Materials Sustainability across the Crafts and Applied Arts: a review and reflections

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Introduction

Over the past two decades sustainability has developed from a peripheral concern to a pressing mainstream issue. This makes developing more sustainable practice an imperative for craft and applied arts professionals. Sustainability issues can be as direct as the sourcing of raw materials that products are made from, or the energy sources used for specific techniques, but may also involve the procurement, use, and disposal of the less obvious but essential tools, equipment, and secondary materials.

The material in this article is primarily drawn from the findings of the scoping project: 'Sustainable Materials in the Creative Industries' (SMICI), that ran from 2020 to 2021, with supplementary material from related research undertaken since its conclusion. The article has seven sections. Following the introduction, part 2 describes the scope and methodology, whilst part 3 explains the definition of crafts and applied arts used in the study and this paper. Part 4 focuses on the main barriers to sustainability and Part 5 presents a selection of innovative approaches to craft and applied arts. Part 6 addresses craft's educational potential with respect to sustainability, followed by the conclusion.

Part 2: Scope and Methodology

The foundational material for this paper is the findings from a scoping project: *Sustainable Materials in the Creative Industries* (SMICI), (AH/V005510/1), one of six successful proposals submitted to the pilot round of the Arts and Humanities Research Council's (AHRC's) *Where Next?* call. In terms of disciplinary scope and methodology this paper follows the framework established for the SMICI project, though it benefits from further research on sustainable innovations in the UK and Thailand undertaken since the project concluded. It also draws on a much longer thread of research activity conducted by the author, which began in 2008. This has focused on the jewellery and watch industry and its supply chains, and included following the development, launch, and subsequent trajectories of ethical gold sourcing certification programmes and associated supply initiatives.

Sustainable Materials in the Creative Industries had a much broader remit than the current paper. It examined sustainable practice and innovations across a range of the creative industry sectors supported by the AHRC (see Oakley *et al*, 2022). The diversity of practices encountered, together with the divergent and sometimes even competing claims regarding sustainability, meant the team had to select a practical definition of sustainability. This also needed to align sufficiently with government policy to be meaningful for the AHRC in developing their funding strategy.

After considering a range of options, the project team decided to adopt the Ellen MacArthur Foundation's description of the *circular economy* (CE) as the benchmark for assessing sustainable practice. This decision was based on three factors. Firstly, such an approach had the merit of providing a holistic view of any activities, enabling the project team to review claims based on an external benchmark than self-definitions. Secondly, it exposed perverse outcomes to ostensibly viable approaches to sustainability. Thirdly, the Ellen MacArthur Foundation's framework has been well documented (e.g. Ellen Macarthur

Foundation 2023; Stahel 2019) and is widely recognised and applied by creative industry professionals and policymakers engaging with sustainability. This meant the terms employed in the report would therefore be emic for these communities of practice.

