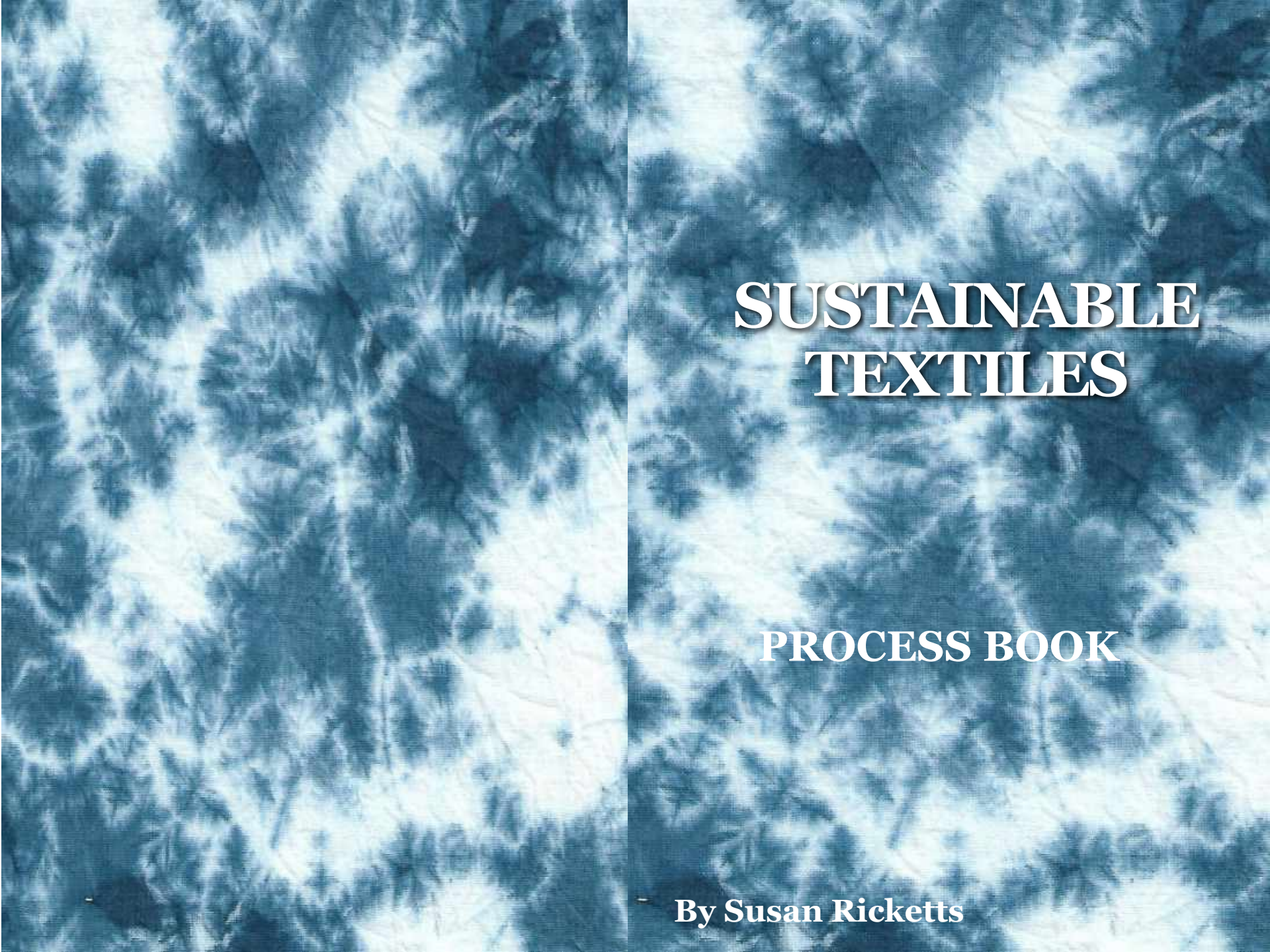


SUSTAINABLE TEXTILES

PROCESS BOOK

By Susan Ricketts

CONTENTS

1. The Textile industry research
2. Textile Mill research
3. Idea generation and manifesto
4. Inspiring artist and ideas
5. Natural dyeing research
6. Work in progress
7. Final outcome
8. Bibliography

THE TEXTILE INDUSTRY

The textile industry has been under scrutiny for some years by the media and the Government, examining their impact on the environment from production to waste. The industry is the major cause for greenhouse gas emissions, landfill, fast fashion and water pollution.

Landfills is a waste disposal system to dispose of trash/garbage either by dumping it, buried or burnt which is a catastrophic threat to the environment.

The increase in population leads to an increase in more waste, more demand in manufacturing goods i.e. clothes, and then more waste being dumped which then causes toxins leaking into the soil and water.

The UK is fourth in ranking as the largest textile waste producer in Europe according to,Circular Online.

(Circularonline.co.uk, 2021)

Disertation, Susan Ricketts

STATISTICS

Figure 1: Preventing waste across the product lifecycle

How will the Waste Prevention Programme relate to "Our waste, our resources: A strategy for England"?

"Our waste, our resources: a strategy for England", referred to here as the Resources and Waste Strategy, states how we will better manage our material resources: how we will promote resource efficiency, move towards a circular economy, and minimise the residual waste produced. It aims to safeguard our natural capital: reducing greenhouse gas (GHG) emissions, mitigating risks from chemicals, and reducing the impacts of extraction on our natural environment. It sets out a comprehensive and overarching approach, covering in depth the immediate actions that need to be taken.

		Yearly Textile waste	Yearly textile waste per person	Of which recycled	Of which landfilled	Annual spending on clothing	Final score
1	Italy	465.925 t	7,7 kg	0,8 kg	4,4 kg	£920,80	100,0
2	Portugal	81.715 t	8,0 kg	0,8 kg	4,6 kg	£682,10	96,9
3	Austria	62.446 t	7,0 kg	0,7 kg	4,0 kg	£1.082,80	84,9
4	United Kingdom	206.456 t	3,1 kg	0,3 kg	1,7 kg	£980,50	59,1
5	Belgium	169.949 t	14,8 kg	1,5 kg	8,4 kg	£810,00	51,7
6	Czech Republic.	108.273 t	10,2 kg	1,0 kg	5,8 kg	£298,40	49,7
7	Denmark	18.134 t	3,1 kg	0,3 kg	1,8 kg	£844,10	47,0
8	Spain	98.881 t	2,1 kg	0,2 kg	1,2 kg	£578,80	45,7
9	Finland	14.934 t	2,7 kg	0,3 kg	1,5 kg	£750,30	44,4
10	Germany	391.752 t	4,7 kg	0,5 kg	2,7 kg	£775,90	43,5
11	Netherlands	102.261 t	5,9 kg	0,6 kg	3,4 kg	£869,70	41,6
12	France	210.001 t	3,1 kg	0,3 kg	1,8 kg	£571,20	39,0
13	Ireland	22.944 t	4,7 kg	0,5 kg	2,7 kg	£648,00	34,1
14	Poland	103.683 t	2,7 kg	0,3 kg	1,6 kg	£341,00	28,3
15	Hungary	23.190 t	2,4 kg	0,2 kg	1,4 kg	£213,20	0,0

Ranking of the biggest textile polluting nations

Government Waste Prevention Programme for England, towards a resource efficient economy. (Policy connect,2021)

Scientific Companies Research

New Innovations

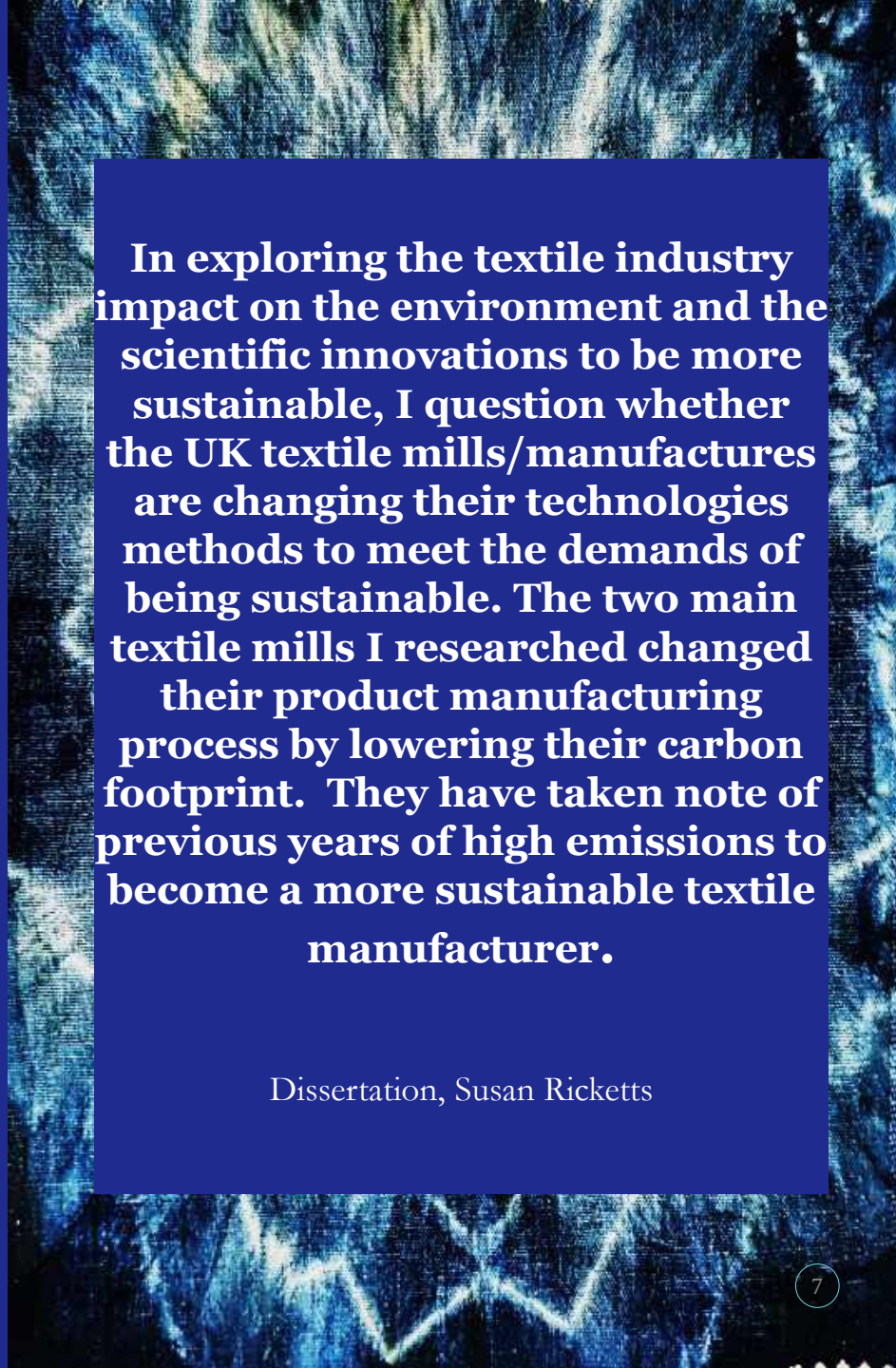
BLUESIGN is a system that provides safer and more sustainable environments for people to work in and everyone to live in. Powered by a holistic approach, BLUESIGN traces each textile's path along the manufacturing process, making improvements at every stage from factory floor to finished product. (Bluesign,2021)

