National College of Art and Design

Constructed Textile Design

'Wilder colour: Beauty in the local and biodiverse'

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Submitted to the School of Visual Culture in Candidacy for the Degree of

Textile Surface Design, 2022

NCAD DUBLIN

National College of Art and Design

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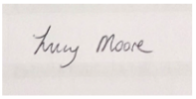
I declare that this **Critical Cultures Research Project** is all my own work and that all sources have been fully acknowledged.

Signed: 

Programme / department: Textile Surface Design

Date: 31st January 2022

Acknowledgements:

I would like to thank most sincerely my tutor Dr.Liza Foley for her expert advice and encouragement throughout the writing of this dissertation. In addition, the library staff at NCAD and my dear family and friends for their unending support.

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Introduction

"**Mottainai**", a concept from the Japanese cultural tradition, stresses the value of everything on earth, and the need to use our creations fully. Originally from the Buddhist notion of not being wasteful, it also includes the importance of being 'thankful' (Irvin, K., 2018).

In this dissertation I am interested in the role that natural dyes could play in the world of textiles, and also their importance in supporting a more biodiverse planet for the future. I will explore why biodiversity is important, and look at the role that the farming and fashion industries play in the interrelated problems of species decline, climate change, and pollution, as well as some recent official measures that aim to protect the environment. I will also look at the history of natural dyes in Ireland, and make suggestions for their possible role in the future, as well as examining the work of some contemporary sustainable practitioners and theorists.

Many current natural dye practitioners use exotic species such as avocados or pomegranate skins. My interest lies in using sustainable local 'wild' sources such as hedgerow and meadow plants in order to highlight their exciting colour ranges and potential value to us as dye plants. I hope that this work will provide a new lens with which to view our native plants, which are so important for biodiversity.

I acknowledge that there are limitations to this study as well as some issues associated with natural dyes. I would like to have investigated the work of the

Irish natural dyer Evelyn Lindsay, who did extensive work in the 1980's on natural dyes, but time and space did not allow. Fading (which we accept does happen with conventionally dyed materials such as jeans or curtains) is an often cited problem with natural dyes.

I am interested in firstly establishing the role and current state of affairs for climate change and biodiversity both locally and globally. Secondly I will look at how other practitioners work with regard to sustainability, and thirdly I will try to ascertain if natural dyes could have a role to play in the future for both textiles and in the promotion of greater biodiversity.

I will explore the work of the textile scholar Kate Fletcher, who offers many thoughts on sustainability in textiles, as well as the model proposed by Fletcher and Tham for the future. I will put forward the ideas of the natural dyer and textile designer Jong Lee and author Kate Wells who make the case for the medicinal properties of some natural dyes and I will also discuss the arguments for a 'slow textiles' approach. In addition I will examine the approaches taken by two key practitioners for me, Claudy Jongstra, a Dutch based artist, farmer, educator and natural dye practitioner as well as Fibershed, a Californian movement with a mission to create local textile systems, and to a lesser extent the practice of Kathyrn Davey, a Dublin based natural dyer, and educator.

I will use critical analysis to examine the mainly secondary sources that I used for my research, including blog entries, books, DVD's, online films,

images and photographs from books and websites, magazine and newspaper reports and web articles. I will also use some of my own photographs as primary sources of evidence.

In chapter one, I will investigate the state of the environment today in a global as well as local sense, which provides a rationale for my work. I will also look at the history of natural dyeing in this country, and would like to acknowledge the work of Bree Price, a previous NCAD student, who investigated the history of natural dyeing in this country (Price, B. and Hemmings, 2016). In chapter two, I will look at the work of three contemporary practitioners, Claudy Jongstra, Fibershed and to a lesser extent Kathyrn Davey. In chapter three, I will examine possible futures, and whether natural dyes can offer some solutions for textiles as well as a more sustainable world.

Chapter one

Natural Dyes: Why now?

Human populations in the western world have recently been experiencing a small taste of what is happening in many other parts of the planet. Over the last 12 months alone, our screens have shown us unprecedented flooding in Germany and New York, as well as shocking scenes of out of control fires in the U.S. and Greece, amongst other countries. Despite the recommendations to counter catastrophes such as these, many industries including farming, continue to expand in line with the continuous growth required for the global capitalist production system. Practices such as hedgerow and other habitat removal to facilitate ever bigger machines and more intensive production, are happening in this country on an unprecedented scale, which given their importance for biodiversity, is unacceptable (Sargent, N., 2021).

In this chapter I intend to look more closely at some of these issues, which provide a context and rationale for my decision to make natural dyes in my studio practice from local, rather than exotic sources, in a bid to highlight their beauty and value, not just for us but for the biodiversity which underpins our future globally.

1.1 Climate change, agriculture and species decline

The Intergovernmental Panel on Climate Change (IPCC) made the following points in its 6th report in August 2021:

- Climate change is widespread, rapid and intensifying.

- Many of the changes are unprecedented. Some of these changes already set in motion are irreversible over hundreds of thousands of years e.g. sea level rise (IPCC Sixth Assessment Report, August 2021).