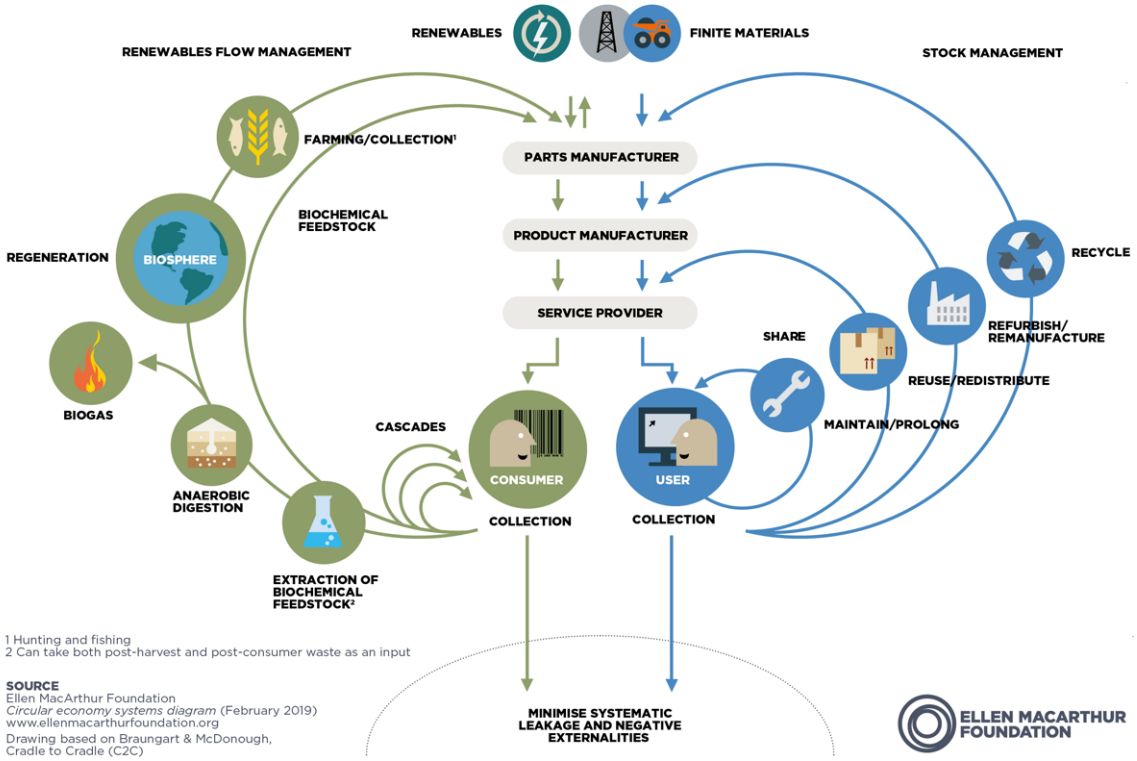

Fig.1. The Ellen MacArthur Foundation's Butterfly Diagram explaining CE principles.

In taking this position we were aware that we were selecting from a range of competing CE frameworks (see Kirchherr *et al* 2017). We were also applying a perhaps unrealistically ideological standard that, due to wider structural factors, would be impossible for any business to fully achieve in 2023. However, it proved to be an useful barometer in terms of assessing practitioners' intentions and understanding the complexities of aspiring to more sustainable practice and choices. Applying a circular economy perspective also provided the opportunity to review behaviours not currently identified as sustainable but which it turned out met circular economy criteria. It therefore shed new light on some types of established or even traditional practices, providing additional justification for their continued existence, or even wider adoption, in the 21st century.

The sections of this paper broadly follow the SMICI project report's Section on Crafts and Applied Arts section's approach, which relate directly to the stages of the circular economy flagged in the canonical 'butterfly diagram' (see above). However, upcycling, which does not appear in this diagram (though it is discussed in the CE literature) has been added due to its importance for contemporary craft practice. This addition can be considered a consequence of translating the idealised perspective of the abstract circular economy into the real-world scenarios of craft production.

Part 3: Defining the Crafts and Applied Arts

As explained in the SMICI report (Oakley et al 2022), the term crafts and applied arts covers a range of specialist material-based disciplines, typically with a long history of practice and associated heritage. It is also worth noting that craft has an ideological aspect

which helps define its boundaries, (see Adamson 2007, 2013; Sennet 2008). Though these are ambivalent towards sustainability *per se*, the concept of 'intelligent making' admits consideration of the integration of sustainable practice as part of the crafting process. Most are heavily reliant on manual making techniques and processes. In many cases the craft discipline has an industrial equivalent, e.g. furniture design, ceramics, and textiles. However, due to the difference in scale of operation, the techniques employed, and to some extent, the exact materials being used and the ethos of the relevant practitioner(s), there are fundamental differences in practice with regards to materials sourcing, use, and disposal.

The individual craft and applied art disciplines examined for SMICI were:

- Blacksmithing
- Bookbinding
- Ceramics (studio)
- Clock and Watchmaking
- Furniture Making
- Glass (studio)
- Jewellery
- Leatherworking (bespoke)
- Metalworking (base metals)
- Musical Instrument Making
- Restoration (Fine Art)
- Restoration (furniture and textiles)
- Silversmithing & Goldsmithing
- Textiles (studio)
- Woodworking

It was recognised that most professional craft and applied arts practitioners in the UK operate as sole traders or small or medium side enterprises on the smaller end of the SME scale. There is also a significant leisure or hobby constituency for most crafts. In addition, the boundary between professional and amateur is extremely blurred. Notably, the appearance of online selling platforms such as Etsy has facilitated opportunities for craft and applied arts makers to generate a second or supplementary income, whilst remaining in more secure employment elsewhere.

