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Question 4: Outline a current environmental, political, or social issue that requires redesign. Explain how you will solve this issue over the duration of your future design career. Underline the tools and approaches will you use and discuss how and why.

Eighty per cent of the environmental impact of the products and buildings that surround us is determined at the design stage.

(Thackara, 2007, XVI).

Humankind's carbon footprint is increasing insurmountably and design practitioners are at the forefront of that change. In the age of the Industrial Era, the short sighted view of humankind impacted the environment immeasurably. It appears we are now at an impasse; something must change for our World to continue to evolve sustainably. Thakara goes on to suggest three ways for designers to respond to this challenge and the accusations that they are personally responsible for the critical state of the planet. His first two ideas render the designer redundant, but the third suggestion is to rise to the challenge of redesign, reformation, transformation and design better.

In his book 'Design Futuring', Tony Fry goes on to analyse the idea of re-design and re-direction in great detail. He agrees that "design has to be in the front-line of transformative action" (Fry, 2009, p.6) and raises the idea of 'design futuring' (giving the self and the planet a future), which asks the designer to address two issues: to slow the rate of defuturing and to redirect humanity "towards far more sustainable modes of planetary habitation" (Fry 2009, p.6). In relation to this concept I am in absolute agreement that systemic changes must be made and implemented. Many theorists have been addressing this notion for over a century and even earlier than this with Plato in the Fifth century BC, "What now remains of the once rich land is like a skeleton of a sick man" (Burke and Ornstein, 1995, p. 253).

Fry's observations comment upon the writings of Peter Kropotkin, who more than 120 years previously had wanted to restore the natural environment after the ravages of the industrial revolution. This utopian thinking was reinforced by R. Buckminster Fuller's idea of the world as a spaceship, to manage, repair and steer. Demonstrating his forward thinking ideas in the 1960's, the architect, inventor, visionary humanist and mathematician proclaimed a "design science revolution" (Baldwin, 1996, p. 62), which focussed on ecologically beneficial design. He stated that "nature is not to be conquered...but regarded as a model of applied principles...to be in tune with the universe, our designs should be regenerative." (Baldwin, 1996, pp. 63). Perhaps here we could exchange 'regenerative' for 'sustainable'? In her writings on 'Care', Puig de la Bella Casa quotes Graham Burnett, the founder of the Permaculture movement in the UK, "Permaculture is about creating sustainable human habitats by following nature's patterns" (Burnett, 2008, p.8). Each of these theorists and practitioners have been pointing towards the same end...sustainability and a cultural shift for the common good of the planet.

In the 21st Century the old 'normal' has been exposed, and this wake-up call resounds amongst designers for a new, ethical and sustainable 'normal'. "Design ethics is massively underdeveloped and even in its crudest form remains marginal within design education" (Fry, 2009, p.3). There will be some resistance from established practitioners, as Boehnert states that "there are clear tensions between the practice of design for ecological good and the embedded priorities within the design industry." (Boehnert, 2017, pp.7). Fry concurs that designers should now place the commercial needs of the marketplace as secondary to the "politico-ethical"

needs to gain sustainability. We are now required to explore by what means the design industry needs to rechannel its energies. There are many schools of thought including the concept of Metadesign, which John Wood, Fry and Tham discuss in length, however I feel that global market will not take these issues seriously until tangible results are witnessed. To arrive at the answer before presenting the question? There needs to be a shift in emphasis away from 'outcomes' and towards 'process'.

As a surface pattern design student, it is essential that one has a strong awareness of sustainability and ethical production within one's practice. It has been calculated that the fashion industry was responsible for around 8% of all man-made greenhouse gas emissions in 2016, and that this percentage is set to grow (Quantis, 2018). Most emissions come from the production of raw materials, therefore addressing the use and methodology of the production of both man-made and natural fabrics, such as polyester and cotton could have a huge impact. It is estimated that around 65% of all fibres used in the fashion industry are synthetic, of a crude oil origin. Cotton holds a 21% market share, which is decreasing due to the availability of cheaper, synthetic alternatives. However, the production of cotton is essential for low-income countries as over 350 million people are involved in its cultivation and production. Wool has a tiny and decreasing share of less than 1% of the global market (CO Data, 2018).