The UN Climate Change Conference COP (Cop 26), arguably the most important diplomatic event in history, met in November of last year to try to agree how to keep temperature increases to 1.5 degree celsius or below. It was deemed a failure, principally because many of the delegates who attended were from fossil fuel companies, who successfully reduced intentions such as ‘phasing out’ of coal power to ‘phasing down’, with the implication that such industries will carry on well into the future (Irish Times editorial, 2021). The Irish farming industry was responsible for 37.1% of national greenhouse gases in 2020 (EPA report, 2021), mainly in the form of methane from cattle/dairy herds and nitrous oxide from Nitrogen fertilizer and manure. In addition, a separate study found that nearly one third of Irish rivers have unsatisfactorily high levels of phosphates and almost half have ‘too high’ levels of Nitrogen, directly attributable to agriculture and sewage (EPA report, 2020).

Most of us are probably aware that species are in decline, but perhaps not aware of just how serious the situation is both globally and nationally. For instance, the second ‘All-Ireland Pollinator Plan’ (AIPP) states that “one third of our wild bees are on the verge of extinction” and that their ongoing decline threatens our ability to deliver social and economic goals in the

future (Fitzpatrick et al, p9-10). Modern farming practices are deemed directly responsible due to agricultural intensification including removal of habitat such as hedges and scrub areas (Fig.1), which in turn results in species loss (Fitzpatrick et al, 2021). Moreover, meadows for hay making have declined in favour of silage. This is significant because the former system supports a greater number of species, with a wide range of wildflowers and grass types on which many insects depend. The interconnectedness of everything should not be ignored. For instance, insects help ecosystems to 'work' by facilitating flowering & therefore fruiting to occur [1] which in turn supports birds and other mammals. Studies have shown that stable and more biodiverse systems are better able to counter climate change (Fitzpatrick et al, 2021).

In the light of all this it is perhaps ironic that Irish Rail who are signatories of the All Ireland Pollinator Plan (Fitzpatrick et al, 2021) and who have removed large tracts of hedgerow along its lines (Fig. 2), have recently been playing recordings of birdsong (in conjunction with the sound artist Christopher Steenson) at stations for its passengers to enjoy (Falvey, D., 2020).

[1] Insects pollinate 71 of the 100 crops that provide 90% of the world's food, and also pollinate 78% of our wild flowering plants and therefore ecosystems (Fitzpatrick et al, 2021).

Fig. 1 Moore, A. (2021) *Hedgerow removal in Co. Tipperary.*

Fig. 2. O'Meara, P. (2021). *Hedgerow removed by Irish Rail near Clonmel to facilitate new fencing*

1.2 Environmental protection policies

Having come to appreciate just how rich many of the plants growing in hedgerows or their proximity are as dye sources it was incredible for me to learn that they have no specific legal protection. As things stand, the Wildlife Act of 1976 is the only limited protection that the National Parks and Wildlife Service (NPWS) can use and only during nesting season. In June 2021 a new set of Common Agricultural Policy (CAP) payment proposals were published by the Department of Agriculture and when finalized will be implemented in January 2023. The new measures will in theory incentivise more sustainable farming. However, the opinion of Oonagh Duggan, head of Advocacy in Birdwatch Ireland, is that vested interests will weaken the reforms that are needed to address biodiversity loss, greenhouse emissions and poor water quality (O'Sullivan, K., 2021). A recently formed group 'Hedgerows Ireland' have found that hedgerow quality is being overlooked in the new CAP payment schemes and that when it comes to achieving our climate and biodiversity targets, small changes in hedge cutting techniques could significantly help in this regard. They suggest that farmers should be paid to manage hedges accordingly and are calling on the Government to ensure that good hedgerow management becomes a key feature of the new CAP payments (Hedgerows Ireland, 2021). The final CAP schemes are not yet published.

The European Commission 'Farm to Fork' strategy, aims to transition the European food system to a much more environmentally sustainable one with a neutral or positive environmental impact, and reverse the loss of

biodiversity. It also aspires through the ‘Green New Deal’ to have at least 25% of agricultural land across the EU in organic production by 2030 (Europa.eu, 2021). Organic farms have approximately 30% more biodiversity on their farms than conventional farms, and so this an excellent direction to be moving in.

1.3 Textiles and pollution globally

According to research published in 2018 by the United Nations Environment Programme (UNEP), the fashion industry is responsible for up to 8% of the world’s carbon emissions in addition to being the second largest water polluter in the world (UNEP, 2018,). Such statistics clearly highlight the destruction wrought by the fashion industry and further illustrate the necessity for us to consider where our clothes are made. It is convenient for wealthy Western countries such as Ireland to outsource the creation of our clothes to poorer countries, where people are paid very low wages. However this globalized, growth-driven model has allowed the fast fashion industry to flourish to disastrous effect, both in terms of the environment and human cost. The film ‘The True Cost’ by Andrew Morgan has shone the spotlight squarely on the systems responsible, and has done much to elucidate the enormity of the problem that is ‘Fast Fashion’ (The True Cost, 2015).

1.4 Dyes used in Ireland’s past

Natural dyes are made from natural materials, and can include bark, berries, leaves, flowers, shellfish and lichens amongst others. The author and filmmaker David Shaw-Smith describes in ‘*Traditional crafts of Ireland*’

(2003), how for centuries dyeing from local plants was a commonly practiced cottage industry with knowledge handed down through the generations, but not usually written down. It was often the children's job to collect the dye plants. The lichen known as crotal (Fig. 3) was very popular and typically gathered after rainfall, which made it easier to scrape off the rocks in seaside areas (2003, p 24). Today it is not recommended to gather lichens, as this is generally agreed to be an unsustainable practice (lichens grow very slowly and are used as an indicator of clean air); instead the modern dyer will look for them on fallen branches and gather them sparingly.