" In our current economy, we take materials from the earth, make products from them, and eventually throw them away as waste – the process is linear. In a circular economy, by contrast, we stop waste being produced in the first place." (Ellen MacArthur,2021)

" Every year that the fashion industry uses 93 billion cubic meters of water-enough to meet the consumption needs of five million people, and 20% of wastewater worldwide comes from dyeing and treatment."

(Ellen MacArthur Foundation, 2021)

TEXTILE MILLS



In exploring the textile industry impact on the environment and the scientific innovations to be more sustainable, I question whether the UK textile mills/manufactures are changing their technologies methods to meet the demands of being sustainable. The two main textile mills I researched changed their product manufacturing process by lowering their carbon footprint. They have taken note of previous years of high emissions to become a more sustainable textile manufacturer.

Dissertation, Susan Ricketts

Stephen Walters

Woven in England since 1720.

"We support the concept of sustainability and recognize that, in common with all businesses, our activities have an environmental impact. Our strategy is to minimize waste in our manufacturing processes, so the environmental impact of our operations is relatively low compared to manufactures in other sectors. We recognize that our impact on the local community is as important as our global contribution. We also recognize that we can improve our own environmental performance and so resources are deployed to actively reduce our own carbon footprint."
(Stephen Walters.co.uk,2021)

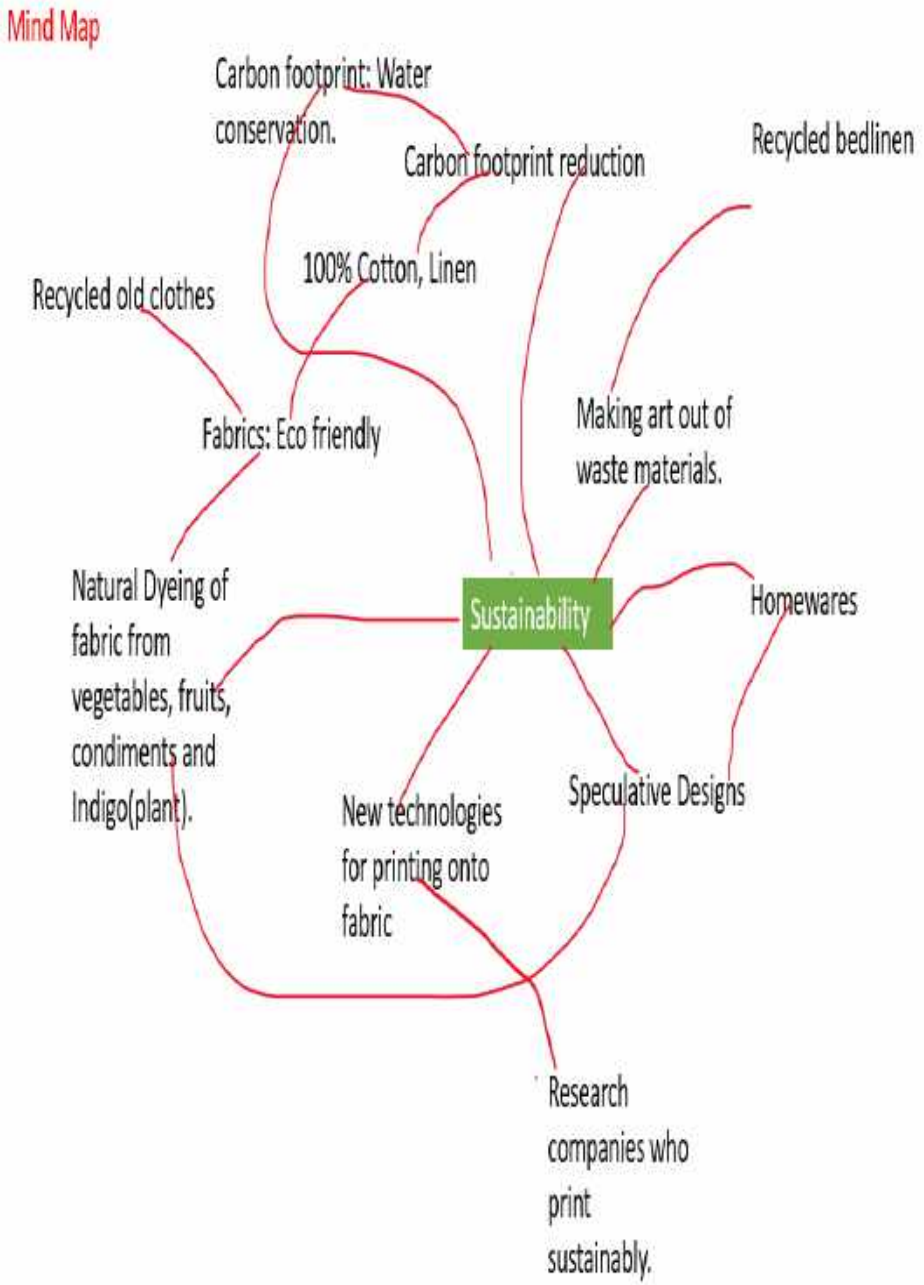
Abraham Moon & Sons 1902

“Our journey of sustainability takes us from the farms of our growers and the natural benefits of the wool itself, right through to the manufacturing methods at our unique British mill. In these pages you will find actions we are currently taking, as well as the commitments we are making for the future.”(Moons.co.uk,2021)

IDEA GENERATION & MANIFESTO

KEY THEMES

- Textile Industry
- Sustainable Textiles
- Natural Dyeing



Idea Generation Mind Map

Word Association Key Words

Sustainability
Organic Cotton
Environment
Organic
Linen
Environmentalism
Tencel
Natural
Pinatex
Organic
Hemp
Sustainable Design
Bamboo
Green
Modal
Natural resources
Silk
Biodegradable
Ecosystem
Chemical
Dyeing
Ethical
Circular
ECO
Carbon-Neutral
Economy
Reuse
Recycle
Reduce

Sustainable Manifesto

- Practice sustainably, Reduce, Reuse, Recycle
- Only use 100% organic cotton, Linen, silk or Hemp.
- Reduce carbon footprints, use less water.
- No chemical dyeing
- Do not use polyester, elastane, lycra, acrylic, nylon, rayon or modal fibers.
- Only use eco friendly dyes.
- Be a sustainable consumer

INSPIRING
ARTISTS &
IDEAS.

Pacita Abad

TATE LIVERPOOL

Bacongo III, 1986, Acrylic paint, silkscreen, plastic buttons, mirrored glass, wool, ribbons and thread on canvas., 2630 x 1495mm

Olga de Amaral

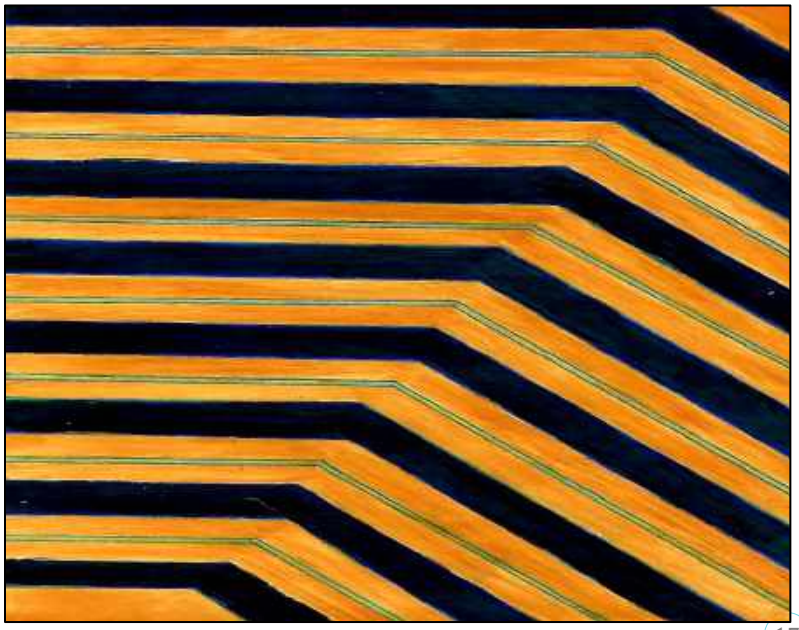
Alchemy 50, 1987, canvas, gesso, gold leaf, and acrylic paint, 1650 x 1500mm.