If each sheep produces enough wool for six sweaters per year, and there are 1.16 billion sheep in the world, then, on average, the global sheep wool herd

produces enough fibre for 6.9 billion sweaters – just under one sweater per person per year for the entire global population.

(CO Data, 2018)

Herein, we find a strong argument for the use of local, natural and sustainable materials. I have personally witnessed the loss of revenue sheep fleeces can cost the farmer/producer. At present, during the Covid-19 crisis, it costs more to have the flock shorn (approximately £1 per fleece), whilst the British Wool Board pay approximately 15p/kg for basic mountain grade wool (britishwool.org.uk, 2020). In comparison, British wool values were at 33p/kg during the financial crisis of the late 2000s (Figure 1), thus demonstrating the effect Covid-19 is having on the wool market.

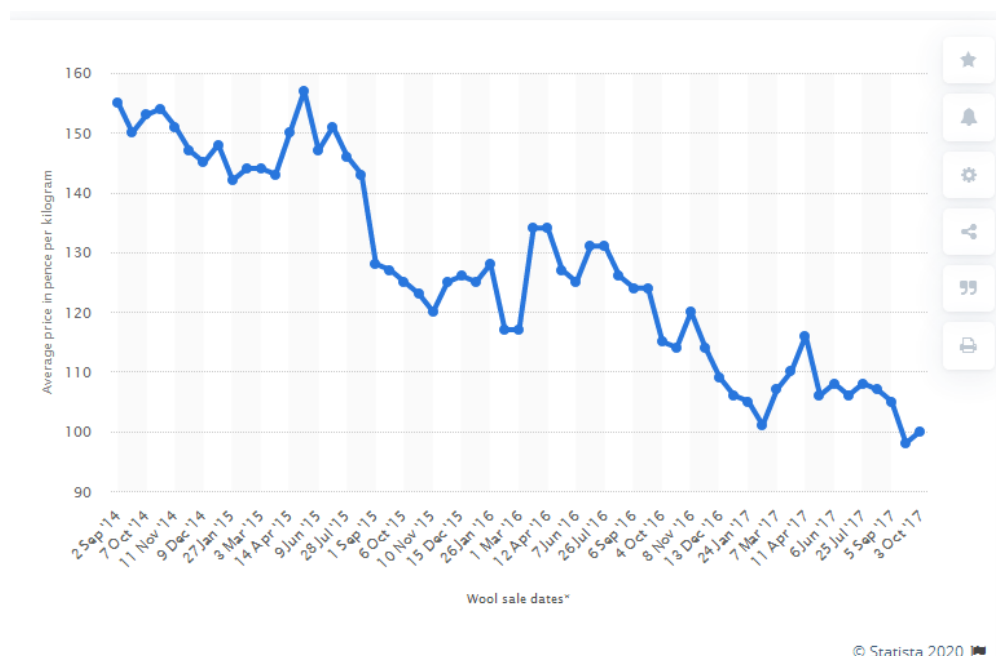


Fig. 1: Statista (2020) Average producer sale price of fleece wool in the United Kingdom (UK) from September 2014 to October 2017 (in pence per kilogram)

In addition to the current pandemic, we find that Britain continues to import wool from other countries. In 2018 more than 42 million kg of wool was imported to the United Kingdom (Statista Research Department, 2020) (see Figure 2).