Shaw-Smith lists commonly used dye plants in his book. For instance, the colour black could be produced from the roots of the common flag iris, oak (both bark and acorns), dock roots and alder bark with the use of copper as a mordant (2003, p. 26). Given the disconnect between people and nature in today's society, I wonder how many of these plants would be recognizable to most people today, yet alone used. As artist Yanny Peters has recently observed "plant blindness' is a term used since the 1990's to describe the lack of human awareness of plants. "Our increased urbanization has reduced our contact with nature, thereby separating us from the very elements we need for our survival in a time of climate change" (Peters, 2021). Shaw-Smith describes how Irish home dyeing started to decline and the knowledge of how to make them, when foreign dyewoods arrived in the seventeenth and eighteenth centuries. As a result, we rely today almost entirely on fabrics that are dyed elsewhere, usually China or India. Practitioners such as Lilias Mitchell who was one of the first to write down and research former methods,

and later Evelyn Lindsay[2] have paved the way for practitioners today (Mitchell, L.,1978).

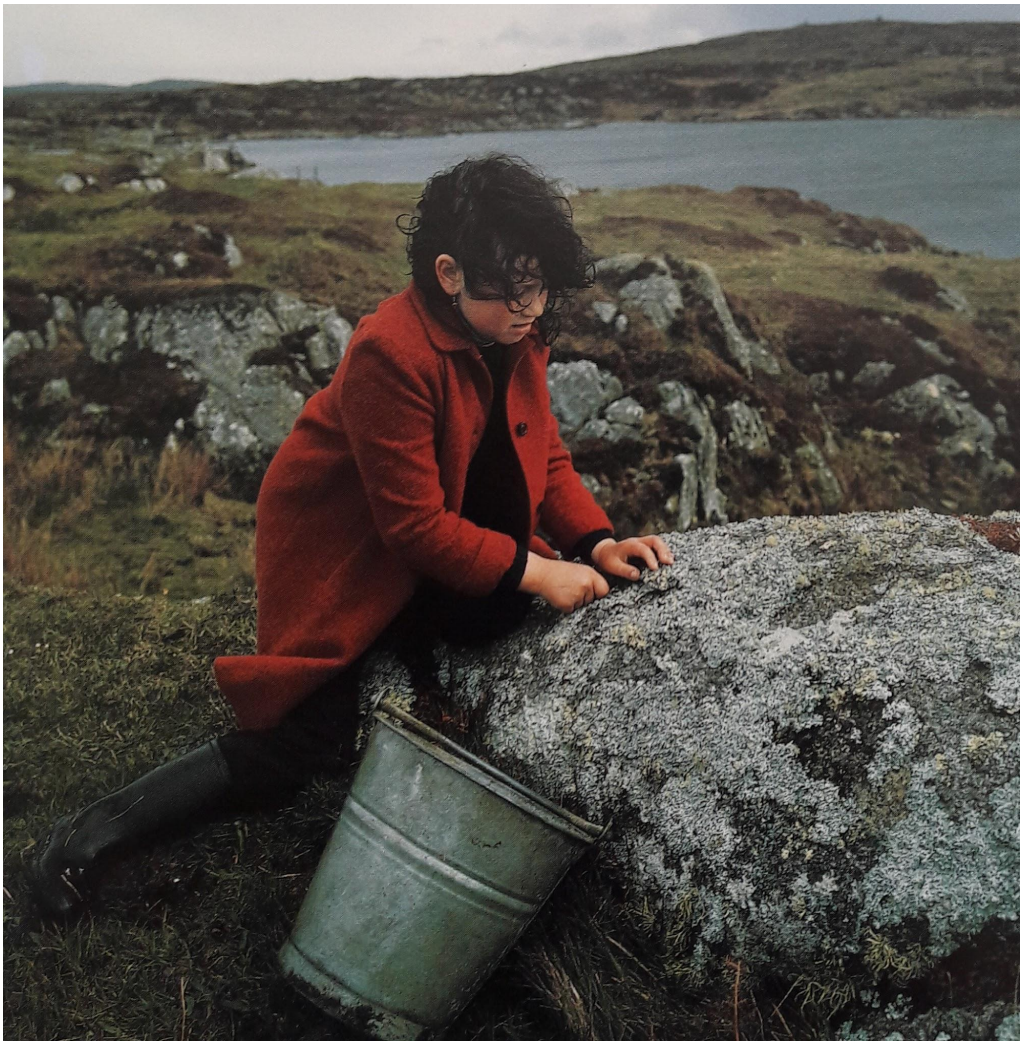

Fig. 3. Shaw-Smith, D. (2003) *Patricia Aspel gathering crotal*

1.5 Conclusion

In conclusion, this is an alarming state of affairs for the environment and our ecosystems both globally and locally for the many reasons outlined in this chapter. It seems illogical to depend so completely on textiles that are

[2] Evelyn Lindsay was the recipient of the RDS Mitchell prize in 1985 for her wool samples dyed naturally with berries, nuts, bark, roots, fruit and vegetables. These are held today in the National Folklore Collection at UCD (Doohan, C., 2018)

produced and dyed in many different countries, particularly in light of the climate crisis. Current textile dye practices are highly polluting and are as a result extremely costly in terms of the environment and ultimately for humanity. There appears to be a worrying lack of urgency and awareness for the climate and biodiversity situation, and policies designed to protect our environment are often too weak or ignored, overridden by big businesses in particular. Hedgerows, which have provided me with many of the dyes in my work, are perhaps taken for granted in this country, and as Hedgerows Ireland have discovered, are disregarded as valuable environmental assets, not least when it comes to their potential for sequestering carbon.