Lenore Tawney

Lekythos 1962, Linen, brass and acrylic., 1270 x 680 x 44 mm

Drawing Ideas

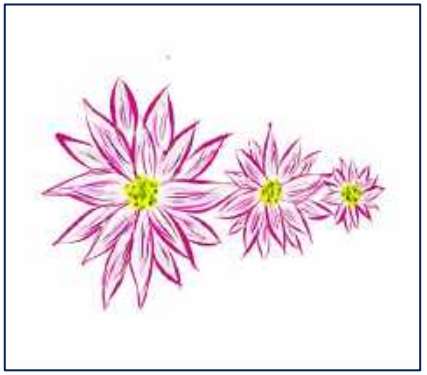
Pacita Abad art works, Bacongo III, 1986 inspired me to paint on fabrics, these are prototypes I have created, to copy onto fabric Olga de Amaral and Lenore Tawney also inspired me to think about materials to use in my processes.

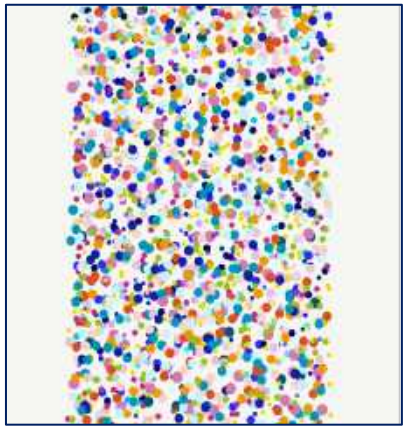


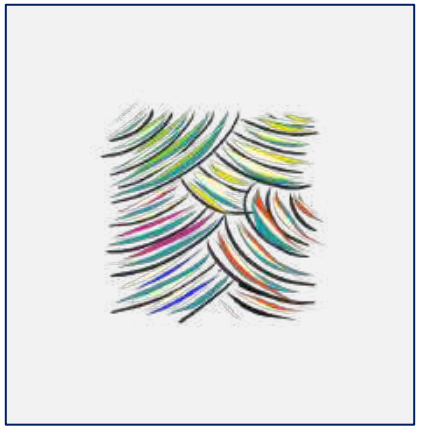
Design inspirations, Susan Ricketts, 2021

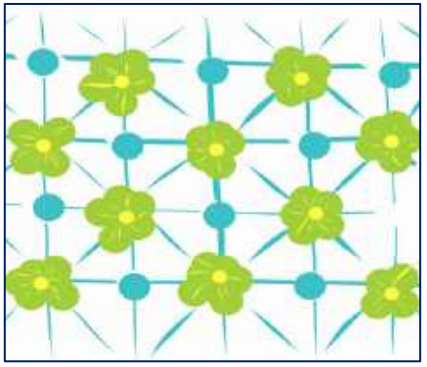
Digital Drawings

More prototypes, digital drawings to duplicate the pattern onto fabric.









Design inspirations, Susan Ricketts, 2021

Various digital designs I had printed on 100% organic cotton, at a sustainable fabric printers, Forest Digital, to re-upholster an old dinning chair Seat.

Exploration of pattern ideas, Texture Rubbing

Ideas from a workshop with Catherine. Texture rubbings from around the Birmingham City University School Of Art,.

Textured rubbings on linen and cotton towelling fabric.

Texture Rubbings, Susan Ricketts, 2021

NATURAL DYEING RESEARCH

Natural Dyeing

Exploration in natural dyeing with fruit, vegetables, coffee, peppermint tea and a spice on linen fabric.

Natural dyeing by, Susan Ricketts,2021

Sustainable fabrics glossary

- **Organic Cotton**: Organic cotton is cotton harvested without any toxic pesticides, synthetic fertilizers or genetically modified seeds. This usually implies a sustainably managed fabric production process. Look for the GOTS certification (Global Organic Textile Standard).
- **Hemp:** Hemp is a specific type of cannabis plant. It's fast growing, doesn't exhaust the soil, and doesn't require pesticides. Hemp creates a durable fabric that doesn't irritate your skin and has many uses. Its often used in place of cotton.
- **Recycled Polyester**: Recycled polyester is PET (the chemical used to create polyester) from plastic water bottles that have been broken down into fibers. The recycled fabric keeps plastic out of landfills and can be recycled many times over. Recycled polyester is less harmful as it generates less carbon emissions in production.
- **Linen:** Linen is made from flax, which can be grown without fertilizer and planted in areas where other crops cannot thrive. The result is biodegradable, providing harsh chemicals are left out of the process.
- **Silk:** Silk comes from silkworms that subsist on a diet of only mulberry tree leaves which are resistant to pollution and easy to grow. This plant's characteristics make the production of silk a fairly- low waste ordeal.
- **Tencel:** Tencel ™ is a brand version of lyocell, a type of rayon derived from cellulose fibers that come from tree pulp. Tencel ™ founding company Lenzing utilizes eucalyptus wood, sustainable practices, and responsible sourcing not guaranteed in other lyocell production processes.
- **Modal:** Modal is another semi-synthetic material made from wood pulp but mainly that of beach trees. The naturally occurring yet human-made fabric is generally more delicate and softer than its lyocell sibling.
- **Pinatex:** Pineapple Leather made from leaves of the pineapple grown in the Philippines. Sustainable than traditional leather – completely animal free. Less water and no harmful chemicals that are not toxic to wildlife.
- **Reclaimed (dead stock)** : Reclaimed fabric (often called deadstock) is left over fabric from manufactures. It can also mean vintage fabric, or any unused material purchased secondhand which could otherwise be tossed. By using deadstock, makers keep textiles out of landfills and use something that's already been made.

Natural ways to dye fabric.

•**Orange:** carrots, gold lichen, onion skins
•**Brown:** dandelion roots, oak bark, walnut hulls, tea, coffee, acorns
•**Pink:** berries, cherries, red and pink roses, avocado skins, and seeds (really!)
•**Blue:** Indigo, woad, red cabbage, elderberries, red mulberries, blueberries, purple grapes, dogwood bark
•**Red-brown:** pomegranates, beets, bamboo, hibiscus (reddish color flowers), bloodroot
•**Grey-black:** Blackberries, walnut hulls, iris root
•**Red-purple:** red sumac berries, basil leaves, daylilies, pokeweed berries, huckleberries
•**Green:** artichokes, sorrel roots, spinach, peppermint leaves, snapdragons, lilacs, grass, nettles, plantain, peach leaves
•**Yellow:** bay leaves, marigolds, sunflower petals, St John's Wort, dandelion flowers, paprika, turmeric, celery leaves, lilac twigs, Queen Anne's Lace roots, mahonia roots, barberry roots,

Prepare your Fabric for Natural Dyes

•Before you start the dyeing process, you'll want to get your fabric ready. First, wash the fabric. Don't dry it though – it needs to be wet. Then prepare your fixative or "mordant." This is to help the fabric take up the natural dyes more easily. **For berries, you'll want to use salt and for any other plant material, you'll want to use vinegar.**

• Here are the measurements:
Salt: dissolve ½ cup salt in 8 cups cold water
•**Vinegar:** blend 1 part white vinegar to 4 parts cold water
Place your damp fabric in the fixative solution for an hour. Rinse with cool water when done. Then, it's time to dye the fabric.

Diynatural.com,2021

Making and experimentation

Organic cotton fabric cushion, fabric dyed with turmeric and painted design with embroidery detailing.

Cushion, fabric dyed with spinach, pale green in colour, with a painted floral design.

First Tie-dye prototype on Organic cotton

Making experimentation, by Susan Ricketts, 2021

Commissioned Work

Mrs Win Gordon requested me to make a cushion in memory of Remembrance day.

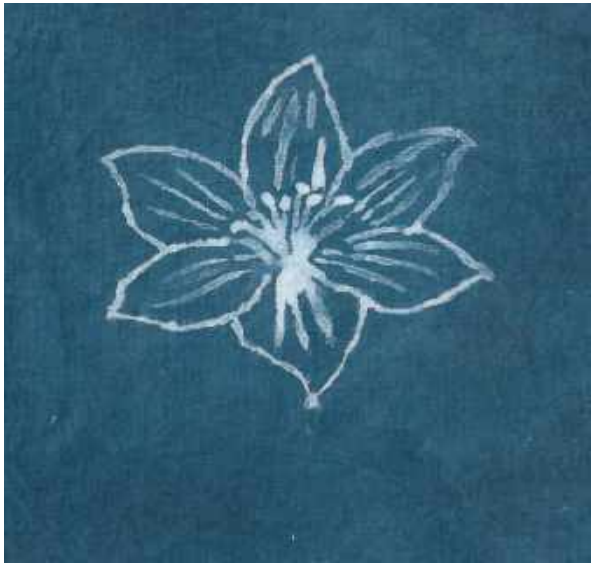
NIGHT SCHOOL

Display exploration

First exhibition at Centrala, December 2021

The British Library, 6,328 books, Dutch wax print fabric, gold foil, software ,networked ,world wide web, table and chairs. Variable Dimensions.