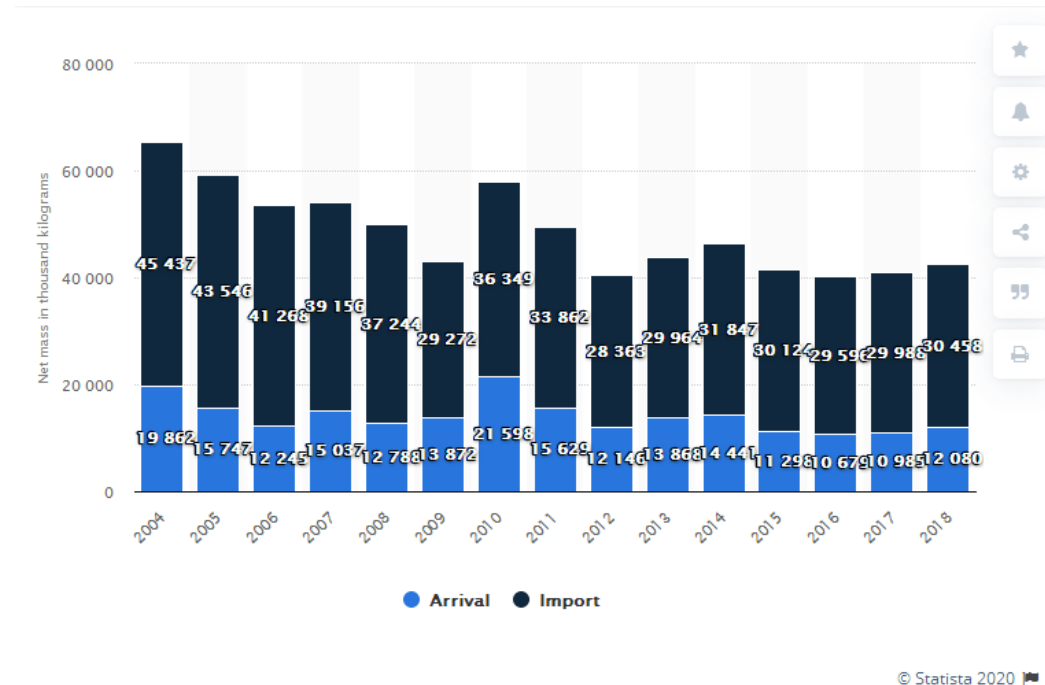


Fig. 2: Statista (2020) *Net mass of wool imported into the United Kingdom (UK) from 2004 to 2018 (in 1,000 kilograms)*

With consideration to the fact that It is estimated that around 65% of all fibres used in the fashion industry are synthetic and unsustainable, surely this should be more strongly addressed by industry as an issue? Whilst consumer demand for cheap, fast fashion remains priority, the petrochemical industries that produce synthetic materials will continue to have monopoly over the markets. Indeed, should the British textile industry not be encouraged to source local materials? It is not surprising that a Campaign for Wool was instigated by HRH The Prince of Wales, a fervent environmentalist, in January 2010. This campaign's aim is to bring together international textile industry associations in order to create a world community, which

in turn promotes and educates communities on the benefits of this natural, sustainable material. The ultimate aim being to support farmers/producers and small businesses dependent on wool production (Campaignforwool.org, 2020).