Given that locally derived natural dyes from sources such as these are very beautiful, and were once made on a domestic and widespread scale in this country, I believe that there is a strong case for their resurgence especially in the light of the widespread damage caused by synthetic dyes.

Chapter two

Backwards to move forwards? Some contemporary practitioners.

In this chapter I will focus my investigations primarily on the work of two contemporary dye practitioners, Claudy Jongstra in Holland and the Californian collective ‘Fibershed’, who both have sustainability as well as education at the core of their work. I will briefly mention the work of Kathyrn Davey, an Irish practitioner of some acclaim, who also values sustainable materials and education, in her work.

2.1 Claudy Jongstra

The Dutch artist Claudy Jongstra initially trained in fashion design, but because of her increasing concern for the environment decided to re-educate herself as a natural dyer and felt maker. The small farm (Fig. 4) that Jongstra and her partner own in Spannum in the north of Holland underpins her practice, and has been run since its inception on ecologically sound principles, for instance in growing many of the dyes that she uses in her art works and producing wool from her herd of endangered Drenthe Heath sheep (Fig. 5). This all stands in contrast to the industrial style farms surrounding them. In the film ‘Atelier Talks 1’ where she discusses her practice, Jongstra asserts that her sheep live with the minimum of stress and that this has a bearing on the excellent quality of their wool. In addition, she has found that the dyes vary slightly in their colours from year to year, according to the amount of sunshine hours received (particularly in the case

of weld which produces a greener dye if it receives less sunshine), the soil and growing conditions, all of which have an impact.

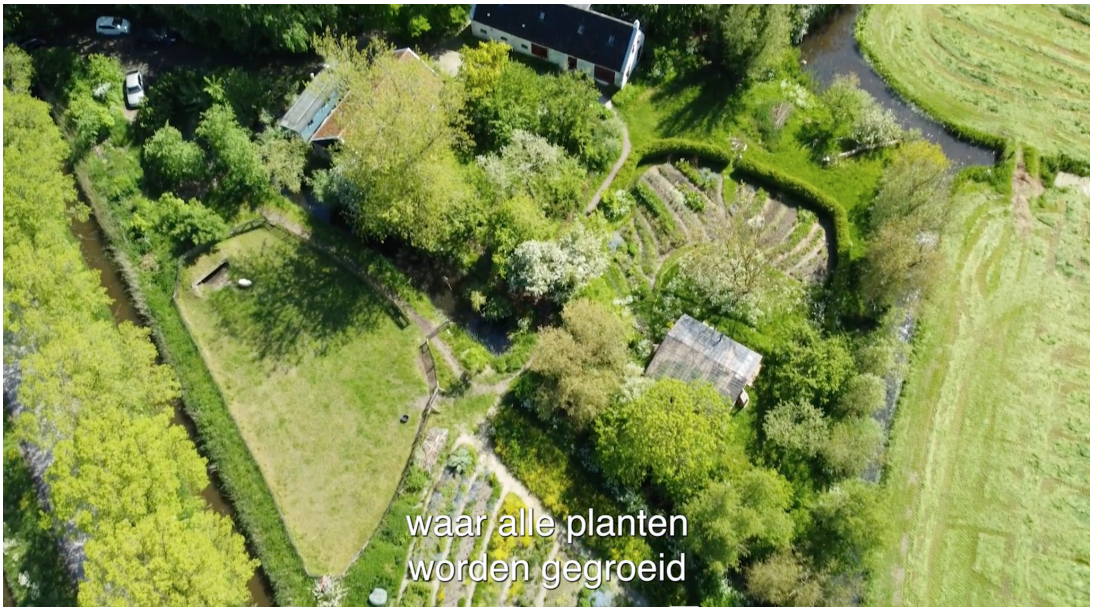

Fig. 4. *Atelier Talks 1: Jongstra's farm* (2021)

Fig. 5. *Atelier Talks II* : *Drenthe Heath sheep* (2021).

Her strong beliefs mean that she likes to use local resources as far as possible, although she does use some plants that are not native to the area

such as indigo and madder as well as silk (Julius, 2018). Her dye garden gives her an array of colours to create her monumental and highly acclaimed felt artworks, which grace the walls of many important institutions across the world, including the V&A, Het Catshuis (the Prime Minister's residence in The Hague) and the Lincoln center in New York, as well as for private clients.

‘Golden Glow of Truth’ (Figure 6) is a large piece commissioned by a private client for the hallway of their home. The qualities she has tried to imbue in the piece, through the many shades of yellow, include integrity and truth, as well as warmth and generosity. Jongstra often employs unusual carding techniques to blend different colours as can be seen in this piece, creating layers and textures while also leaving some of the wool in its natural state in places. She sometimes uses embroidery, to create movement and more texture (Golden Glow of Truth, 2021).