Batik Dyeing Process



Batik dyeing with wax process, is a method by drawing dots and lines of the resist pattern with a spouted tool called a tjanting, or by printing the resist with a copper stamp called a cap.

Yinka Shonibare CBE practice of using batik fabric in his art works, like , The British Library, inspires me with the bright Nigerian fabrics.
In my experiment I have combined the batik wax method without the crack effect and dyed the fabric with indigo.

SHIBORI TIE-DYE PROCESS

Shibori Japanese dyeing technique, binding and folding to form different patterns before dyeing.
The use of elastic bands, nylon thread, crumpling and string acts as a resistant to the indigo dye to create patterns on the natural white fabric.

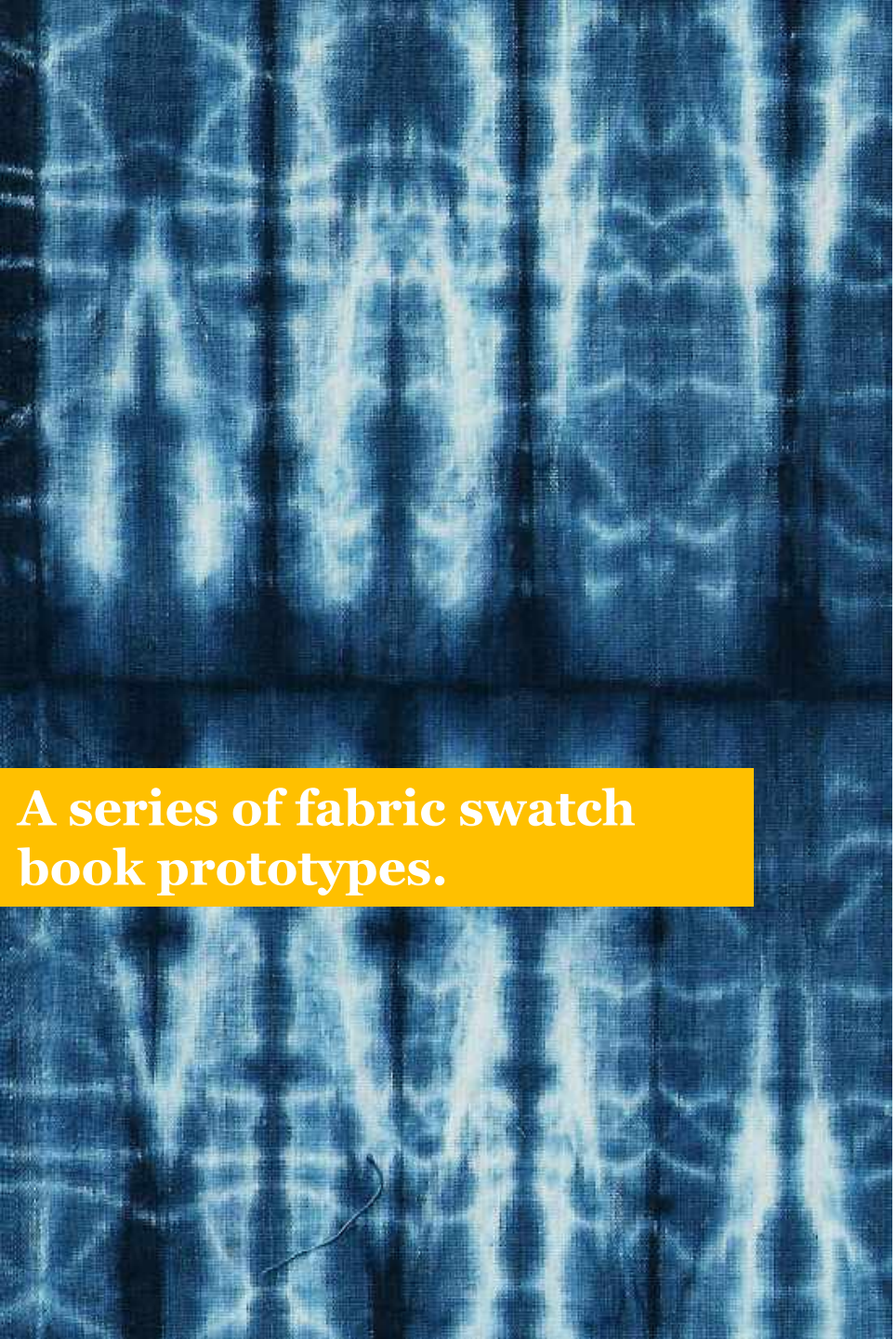
Shibori tie-dye, Feathers design, Indigofera tinctoria plant dye on recycled cotton fabric. Susan Ricketts,2021

Indigo Shibori dyeing

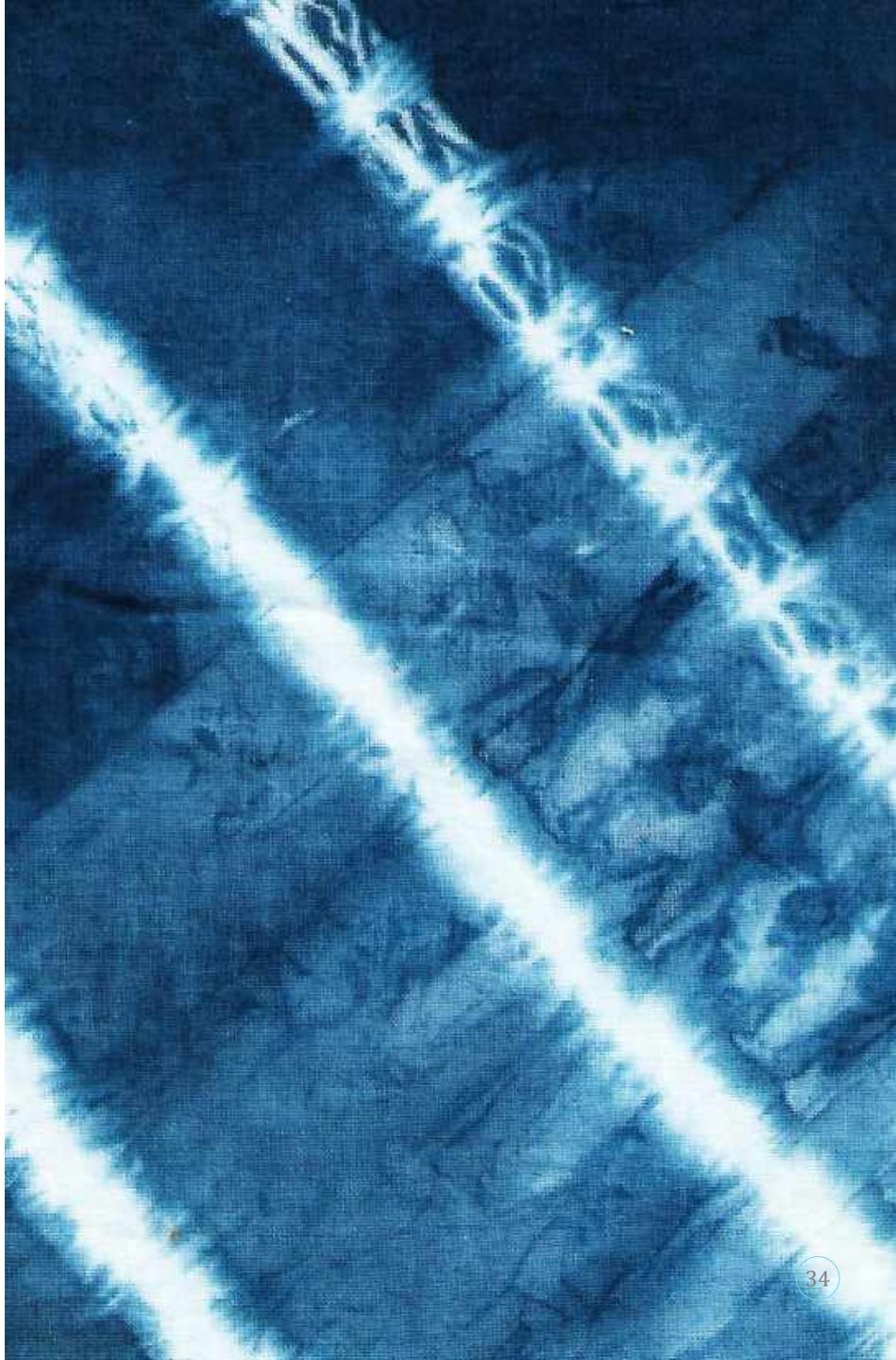
The indigo plant, (Indigofera tinctoria) is derived from several plant species across the world. The most significant plant of this family which yields the highest concentrations of indigo pigment. (Denimhunters.com, 2021)