The SMICI report included all jewellery and watchmaking practice in the crafts and applied arts section. Whilst from a global perspective, jewellery and watch manufacturing includes large companies, the industry has a different profile in the UK; most jewellery manufacturing businesses are categorised as SMEs (Department for International Trade 2020; OECD 2005). In addition, manual or semi-manual processes are still very much in evidence within many jewellery manufacturers. This stands in contrast to disciplines such as ceramics and furniture production, where almost total automation often exists at the industrial scale and the use of different types of materials is very evident.

Part 4: Sustainability Issues relevant to Crafts and Applied Arts practice.

Craft and applied arts practitioners typically work in SME contexts that tend to specialise in utilising one type of material and a small number of associated manual-focused processes and technologies. Their products are typically hard goods that are sold onto customers. These products are usually discretionary purchases that have a price premium in comparison to more prosaic alternatives. Many fall into the luxury goods bracket.
With respect to sustainability, issues for craft and applied arts practice coalesce around:

- Practitioners 'locked in' to working with unsustainable materials
- Practitioners 'locked in' to unsustainable supply chains
- A decline in local sourcing options

- Practitioners 'locked in' to unsustainable making processes
- The dominance of the 'goods for sale' model

Practitioners 'locked in' to working with unsustainable materials

Almost all craft disciplines are organised around the use of a specific group of materials with a common set of properties. Many of these predate modern chemistry, so developed in a context where chemical structure or toxicity was not fully understood or determinable. Whilst some of these materials are entirely benign, others have turned out to be inherently unsustainable, due to the circumstances of their production or their capacity for environmental contamination.

Some organic materials were harvested in ways that are now known to be entirely unsustainable and have been prohibited by international treaties, such as ivory harvesting from elephants, walruses, and whales. However, many others are still being sourced in ways that are debatably but not definitively unsustainable. This intersects with the added issue of a diversity of sources, making it much harder for a craft practitioner to determine how sustainable any specific batch is in actuality.

Perhaps the most extreme example of an unsustainable craft material is lead crystal, traditionally used by craft glassblowers and cutters in the UK. This aesthetically beguiling material is highly polluting in terms of the lead fumes given off by the molten glass during production. But the crystal itself has recently been identified as also toxic in general use due to lead leaching. This makes it unsuitable on health grounds for what are currently staple product lines, such as drinking vessels, including wine glasses and whisky tumblers, and crystal decanters (Schwarcz 2019).

Craft goods are often discretionary purchases, with the quality of the materials employed and the price point being an important customer considerations. A good example is the case of leather products, where the quality of the hide and the tanning process contribute significantly to the final look and feel of the finished article, but this quality imposes pricing barriers. There are two main methods of tanning: (1) vegetable tanning, which makes use of the tannins found in tree bark, and (2) chrome tanning, a more recent industrial process that uses chromium salts to preserve the leather. Vegetable tanning is considered more environmentally friendly, but is also much more expensive as it is a more time-consuming process and more costly in terms of raw materials. The UK is home to a small number of vegetable tanners, including J. & F.J Baker the only remaining oak bark tanner in the UK (https://www.jfjbaker.co.uk/), and Thomas Ware of Bristol (https://thomasware.co.uk/). However, the production is restricted as the more sustainable option can only be accessed by craftspeople making items sold at very high prices. Leatherworkers creating products at lower price points can only balance the books through using chrome-tanned leather.

Practitioners 'locked in' to unsustainable supply chains

As many crafts became established during the ‘era of material scarcity’ (Stahel 2019) those crafts are at core inherently frugal. However, during the modern era the increasing availability of materials changed, alongside attitudes towards craft practice. On one side, craft has become more associated with the luxury sector. On the other, it is now associated with leisure, as advanced types of hobbyist activity. In both contexts, the raw material price is no longer seen as critical. In addition, many materials’ supply chains have become increasingly complicated as they have responded to, and often became dominated by, the needs of industrial manufacturing. Consequently, supplying craft practitioners has typically become an increasingly marginal activity for suppliers and sustainability is not a leading factor in their distribution procedures.