Fig 6. *Golden Glow of Truth: Embroidery detail* (2021)

A recent three year project spent researching the colour ‘Burgundy black’ culminated in an art piece called ‘Truth and Beauty in Black’, commissioned

by the Mingei International museum (Fig. 7). Jongstra followed a mediaeval recipe in which walnut, woad and madder are mixed to create an unusual purple version of black with rich depths. Her hope was to inspire an appreciation for the connectedness between humanity, material, culture and the environment (Atelier Talks 1, 2021).

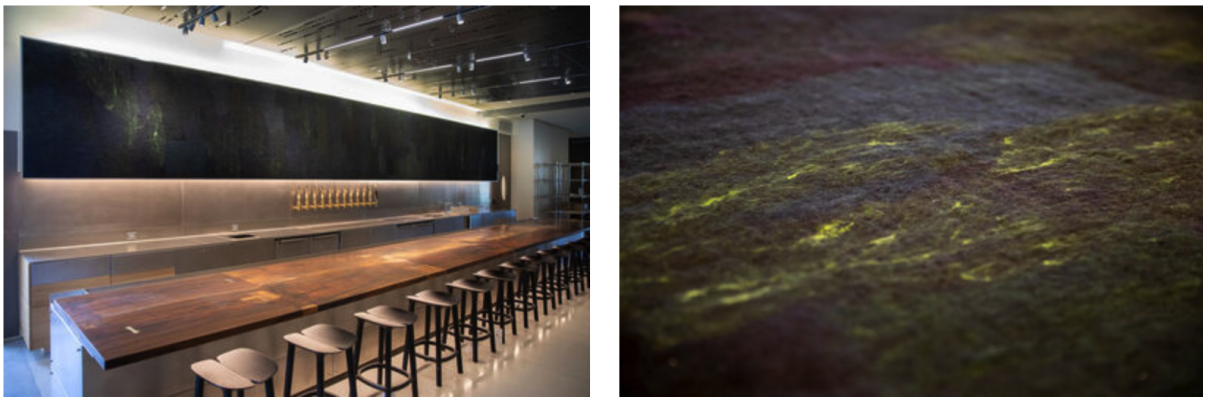

Fig. 7. *Truth and Beauty in Black* (2021).

Jongstra says of herself: “My work expresses giving justice to the earth, to humans and the environment” (Julius, C., 2018, p.26). She often works in collaborative projects with, for example, the farmers in her locality, schools and social projects in order to share her environmental beliefs. She recently worked with high end fashion brands including ROC TOP and disadvantaged students in an innovative project called ‘The Gift of Colour’ (Fig. 8) which involved the growing of dye plants in “underserved” city gardens and used these in youth driven fashion projects (The Gift of Colour, 2020).

Fig. 8 *The Gift of Colour* (2020).

This to me seems like a wonderfully creative approach in connecting young people and fashion with the world of plants and natural dyes, while in addition giving fashion brands an opportunity to rethink their approach and become more sustainable.

Jongstra posits that “Wool humanizes spaces” by bringing warmth, colour and sound reduction qualities to interiors (Dalzell, 2019, p.144). Significantly, Jongstra has also made work for hospital environments, for example in the piece called ‘Spring of Light’ hung in Amsterdam’s cancer hospital (Fig. 9) which is mounted on a wall in the waiting area. The writer Susan Brown observes a paradox that exists in textiles today, that “on the one hand intense research being devoted to (artificial) antimicrobial fibers and finishes, contrasted with a renewed appreciation for the beneficial qualities of natural

materials" (2008, p.3). It is perhaps telling that the pigments used to dye the wool for this piece have properties that are pertinent to the project and healing. For instance the latin name for chamomile (Matricaria recutita) which was used to create the yellow dyes, comes from 'Matri' meaning 'mother' and 'Caria' which means 'care' in Latin.

Fig. 9. Jongstra, C. (2016). *Spring of Light* (2021).

A recent piece called 'Guernica de la Ecologia' (2021), shows Jongstra's frustration with the lack of urgency in relation to the ecological crisis facing the planet (Fig.10). According to the journalist Mark Rampling, it is an angry and menacing piece that is intended as a statement on biodiversity loss (Rampling, 2021). There is a deliberate lack of colour, to remind us of the loss of colour which is experienced in conjunction with biodiversity loss. Jongstra's 'Guernica' is a timely reminder of the need for urgent action; the climate crisis we are in which contrasts with the disappointing outcome from

Cop 26. Industrial style farming practices today, species loss and the fast fashion system amongst others all give credence to her rationale for this work. She plans to exhibit it internationally in 2022-2023, and in addition to collaborate with communities (both urban and rural) to create wilder landscapes. Her activism and exciting yet pragmatic approaches are just what is needed to kick start other similar projects inspired by her many approaches.