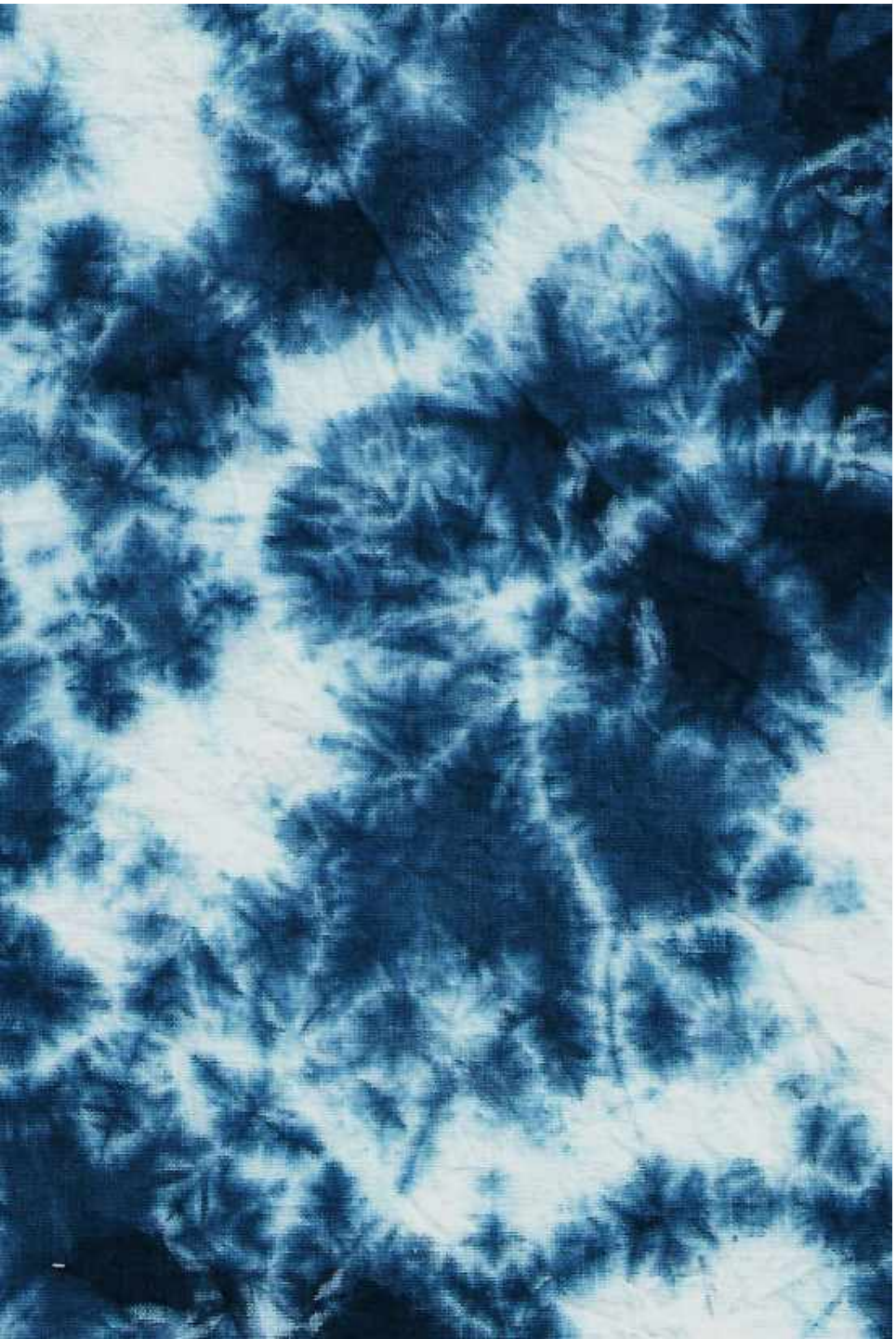
Dyeing the calico fabric in the indigo vat bath.

Shibori tie-dye process of folding and binding .

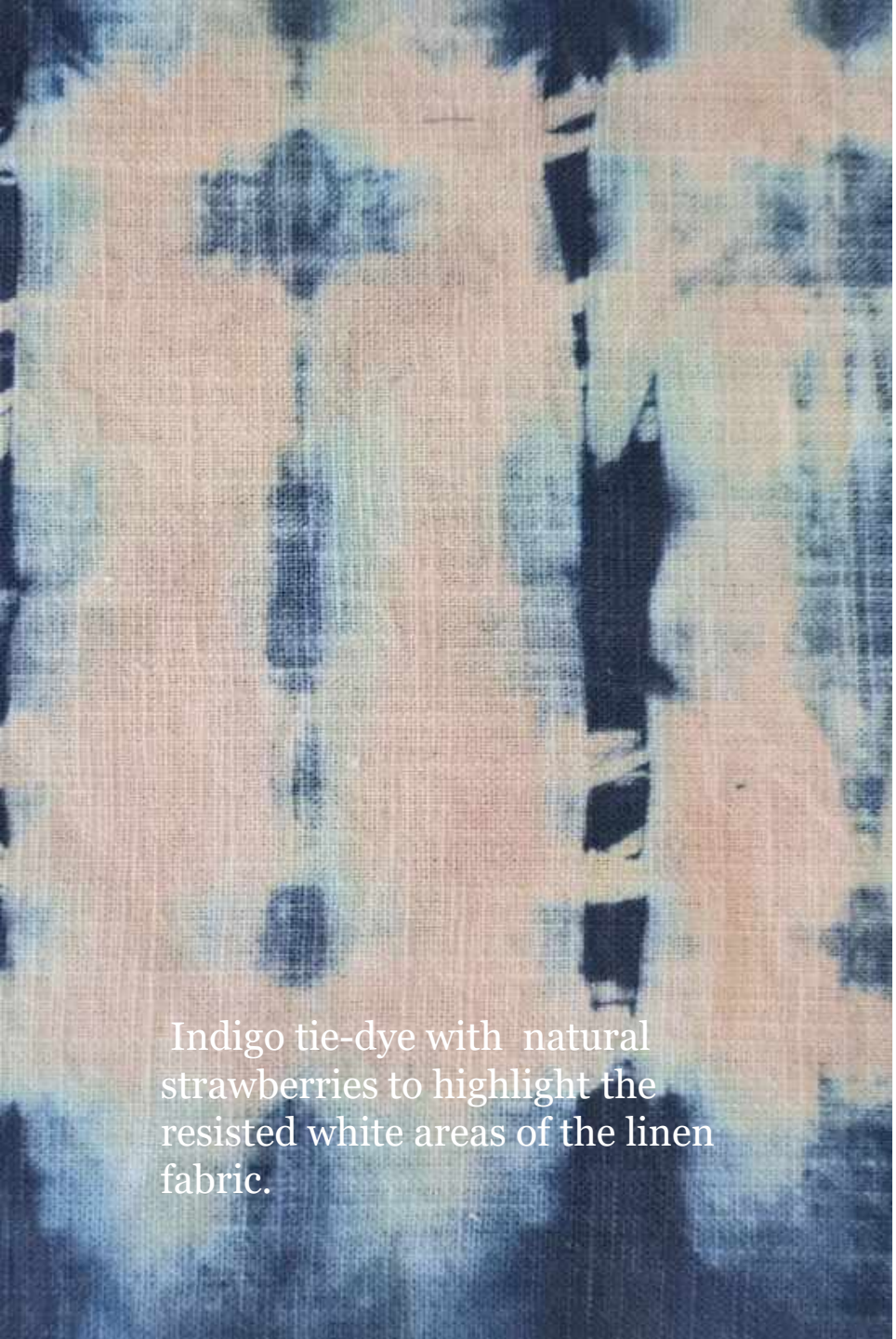


A series of fabric swatch book prototypes.