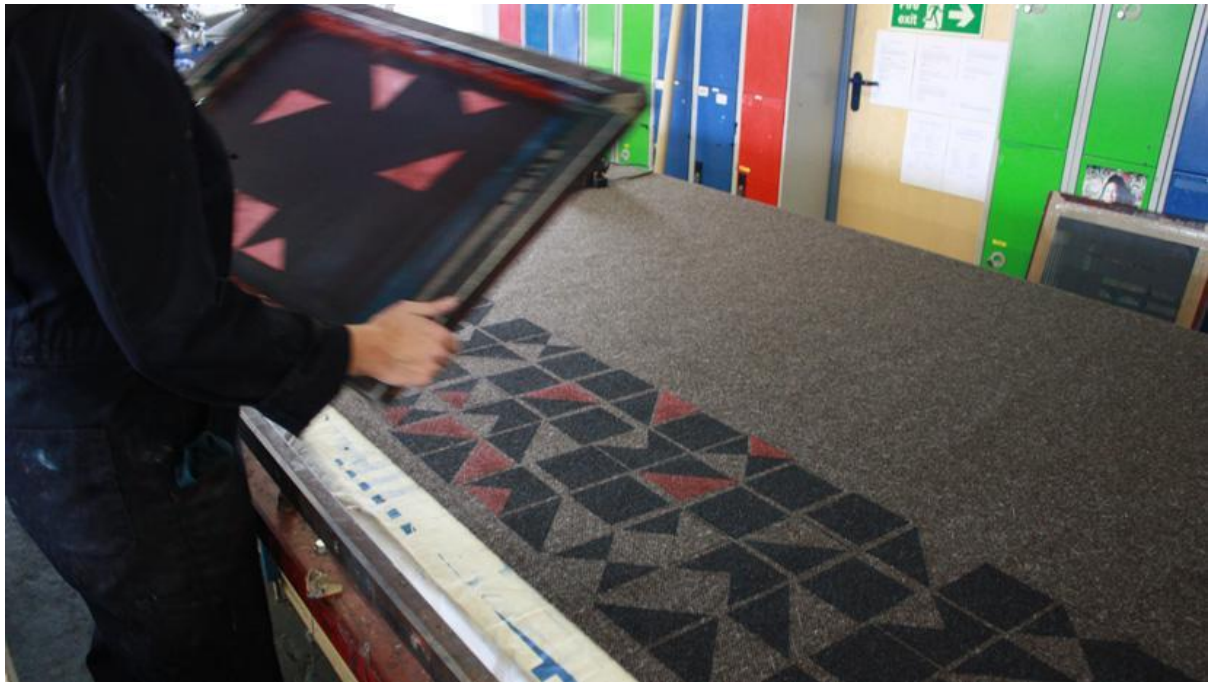


Fig. 3: Cherchbi.co.uk (2020) *Screen printing onto Herdwyck No.10 tweed*

After witnessing first-hand the waste produced by fast and high fashion brands such as Louis Vuitton and H&M, textiles artist and designer Tamasyn Gambell decided to create a company with an ethos to produce luxury interior designs, whilst working in the most environmentally and socially responsible methods (Gambell, 2020). She has been known to up-cycle and utilise locally sourced used materials including silk scarves, waste fabrics from fashion production and recycled paper. Wherever possible she will use water based dyes in her print production. She questions and challenges every part of her production process to ensure sustainability. She has most recently collaborated with Cherchbi.co.uk to produce screen printed bags using

Herdwick tweed from the indigenous and extremely hardy Lakeland Herdwick sheep. (Figures 3-4).



Fig. 4: Cherchbi.co.uk (2020) *Screen printed Herdwyck No.10 tweed bag*

A study measuring the environmental impact of the global fashion apparel and footwear industries, undertaken by Quantis in 2018, assessed three impact reduction action scenarios. These were: switching to renewable energy, promoting energy efficiency/productivity, and implementing circular economy by re-using materials.