Fig. 10. Jongstra, C. (2021*). Guernica de la Ecologia*

2.2 Fibershed

An organisation that offers a useful model for thinking about sustainable dying is Fibershed. Fibershed, a not for profit company founded by Rebecca Burgess in California, is distinctive because it promotes regional textile production using regenerative farming methods that benefit the climate rather than ones that harm it. Fibershed has grown since its inception in 2010 to include a comprehensive educational programme as part of its remit, which aims to teach people both locally and globally (through its online platform) about textiles, and also hosts workshops where one can learn practical skills in dyeing, making and mending, spinning, and knitting amongst others (Fibershed, 2021). North West England Fibershed in the UK is the nearest Fibershed community to Ireland and aims to produce textiles grown regeneratively, fostering a community of fibre and dye professionals (North West England Fibershed, 2021). The founder, Justine Aldersey-Williams of ‘The Wild Dyery’ is an educator and dyer, who works on a voluntary basis for the UK branch while continuing to run her business. She initiated a collaborative project to ‘grow jeans’ called ‘Homegrown Homespun’ to raise awareness about textiles in the UK, by growing flax and indigo (Fig. 11), inspired by a similar project in the U.S. where the community grew cotton. The project was a collaboration between Aldersey-Williams, Patrick Grant (a judge on the BBC Great British Sewing Bee), Community Clothing (a social enterprise) and The Super Slow Way, who run The British Textile Biennial (arts organisation). While the project resulted in ‘just’ a piece of fabric (Fig. 12) rather than the hoped for jeans, it achieved much more in that it raised

awareness about the many processes involved, and highlighted how much these are taken for granted. Aldersley-Williams quotes Mohsin Saijid, (lecturer in Central St Martin's and denim consultant) as saying that the outcome was "a watershed moment in the industry" (Aldersley-Williams, 2021). Every part of the project was done by hand, and exposed the difficulty in producing fabric in a country where there is little remaining in the way of textile infrastructure. Undeterred by the difficulties encountered, they intend to grow the project further in 2022.

Fig. 11. Aldersley-Williams, J. (2021). *Claire, Shelley, Pam, Jay and I crouching in the stooks!*

Fig. 12. Aldersley-Williams, J. (2021) *Fabric*

One of the problems encountered during the project was growing woad, a plant that produces blue and typically grows well in temperate climates, but for Fibershed this was not the case. This was partly due to a cold late spring in 2021 causing germination problems, and also weed infestation. Fibershed discovered that most producers use glyphosate[3], an ingredient in many weed killers to help with the latter. The project team saw this as yet another issue that needs to be highlighted when it comes to textiles. They did manage to harvest enough to do a small amount of dyeing however (Fig. 13), and used two different techniques to do it, namely the '*fresh leaf salt rub'* method, and a '*fermentation vat'* method to dye with (Aldersely-Williams, 2021). As the image shows, woad produces different blues to the indigo blues we are used to.

[3] Its use is becoming quite problematic for the Monsanto company who face many lawsuits citing its health risks (Cox, D., 2019).

Fig. 13. Aldersley Williams, J. (2021) *Silk dyed with woad using a reduction vat (left) and fresh leaves harvested from Blackburn on 6th August 2021 (right).*

2.3 Conclusion

In conclusion, I feel that the work of these practitioners is highly relevant to society, both in this country and globally. Their considered approach to both materials and work practices should be an encouragement to more of us to work in a similar vein, that is by placing biodiversity centrally in our lives. Although my case studies are in Holland and California respectively, practitioners such as Kathryn Davy, a natural dyer based in Dublin, are already showing what is possible in Ireland. Davey has a successful business producing small quantities of naturally dyed clothing in collaboration with other small niche companies. She also has an educational dimension to her practice, hosting workshops in natural dyeing for clients (Davey, K. 20221).

My case studies further demonstrate the potential of natural dying combined with educational and community-led enterprises, and show what is possible in an Irish context .

Chapter three

The Future: Living lightly, living better.

In chapter one my research indicates the urgency with which climate change, species and biodiversity loss must be addressed. Kate Fletcher and Mathilda Tham offer an alternative vision for the future to address some of these issues. They have called it ‘Earth Logic’, an action plan in which the earth is prioritised before profit and industry. Fletcher and Tham propose a significant reduction in shopping and instead a shift to a culture of care and maintenance, in which we would learn to love and better look after the clothes we already own. Other alternative approaches they envisage are sharing, lending and renting clothes. They posit that a cessation of shopping would remove power from multinationals and instead place it firmly in the hands of individuals and communities (Fletcher and Tham, 2021). Fletcher makes the interesting observation that few people make their own clothes today, thanks to the dominance and professionalisation of clothing by the fashion industry and miss out on the positive feelings associated with making (Fletcher, 2008). The artist Sheila Hicks is in agreement:

> “Living an honest, mindful life requires a devotion to making; and by deprioritizing such “slow” skills, we lose opportunities for richness and beauty” (Cohen, A.,2019).

Furthermore, Fletcher and Tham find that ‘circularity’, long hailed as the saviour of the fashion system is still a problem since it operates within the paradigm of the growth economics that have created the environmental problems to begin with. In other words, it allows consumerism to continue

without guilt, since everything would be recycled. However they find that this is a flawed solution, since in each cycle of breaking down and remaking, a huge amount of energy is needed and in general results in a poorer material each time (Fletcher and Tham, 2019).