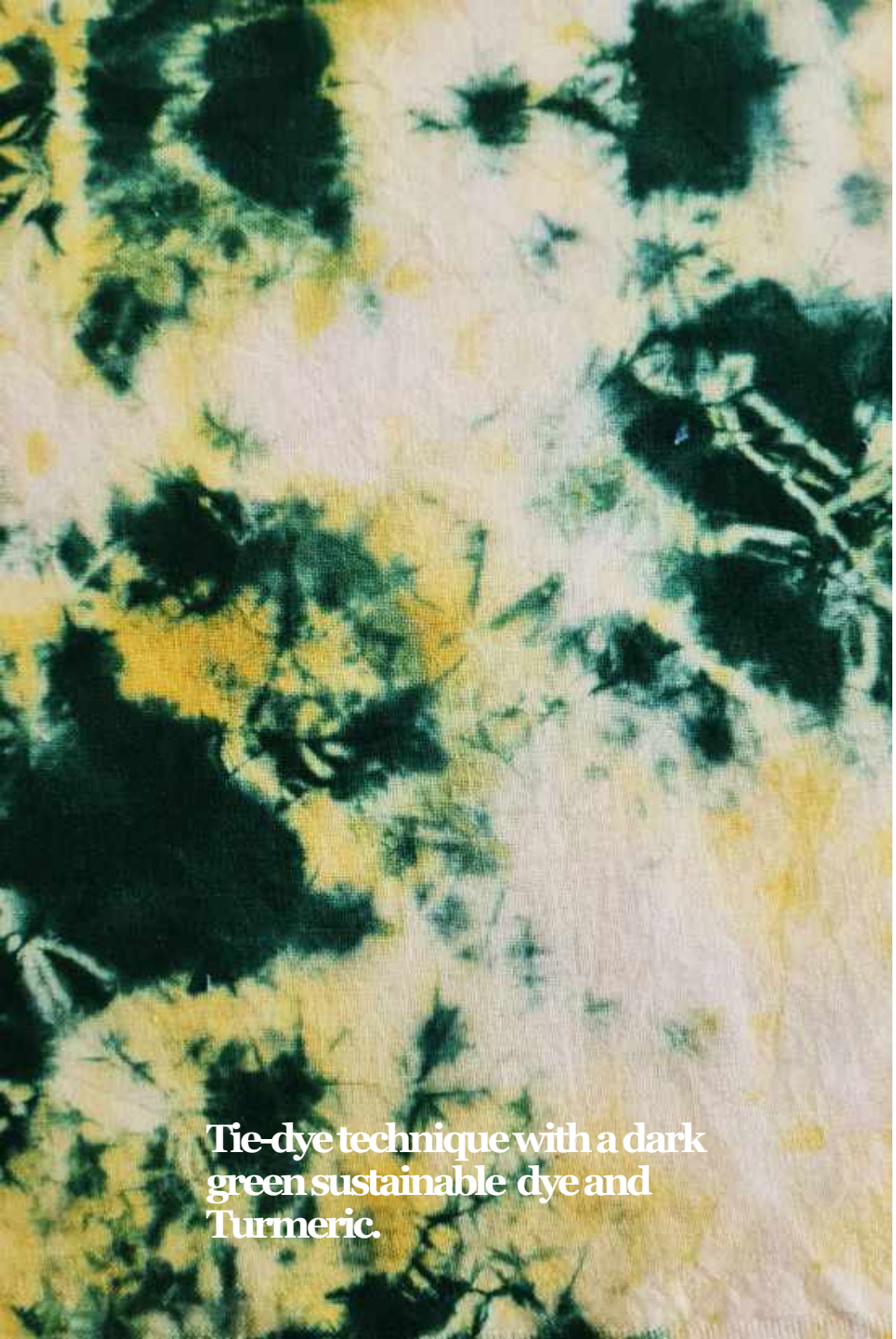




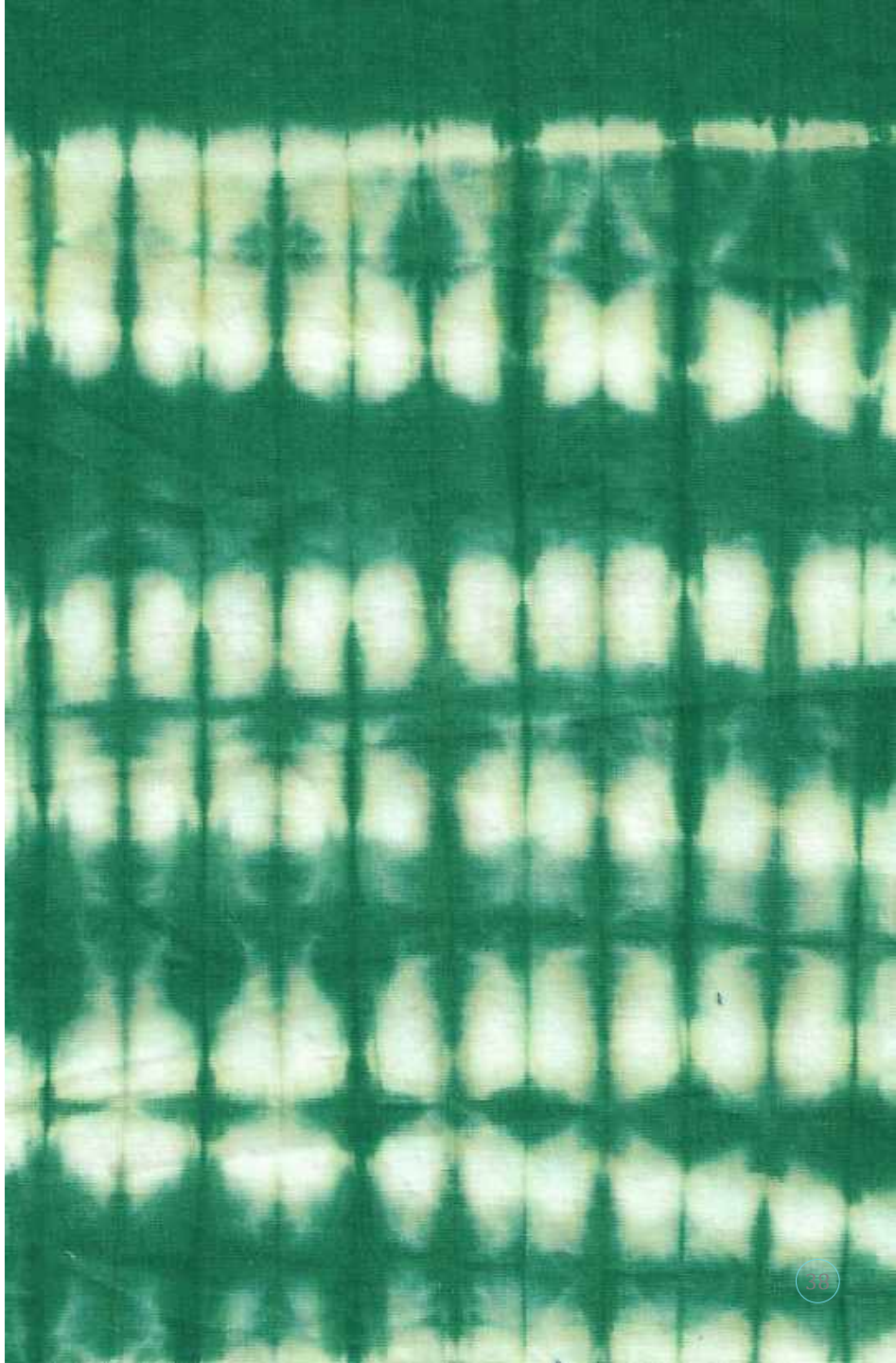
Indigo tie-dye with a hint of strawberry natural fruit dye



Indigo tie-dye with natural strawberries to highlight the resisted white areas of the linen fabric.



Tie-dye technique with a dark green sustainable dye and Turmeric.



Shibori tie-dye technique with a dark green sustainable fabric dye.

Tie-dye technique, dyed
with turmeric.

Tie-dye technique, dyed with turmeric.


Organic Linen fabric tie-dyed
technique with blueberries and
coffee granules.

Linen fabric tie-dyed with blueberries.

Organic cotton tie-dye method with natural beetroot dye.

Terms

Sustainable: Sustainable manufacture – textiles made from sustainably-grown or recycled materials, using low-impact processes. Quality and longevity – textiles that is made to last.

Sustainable fabrics are made from natural and earth friendly materials.

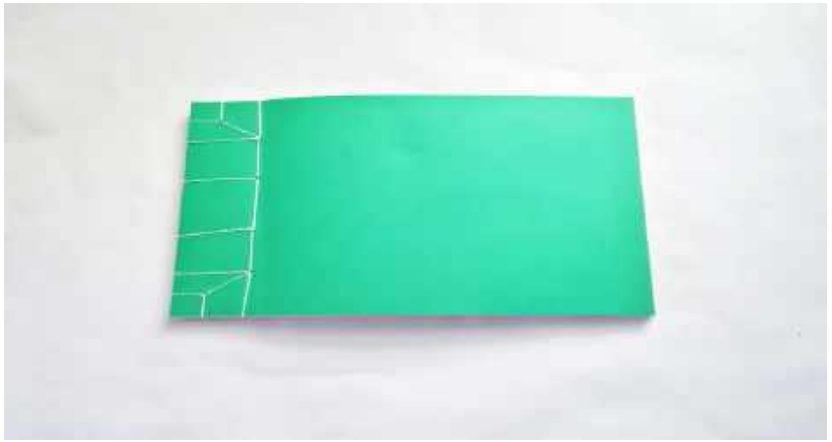
Unlike materials used in fast fashion garments, they actively reduce harm to the planet, either through the production process, fiber properties or overall environmental impact.

Fabrics that can be recycled, re-worn, reused and stay out of the landfill.
Sustainable fabrics can contribute to waste reduction, water conservation, lowered emissions and soil regeneration.

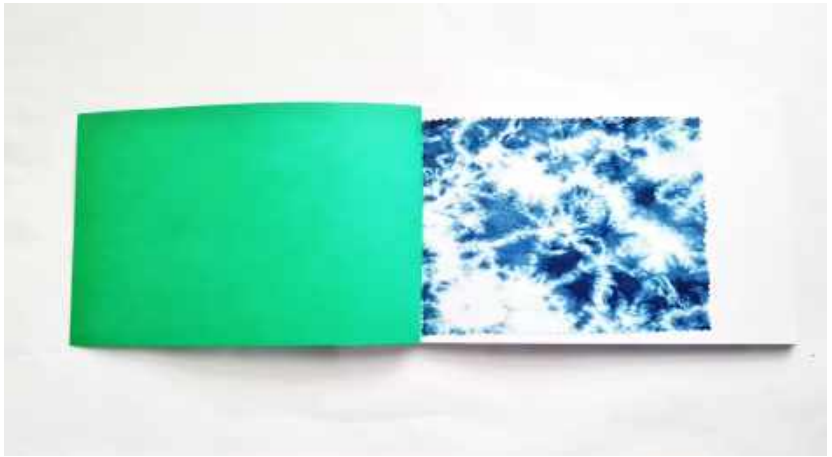
Organic linen shibori tie-dye with natural strawberry dye.

PUBLIC HOUSE

Inspirations for process book designs.



Japanese stab binding textile swatch book.



Textile Swatch book designed by, Susan Ricketts, (2022)

WORK IN PROGRESS

W
I
P

Researching various artists I came across, Rachael Wellisch who creates sculptures and walk through installations with indigo dyed, salvaged fabrics from landfill.
I was inspired and excited to start experimenting with large scale fabric. I have always created art works on a small scale, so this was a challenge for me.

The W.I.P went very well, with people asking me how I created these patterns on such a large scale fabric, and the dyeing process. After the show I wanted to create more dyed designs and thought of different pattern ideas.

Designed by Susan Ricketts, 2022

Rachael Wellisch

A blue landscape, 2019 Indigo dyed salvaged textiles.

Soundscape, 360 x 360 x 235cm.

Rachael Wellisch: Monumental Schists ~5(Detail), 2021,

22cm (w) x 6cm (d) x 32cm (h), Indigo dyed, Layered, salvaged textiles

Indie-Stain ,100% Organic Calico Cotton, Biodgradabale. Indigofera tinctoria dyed, 259cm x 75cm , 2022.