For example, though the UK has extensive local china clay reserves and mines in Southwest england, these are managed by international conglomerates. The raw china clay that is extracted is exported in industrial quantities. In 2018 overall UK production of china clay amounted to 0.9 million tonnes and entailed the production of mineral wastes eight times that amount, with only about 15% of the waste material being repurposed (Wardell Armstrong LLP 2021). At the same time, ceramicists in the UK are buying and importing prepared porcelain clay bodies from craft suppliers based abroad, entailing the carbon cost of international shipping. In the immediate aftermath of Brexit, the international nature of these supply chains briefly became apparent as the supplies of prepared clay bodies to UK craftworkers were suddenly severely disrupted. This supply chain may also involve the unwitting re-import of exported UK clays as a constituent of the prepared clay bodies the ceramicists purchase.

In contrast, cotton is an internationally standard product, but the means of its production encompasses many different regions and covers the gamut of sustainability, from environmentally considerate to the overexploitation of a region's material resources to the point of its ecological collapse. The international market for cotton and the lack of transparency in current supply chains makes it very possible that a craft weaver working in the UK will be weaving with yarns made of cotton least partially grown in Central Asia (Environmental Justice Foundation 2005, 2012; Satke 2021). The drying out of the Aral sea is closely linked to the growing of cotton in Central Asia, and its need for irrigation in extreme environments.

A decline in local sourcing options

In cases where more responsible extraction options exist (e.g. digging local clay rather than purchasing a commercially-produced clay bodies), the more sustainable approach involves additional costs, time, resources, and extended expertise. These are each formidable barriers. The decline in use of local mineral deposits in the UK has accelerated since the 1970s, partially due to de-industrialisation, which has involved the closure of many operating mines, quarries, and pits. This has occurred alongside the gentrification or fetishization of many rural landscapes. These two factors place additional barriers in the face of those wanting to exploit such resources. Examples of objections to extraction projects, even on a small scale, include the ongoing controversy over the Scotgold gold mine at Cononish, near Tyndrum, on the edge of the Loch Lomond and Trossachs National Park (see Kempe 2017, 2021; The Scotsman 2010).

Practitioners 'locked in' to unsustainable making processes

Some craft processes are extremely profligate in terms of secondary material use, such as polishing or finishing media or energy sources essential for specialist activities. An extreme example is ceramic wood kiln firing. Typically, 1.5 Cords of wood (a cord equals 3.62m^3 of wood), will be needed to fire an average size kiln. Ceramicists' continued adherence to the practice of wood firing is based on a mixture of tradition and the unique glaze aesthetic of the results, which is due to the ash drawn into the kiln chamber from the firebox. The same surface effect is extremely difficult to obtain using electric or gas kilns and could be considered contrived. The source and quality of the wood being burnt are key variables in determining the sustainability of the process in specific situations. If the wood is an integrated part of a forestry management plan there is a potentially valid claim to its sustainability. However, this is rarely demonstrated. There have also been claims made that burning 'waste' wood is sustainable, though the examples given, such as burning shipping pallets, are easily criticized as contrary to CE principles.

The dominance of the 'goods for sale' model

Historically, craft workers have had a variety of relationships with the users of their products. This has included arrangements of exclusive patronage (sometimes even with an

aspect of coercion or incarceration). In the British Isles, the establishment of the craftsman as a supplier to the open market was well established by the time of the industrial revolution, and craft wares ended up competing with industrially produced goods. Consequently, craft has only retained a foothold in niches where aesthetics or bespoke production is an evident and valued aspect (Pye 1964). Craft practitioners have adapted to the linear economy both in terms of the type of objects they sell and the methods they use to attract customers and make sales. Whilst the growth on online sales platforms such as Etsy have opened new markets, virtual seller-buyer relations are being constructed along the same lines as in-person sales. One could even claim that the digitally mediated nature of the contact means online sales have become even more de-personalised, with constructed narratives and visual facades built on stereotypes replacing the last vestiges of personal engagement.

There is no reason why this type of relationship should predominate. However policy currently focuses on immediate profit generation through sales made through consumer markets, which reinforces a linear production model (e.g. see Morris Hargreaves McIntyre, 2020).

Part 5: Innovative approaches

Materials Sourcing

An emphasis on sustainable sourcing of materials has been a growing feature of recent craft practice. Though it is tempting to presume a direct linkage to the self-reliance and anti-industrial ideology of 20th century studio crafts (e.g Albers 1966; Leach 1940), this might be a misleading interpretation. Many practitioners are conceptualising their approach to material extraction, harvesting or processing more in terms of acting in a more sustainable and responsible manner as global citizens, rather than embarking on a romantic quest to evade the modern world or undertake a spiritual journey.