3.1 Localism: Slow vs fast in textile systems

The proposed system change would support the idea of ‘slow fashion’, whereby small amounts of carefully considered, perhaps naturally dyed textiles are produced. This is a model that Kathyrn Davey has successfully embraced in addition to her educational role (Davey, K., 2020). Fletcher and Tham are not against a total cessation of buying, rather a significant reduction so that purchasing is done with due consideration for quality and the long term future of the garment. They also cite the need to significantly reduce resource use by between 75-90%. Fletcher & Tham state that in order for such a dramatic system change to occur, there needs to be ‘governance’ as well as a new mindset (2019, p.68). I couldn't agree more; although few governments will want to spoil certain demographics lifestyles as well as economic growth, and so this seems unlikely. Governance would have to come from global agreements and given the intervention of vested interests at COP26 to maintain the status quo as far as possible, this too seems unlikely especially in the time frame needed (Irish times, 2021).

However, Fletcher suggests that if the Earth logic model is applied, textiles can be a way to invigorate communities and ecosystems (Fletcher, 2021).

Natural dyeing could be a useful tool in achieving some of the changes that are needed, in that they would be a practical and exciting way to achieve a 'new' look for preloved clothes. Natural dye services could become a new type of small business, whereby customers could leave the dyeing of their garments to local experts. Perhaps in the future, small dye houses will spring up throughout the country, in both rural and urban settings. I can envisage an information label that would read something like: '80% yarrow, 20% hawthorn, created through the use of solar dye technology in a small dye house in Tipperary'. In addition, the label could include some facts about the plant, such as its role for biodiversity and carbon sequestration.

I would like to see an embracing of materials with proven track records in sustainability such as wool, hemp and linen that could be grown in this country, if the infrastructure is put in place to support them. Such materials take natural dyes very well provided they are mordanted.[4] Many natural dye plants including the classics, woad, weld and madder can grow in temperate climates such as ours and would give farmers and small businesses new directions.

[4] Mordants are fixatives, and are needed to help the dye attach to the fabric or yarn. Alum, the most commonly used mordant today, is described by Jenny Dean as 'not a poison but it is an irritant' (Dean, p.36). I have found alternative sustainable mordanting methods very satisfactory e.g. solar, iron, and plant based ones.

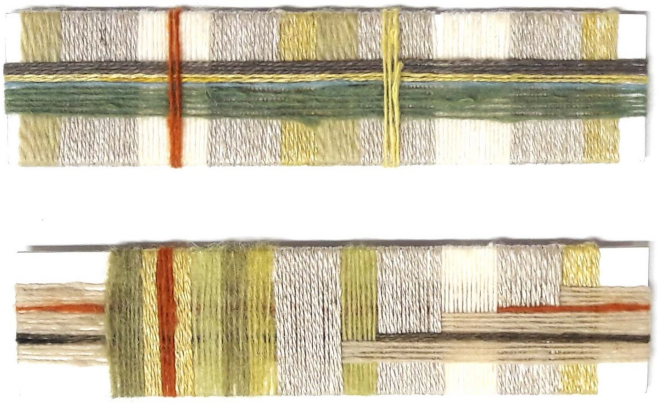

Fig. 14. Moore, L. (2021) *Two yarn wraps, using wool and linen dyed from local sources*

3.2. Benefits of natural dyes.

Natural dyes have various useful uses for example as food colourants, in their medicinal properties and in the case of woad as a wood preservative. The fabric artist and researcher Jong Lee has written about the medicinal values, long recognised in Korea, of many natural dyes when used in clothing worn next to the skin. He cites the case of mugwort which is helpful for preventing the spread of germs, and also how blood circulation is helped by safflower or gromwell (Lee, 2005). One can imagine the added benefits if medical bandages and gauzes, gloves, scarves, nightwear, nappies and underwear were dyed with such beneficial plants. Bioactive textiles as these are called, are described by the author Kate Wells as a ‘new’ approach to

textiles where small amounts of the active substance is released from the fabric to the skin when worn. She describes the presence of chemicals called anthocyanins found, for instance in elder berries which have immune modulating, anti-oxidant, insulin-stimulating and anti-inflammatory properties (2013).

The range of colours that can be achieved from locally grown and foraged meadows and hedgerows is extraordinary, as I have learned through my studio practice. These could be grown more widely, specifically for dye and would help with supporting greater biodiversity. In addition, a non-commercial foraging approach to collecting dye materials, by communities, families and individuals could provide a new way for us all to engage with nature and in the process we might learn of the need to let parts of our towns and gardens become a bit wilder, the benefits of which have been well established (Fitzpatrick et al, 2021). Furthermore, waste products which are often dumped and which could be used for dyeing are easily and widely available, for example tea and coffee grounds, carrot tops, onion skins, as well as widespread dye plants such as buddleia (a plant that grows widely in urban areas on waste grounds), ivy leaves and berries to name just a few.

3.3 Some potential issues for natural dyeing

The researchers Bechtold et al, make the point that natural dyes usually require equal weight of dye stuff to fibre whereas synthetic dyes only need eg. 2g of dye for 100g of cotton, thanks to their superior tinctorial strength.

Secondly, natural dyes can be more costly as they must be grown and harvested (Bechtold, T. et al, 2007). On the other hand, given that it is known that synthetic dyes are potentially carcinogenic as well as extremely toxic for the environment, one wonders why they continue to be used (Sharma et al, 2019). We also know that there is a huge cost to ‘cheaper goods’ from the film ‘The True Cost’ (2015).