Work in progress exhibition at the school of art, 2022.

DISPLAY IDEAS

Gallery visits to generate ideas for installation for the degree show exhibition.

TATE MODERN

Jannis Kounellis

Untitled 1968, Wood and Wool, 2500 x 2810 x 450mm

Guerra de la Paz, Collective of Cuban artist

Spring, Sprang, Sprung, Guerra de la Paz, 2009.

Quipu Womb(The story of the Red Thread, Athens) 2017, Wool, dye, rope and thread, Display dimensions variable.

Simryn Gill

Channel 2014,
photographs, gelatin silver print on paper and dye destruction on paper.
Image: 319 x 326mm

IKON GALLERY BIRMINGHAM

Betsy Bradley
Chasing Rainbows

Chasing Rainbows Installation ,Canopy, (2021)

Surfing Between Dreams, 2021, Acrylic and spray paint on voile, 178 x 220cm

Pure Shores, (2021) Sand

Exhale(2020) Acrylic on voile, found wood. Hemp rope

Midnight Magic (2020) Acrylic and spray paint on muslin

WOLVERHAMPTON ART GALLERY

Hardeep Pandhal

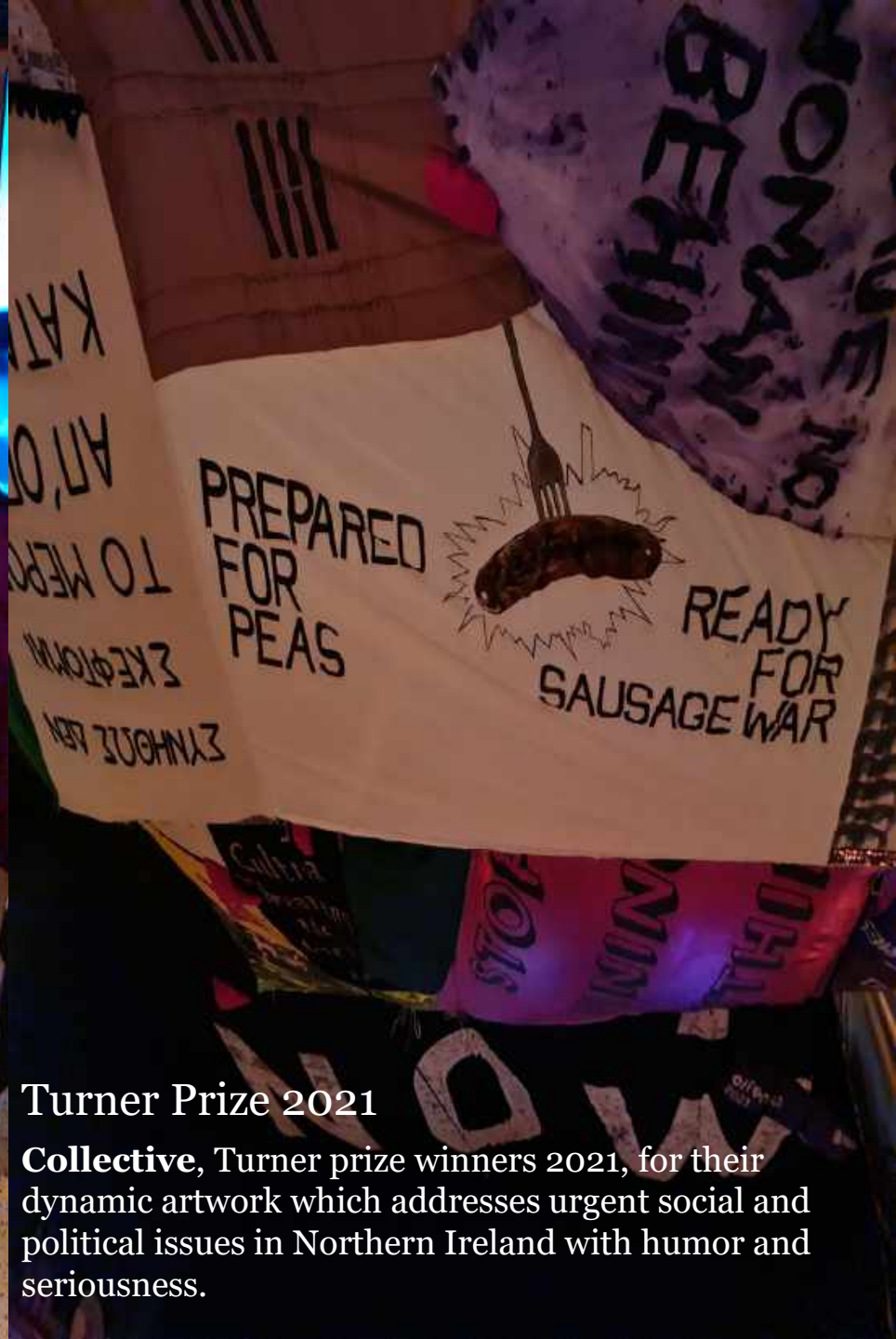
British Art Show 9

Untitled (The Lord Tebbit Series 6), (2019), Synthetic wool

Grace Ndiritu

Plant theatre for plant people,(2022)

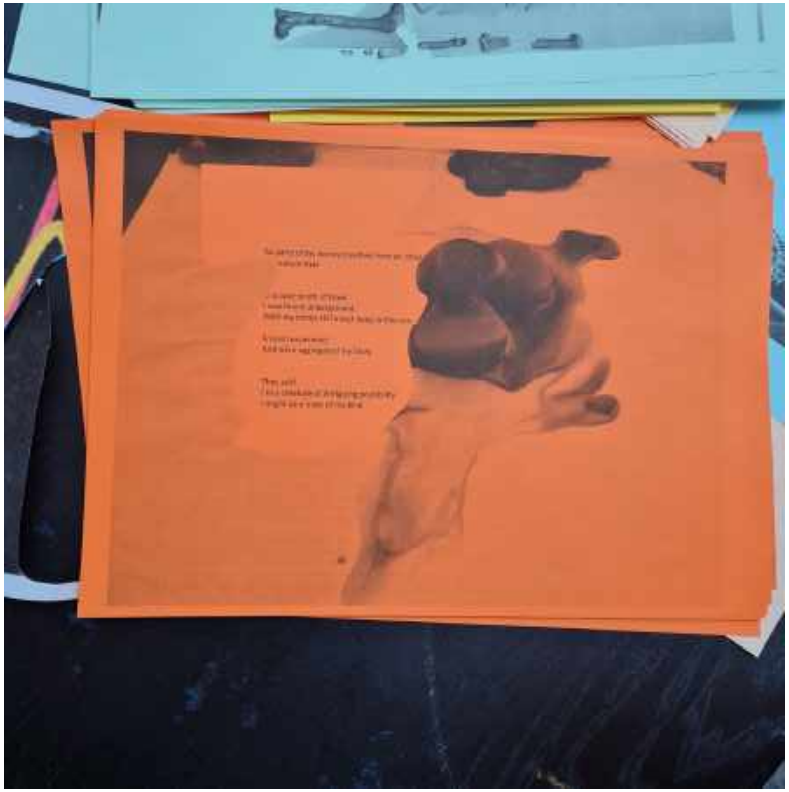
HERBERT ART GALLERY & MUSEUM

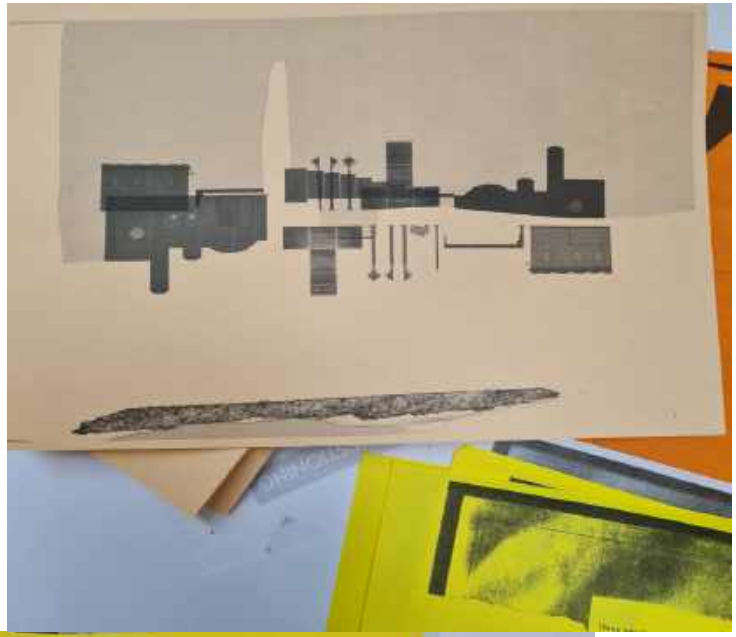


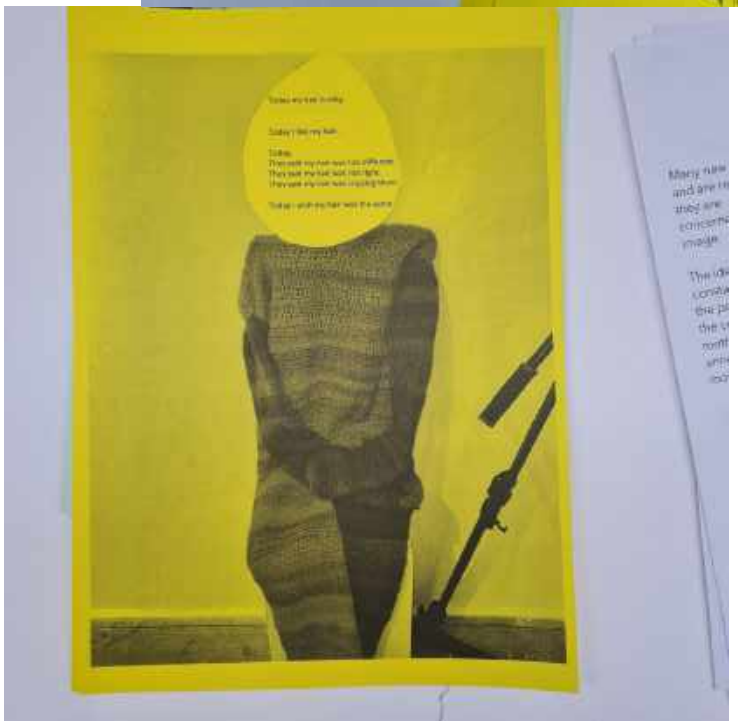
Turner Prize 2021

Collective, Turner prize winners 2021, for their dynamic artwork which addresses urgent social and political issues in Northern Ireland with humor and seriousness.