Case Study: Flax

In these situations, the claim to sustainability can be made through different criteria. In the case of the Thorody Flax Project (https://www.crowdfunder.co.uk/thorodyflaxproject), the intention is to re-establish a once thriving local industry - flax growing and linen production - in Southwest England. The project is based on enhancing the local ecology and agricultural diversification, as well as reducing the carbon cost of transporting the harvested flax to northern France for processing and weaving.
It is perhaps worth noting environmental sustainability is not the only benefit the project will bring. As well as offering new employment opportunities, in a post-Brexit context the channel- hopping of raw materials which the current flax-linen supply chain relies upon will become more difficult to successfully manage.
The Thorody project is only one example of small-scale localised flax production in the UK. Amongst similar projects in the UK are start-ups or proof-of-concept operating in Liverpool (https://fieldofflax.co.uk/about/), Edinburgh (http://www.edibleestates.co.uk/project/flax/), and Blackburn (https://northwestenglandfibreshed.org/homegrown-homespun/). The Fibreshed organisation even manages a UK Flax Map to keep track of the different initiatives and runs a Facebook group to support flax growers and processors (www.facebook.com/groups/flaxandhempgrowersuk/).

Case Study: Urban Forestry

For other crafts, there are different drivers. Urban forestry has developed as a practical response to the poor management of a difficult-to-source product: high quality specialist woods growing in urban environments. This is connected to the long-term drift by

large wood supply companies towards standardisation of feedstock and a dependency on the economies of scale linked to large-scale extraction. Consequently they were no longer prepared to countenance the extraction of single trees from urban sites. Until relatively recently urban trees had to be chipped on-site, rather than cut into lumber.

As city councils need to cut down trees for legal reasons or due to failing tree health, in recent years local sawmills have been collecting these trees to turn into wood suitable for cabinetmaking and other similar purposes. As the wood needs a minimum amount of transportation the carbon footprint of urban wood is extremely low. Vibrant Cities Lab, in Washington DC, has led research on the benefits of urban wood, highlighting:

> "Urban wood reuse can reduce greenhouse gas emissions, improve environmental quality, reclaim abandoned housing, stimulate new local enterprise and increase career opportunities for hard-to-employ individuals." (Vibrant Cities Lab, 2021)

Another benefit of urban wood is the availability of rare and high-quality wood species. The species planted in cities are usually chosen for their aesthetic qualities, in contrast to forestry plantation trees, which are selected for speed of growth and ease of harvesting. Urban trees are allowed to mature, it being in the interest of council tree officers to ensure their trees live long and healthy lives to reduce planting and removal costs. Urban trees are therefore more likely to reach a girth that makes them viable for sawmills.

Some tree species are both highly desirable as timber and extremely well suited to urban conditions. The unique lace grain of the pollution-resistant London plane makes it a very desirable wood for cabinetmakers. Walnut trees release chemicals in the soil to inhibit biodiversity and so reduce competition, which is problematic in most woodland management contexts. But as street trees are often isolated, walnut is well suited in planting in the urban environment. Walnut wood is dark, well grained and has excellent working properties, which makes it highly desirable to craftspeople, with walnut lumber selling for up to four times the price of oak (Brown 2011).

London has an urban forest (London Urban Forest Partnership 2020). The scale of the opportunity has been realised by Bruce Saunders, a sawmiller and maker who has established connections across London's councils and tree surgeons to salvage urban trees. Saunders' promotes his lumber products as low carbon hardwoods and has received awards for his work. Bruce comments on his website:

> *"Over 5,000 mature trees are felled in London every year – oak, London plane, sycamore, ash and more. Most are simply chipped and burned. It's a huge waste. And when you consider 93% of hardwood sold in the UK is imported, it's also an environmental opportunity missed."*

The cabinetmaker Sand Buchanan uses urban forestry timber in studio cabinet making businesses. Sand comments on the value that the individual histories of each piece of local wood bring to his practice and his journey towards sustainability:

> *"Only by understanding where they [materials] come from can you begin to understand the impact you are having by using them. Knowing which wood, estate, or street my timber has come from, I can understand why it was felled. In the case of my timber, it is because of storm damage, disease, or as part of a regulated woodland management plan". (Clanford 2020)*