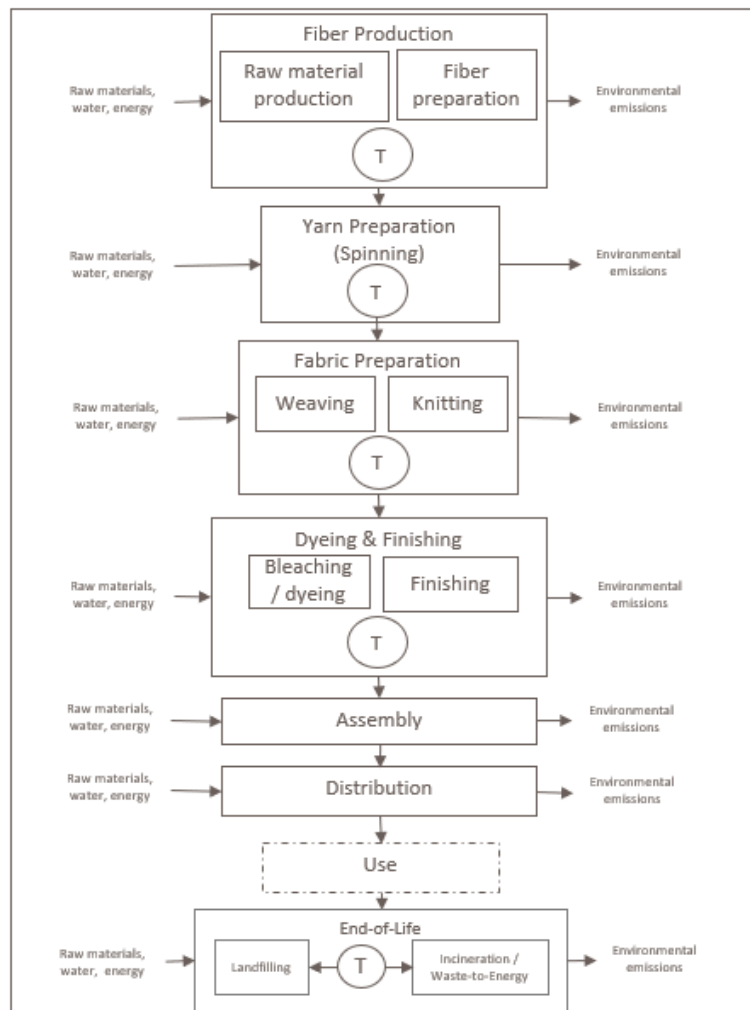


Fig 5: Quantis (2018) *The life cycle of the global apparel system*

Based on their results Quantis found the most effective way to achieve an industry-wide emission reduction would be to focus on renewable energy and energy efficiency with focus upon the highest impacting life cycle stages (Figure 5) which are (Dyeing and Finishing, Fibre Production, Yarn Preparation, Fabric Preparation, and Assembly) in order to propel the value chain into a low-carbon future. Only a circular economy where multiple steps in the chain can be skipped, by reusing fabrics or even garments, can provide a relevant reduction in the waste indicators.

This principle of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems is fundamental to sustainable fashion design development and although this study has focussed on Global/macro industries there are indeed many grass roots practitioners utilising this principle on a more micro level. As Mathilda Tham states, “There is no sustainability by proxy. It must start in the individual.” (Tham, 2015, p.9).

In relation to the evidence presented by Quantis, we might explore the social enterprise business model introduced by Anna Fiscale. Progetto Quid is an Italian social enterprise working ethically and sustainably by recovering waste textiles from Italian fashion firms, collaborating with emerging designers and creating unique fashion collections produced by women with a vulnerable past. (Figure 6). This social innovation, created by entrepreneur Fiscale, offers a new paradigm, a new system and indeed is extremely forward thinking. By re-purposing over 200,000 metres of materials, this business model has saved 500,000 metric tonnes of water, 650 tonnes of chemicals used to wash and dye fabrics and saved 60 million kilowatts of energy. Turnover growth has increased to over a million Euro in 2016. This prime example of a successful systems model should be considered throughout the industry.



Fig. 6: Progetto Quid (2020) *Ermione Long Dress*

We must question why it takes individual designers at a local level to set the standards in order to invoke change globally. Through her thesis research Tham deduces the dichotomised nature of the current environmental fashion industry. On one hand a small number of independent designer-makers, such as Tamasyn Gambell, and small companies, such as Progetto Quid, are embracing the sustainability challenge and have become the benchmark for others, whilst the demand for mass market, cheap fast-fashion continues to expand without ethical consideration. If there is evidence to prove that alternative systems can work, then why are they not being implemented? Again, I reiterate, there needs to be a massive paradigm shift away from monetary gain towards the common good for all.

The fashion sustainability discourse polarizes its stakeholders (producers/brands versus consumers, legal/fiscal top-down initiatives versus grass-roots movements).

(Tham, 2015, p.12)

If we take Tham's 'lucky people forecast' approach, she suggests we foster engagement with and reinforce the significance of sustainability. This could be achieved through education by teaching and also as an independent, via information provided on one's website/blogs/social media. Again, if we look back at the work of Buckminster Fuller, he encourages a dialogue between design and science.