One of the difficulties cited for the home practitioner is mordanting. However this is readily overcome once the fundamental principles are understood. My experience is that this engages one more fully with the material, ditto the natural dye process, through the gathering of the dye plants and making of the dye itself, which is a lovely mindful thing to do, and I feel is an excellent activity for well being. A second potential problem for the home practitioner is having a large enough saucepan to dye big pieces of fabric. Colours tend to be uneven or blotchy if squashed into too small a pan for dyeing; on the other hand one could exploit this tendency by deliberately binding and knotting pieces to get some interesting results. In a similar manner, leaving in some of the dye stuff can create effects such as speckling on fabrics or yarns. Evidently a different mindset, alive to new possibilities would be good for future outcomes.

3.4 Conclusion:

It is clear that change is needed and with it a greater awareness for materials and the resources and processes used in their production, leading to a

reduction in shopping as well as a repurposing of what we already have. This will create opportunities for different types of business and greater possibilities for health and wellbeing. The likelihood is that we will develop new relationships with each other, through the need to upskill, which would be another positive outcome. Practitioners such as Jongstra, Fibershed and Davey offer viable approaches for the future of sustainable textiles which would be possible to apply in this country. Natural dyes are highly applicable to the future thanks to their inherent sustainability, for both professionals who may get involved in ‘slow fashion systems’, home dyers, makers and upcyclers. They are not only valuable in the ways already discussed, including in the field of bioactive textiles, they are also endlessly fascinating, since they vary a lot depending on the time of year when they are harvested, the soil type, the pH of water used to make the dye bath, length of fabric immersion time in the bath, amount of sun received etc. It is possible for people of all ages to learn about them with little need of expensive equipment or technology. My own experience of using local dyes in particular has helped me to realise how far this practice could go in helping us to reconnect with the natural world, with all the joy that would bring to our often troubled societies, as well as the likely bonus of helping to protect threatened ecosystems, by placing a greater recognition and value on them leading in time to their expansion. One would hope for a resulting greater tolerance for wildness in our parks and gardens in both rural and urban settings and greater care in planting choices.

The designer Elaine Butler, founder of the website ‘Living lightly in Ireland’ has this to say: ‘One has to work hard to untangle from the buying mindset…..Over the past six years of trying to live more sustainably I’ve discovered just how little I need to be happy – materially, emotionally, intellectually and spiritually’ (Butler, 2022).

Dissertation conclusion:

My questions were firstly, establishing the role and current state of affairs for climate change and biodiversity both locally and globally, secondly, examining how other practitioners work with regard to sustainability, and thirdly trying to ascertain if natural dyes could have a role to play in the future for both textiles and in the promotion of greater biodiversity.

The research in chapter one has shown conclusively that climate change and biodiversity loss, are very real issues facing the planet and that they are unprecedented in scale; furthermore the importance of biodiversity for the future cannot be underestimated. Rapid change in systems such as agriculture and fashion needs to happen, and while undoubtedly this will be extremely challenging there could indeed be a role for natural dyes in the future as outlined in chapter three. It must be said that although they will not be a magic solution for all the problems we face, I feel that in embracing their use, in growing, enjoying and gathering dye materials we have much to gain through a greater connection with the natural world. Slower approaches such as these can potentially alter mindsets regarding our environment and future approaches to textiles, as well as proffering likely improvements in health and wellbeing.

Sustainable practices as outlined in chapter two by Jongstra, Fibershed and Davey provide viable models that could be embraced in this country. Jongstra has shown what can be achieved from a small parcel of land, and

the ripple effects that have spread out into communities through employment, beautiful biodiverse environments and educational opportunities. There is also the positive influence that she brings to bear for example on the farmers in her area, many of whom have been persuaded to grow dye plants in their field margins, resulting in greater biodiversity locally. Her work is relevant to so many people, including dyers, growers, artists and students of all ages, as well as the general public who benefit from seeing her installations and creations in a range of settings.

As the practitioners in chapter two have shown, natural dyes offer ways to question the status quo. Projects such as Jongstra's 'Gift of Colour', not only provide positive social and environmental benefits for communities but also opportunities for fashion brands to rethink their approaches to their products and methodologies in a more sustainable way. Here in the West we might also reappraise our ideas in relation to colour and in particular fading, often considered an issue. Traditional Japanese culture accepts this as part of the natural life cycle of the cloth in question (Irvin, K. 2018). Their term 'wabi-sabi' is an appreciation for worn and faded pieces, as poignant reminders of time passing and a celebration of the memories within. Irvin also points out that saturated colours in cloth have for centuries been symbolic of wealth and power (2018), so perhaps with this too, a different mindset is needed.

I feel that if more people saw their potential they would find them revelatory because of their extraordinary range of colours. Although they may not be

easy to scale up in terms of production, this is probably a good thing. The raw materials to make natural dyes surround us, truly hiding in plain sight. Despite being an ancient technique, they are a highly appropriate approach for the future because of their inherent sustainability, and what is more they offer very real job prospects and creative solutions for textiles. Furthermore, as discussed in chapter three, natural dyes often have medicinal properties as advanced by practitioners Lee and Jongstra, and it would be wonderful to see these utilised more fully in conjunction with natural dyeing.

I believe that embracing these varied ideas is necessary for a richer and more colourful future, one with more biodiverse environments and their array of associated species and beautiful natural colours. Willam Wordsworth's exhortation to us all summarises this perfectly:

> "Come forth into the light of things,
> Let Nature be your teacher". Wordsworth, W. (1798).

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