BAAAD ANNUAL 2022

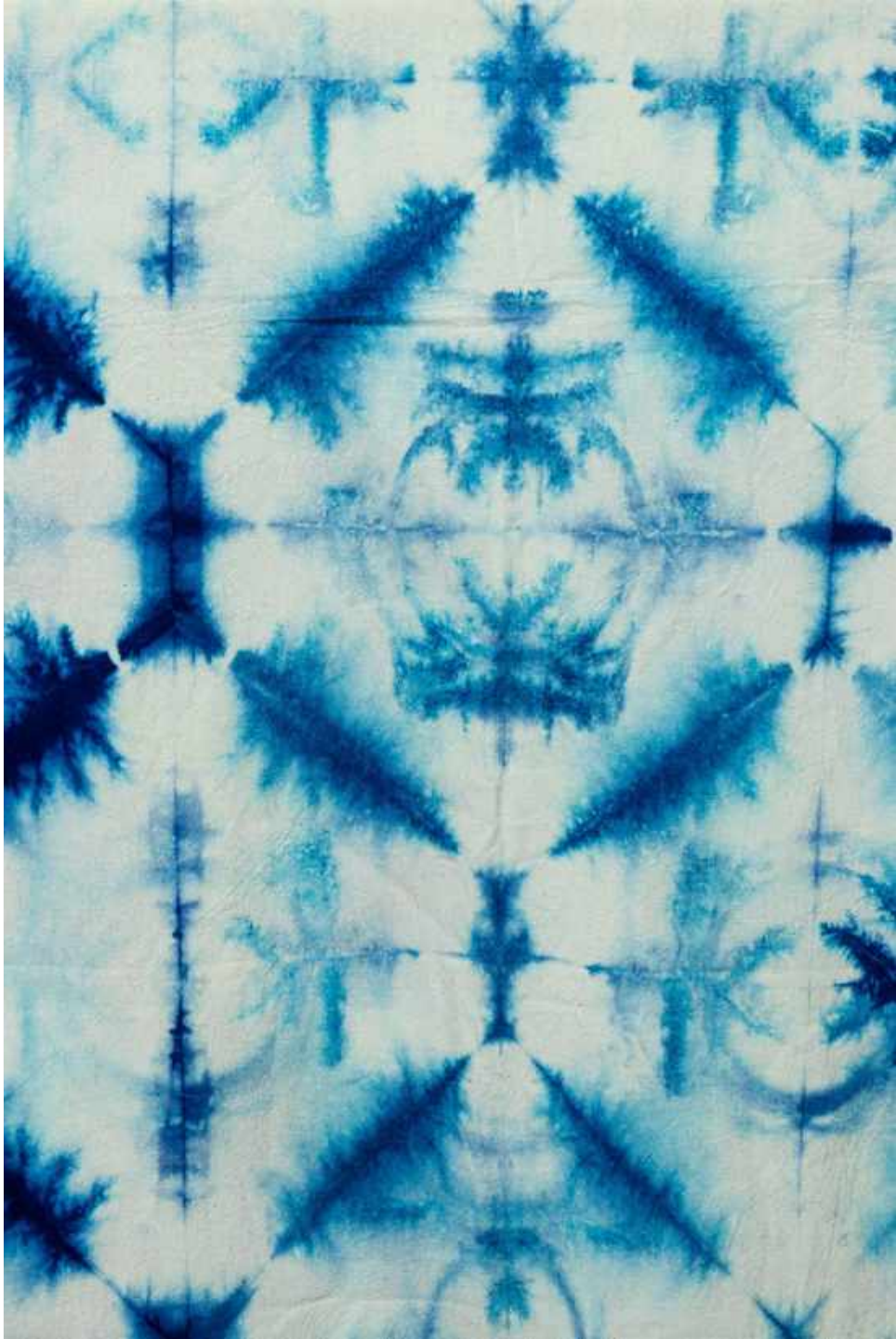






Collage and printing the BAAAD annual 2022, an experimental collaboration from art and design.

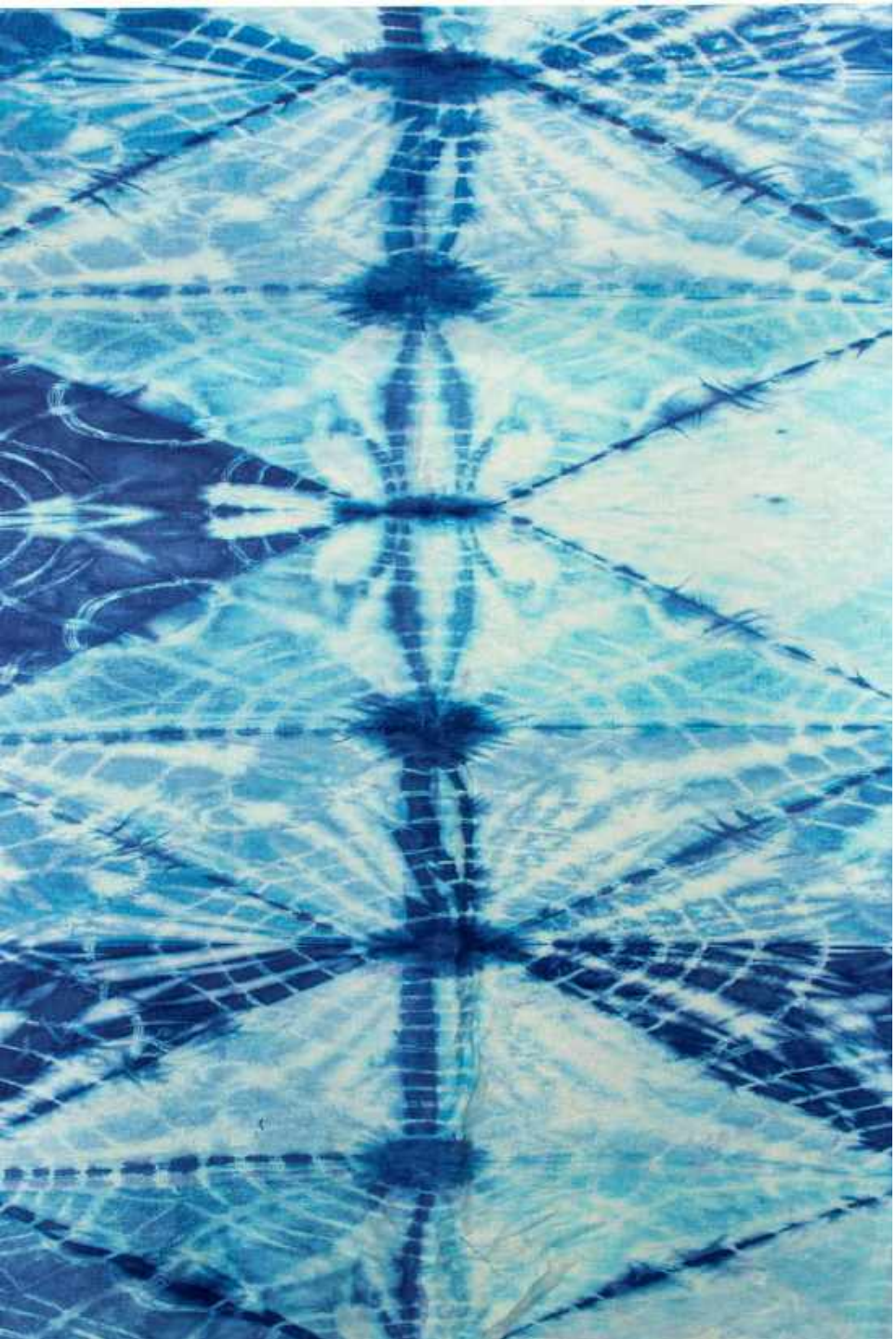
FINAL OUTCOME



Indi-Stain, 2022

Connecting eco friendly fabric to nature, using a resist dyeing Shibori technique. A process of twisting, pleating, crumpling and folding of the fabric.
A organic plant based dye (Indigofera Tinctoria) indigo. Has been used to add a deep earthy rich hue to the unbleached natural calico cotton fabric, giving the fabric a sympathetic justice to sustainable textiles without using a chemical dye.

The calico fabric is environmentally friendly, durable and recyclable and intended for repeat use, the combination of the dye and the fabric is an ethical link to a sustainable production of textiles for our
environment.



Preparing for the Degree show.

Preparing for the degree show, professional photos taken of the fabric I will be installing.

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