The design scientist would not be concerned with exclusively with the seat of a tractor, but with the whole concept of production and distribution of food. Design-science-school students would be encouraged to...study whole industries and the relationship...to general society needs.

(Buckminster Fuller, 1972, pp. 336-7).

When Walter Gropius founded the Bauhaus school in the early Twentieth century, he stated:

Our job is to invent a new system of education that may lead, by way of a new kind of specialised teaching of science and technology, to a complete knowledge of human needs and a universal awareness of them.

(Munari, 2008, pp.27)

There clearly is an argument in favour of adapting the curriculum, and writings in support of this idea. We can see this in the current implementation of a new Secondary Curriculum initiative in Welsh schools. The Welsh Education Authority has given, the governing body of each school, total autonomy to design a curriculum specifically tailored to that school. The guidelines for this educational reform suggest six new Areas of Learning and Experience (AoLE) to be created, with Science and Design Technology joined as one faculty. Secondary subjects across the curricula will be encouraging student centred learning and creativity in many forms, “offering technical ways to meet society’s needs and wants” (Hwb.gov.uk, 2019). Since university level academic engagement already encourages this cross-curricular and multi-disciplinary learning, I feel this advancement at Secondary level is an extremely positive progression. In addition to this, as future designers, we will require scientific knowledge to address the evolving design challenges facing us today. Thus we could conclude that a new series of systems is being created from this educational evolution. “The systems...we live with are created by humans, and so we are capable of creating other, better systems for our present and future wellbeing” (Tham, 2015, pp. 16).

Tony Fry states that “Design intelligence should inform all education and practice...it needs to be elemental to education in general” (Fry, 2009, pp.12-13). He goes on to suggest that disciplines need to be bridged in order to facilitate an exchange of knowledge, thus this convergence facilitating a re-directive design agenda. This theory supports the comments I have made regarding the implementation of new ways of approach to learning in secondary education. He does, however, question

the ethics and motivation of the design educator, asking whether they share a common objective of wishing to improve what is designed and to challenge an education based on defuturing.

Could we recognise a need to educate the educators perhaps? This is discussed in the work of Kate Fletcher and Dilys Williams'. Their paper on devising and delivering a Masters level fashion course at the University of the Arts, London focuses on projects created by their students, which highlight issues relating to fashion education in an era of sustainability. In the case of the 'Energy, Water, Fashion' project, the student explored laundering habits and its effects on garment shape, colour, functionality, engaging with multiple disciplines and sectors, thus demonstrating a need for dialogue and sharing of knowledge between disciplines for the greater good. The overall findings of this study however discovered a 'paralysis of practice', due to the burdening of global sustainability issues upon the students. Fletcher and Williams noted that over time, with support and "by encouraging a shift in emphasis away from 'outcomes' and towards 'process', this often makes action possible again." (Fletcher and Williams, 2017, p.87).

During one's career the aim is to tackle the issue of designing and producing sustainable products by embracing the ethics of individual practitioners such as Tamasyn Gambell and Anna Fiscale. By adopting the principles of collaboration, designing out waste and, keeping materials in use is fundamental to a successful ethical future. Collaboration and co-creation should be embraced in addition to the sourcing and implementation of local and natural sustainable materials. Having a prior interest triggered from experimental work during my year on the UWTSD Arts

Foundation course (Figures 7-8) and with experience of teaching design technology, in particular, textiles technology, I plan to utilise previous skills and develop new skills and knowledge whilst studying, practicing and teaching simultaneously. Education is essential, as is the sharing of knowledge on sustainability and ethical production. Being surrounded by like-minded individuals and collaboration is also imperative as only few are able to work within a vacuum, as is taking ownership of the process of engaging with other on these issues, including within education and during my practice.



Fig. 7: San-Miguel, C. (2015) *Space and Place*



Fig. 8: San-Miguel, C. (2016) *Ephemeral*

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