Instrument makers have found a viable and more sustainable source of material in urban trees, due to these trees' capacity to be used as tonewoods. A tonewood is known for

its aesthetically pleasing sound properties. Such woods are essential for producing high-quality musical instruments. Only certain types of trees are suitable and most of these are found close to the equator. But their tone qualities are a consequence of their environment as well as their genetic makeup. Recent research has shown that rosewood trees (traditionally used in guitar-making) planted in the Amazon basin as part of a reforestation programme had grown too rapidly, due the lack of shade. This meant their wood lacked the compact grain and associated tonal characteristics found in rosewood harvested from old growth forest (Errede 2017). In urban environments the shade of surrounding buildings slows the tree growth and they develop a close grain with tonewood properties. In California, Taylor Guitars Inc. recently introduced three “Urban Ash” models made from trees felled by municipal governments in California and Arizona (Miller 2020). Taylor’s commitment to urban forestry now also extends to supporting city tree planting events.

Case Study: Gold

The past decade has seen the appearance of multiple ethical gold certification programmes, focused on assisting artisanal and small-scale gold mining (ASGM) communities in the developing world. Initially constructed in the name of social justice, the track and trace aspect of these schemes has facilitated their use in terms of supporting sustainaible sourcing approaches.

As with most other classical commodities, at the beginning of the twenty-first century the global gold trading market was operating according to free trade principles. The leading gold exchange platform is the London Bullion Market Association (LBMA), with the twice daily spot price determined by the LBMA’s direct market participants through rounds of competitive bidding (LBMA 2021). Though the centre for physical gold trading is based in London, since the 1970s the leading country for gold refining has been Switzerland (Green 1985; O’Callaghan 1993). The scale of the LBMA's daily trades, amounting to hundreds of tonnes of gold, means the LBMA spot price determines the price of all other commercial and private gold sales made on that day. This includes goldfield trades across the developing world, though the prices paid locally are often heavily biased in the buyers’ favour.

The notion of ethical gold is linked to a wider desire of social justice for the developing world's population (Bloomfield 2017). In an ethical gold programme, the ASGM miners are paid a guaranteed price for their output, closely linked to the LBMA’s spot price, making them independent of exploitative local gold buyers. In addition, the schemes involve a premium on purchases that is to be re-invested in the mining community. In return, the miners promise to adhere to legal, safe and socially and environmentally responsible mining practices as well as jointly determining how the premium would be spent (Maldar 2011). Such certification schemes therefore incentivise the miners to operate in a sustainable manner.

The first scheme, the Fairtrade and Fairmined Gold (FT/FM Gold) certification programme, was the outcome of a partnership agreement between the Fairtrade movement, advocated for by the Fairtrade Foundation (the UK & Ireland’s Fairtrade promotional body) and the Alliance for Responsible Mining (ARM), a grassroots miners’ organisation begun in Latin America in 2004. FT/FM Gold was launched in the UK in February 2011. Though the FT/FM Gold scheme only lasted just over two years, its two successor programmes - Fairtrade Gold and Fairmined Gold - have persisted and expanded (Oakley 2105).

Over the past decade Fairmined gold has developed new collaborations, including the Swiss jeweller and watchmaker Chopard. In 2014 Chopard launched the L.U.C. Tourbillon Qualité Fleurier Fairmined watch, produced in a limited edition of 25 timepieces and retailing at $144,570. Uniquely at that time, the watch’s rose gold case was made of

Fairmined gold, a feature picked up by the industry media. Chopard had taken an enormous risk in producing a watch for the crowded and highly competitive luxury watch category with its unique selling point being the ethical provenance of its gold. Since the revival of the Swiss luxury watch sector in the 1990s, such watches have been promoted on the basis of their manufacturer's heritage and the strength of the manufacturing technology, (Donzé 2015; Glasmeier 2000). The success of the L.U.C. Toubillion Fairmined encouraged Chopard to release further models made from Fairmined gold over the following five years. In 2019 Chopard announced all its future watches and jewellery would be made of ethically sourced gold, consolidating their confirmed market position as an ethical and responsible luxury brand (see Liu 2015).

A key strength of the ethical gold certification programmes has been the ability to guarantee the point of origin of the gold. This then allows the consumer to direct their purchasing power towards miners engaging in more sustainable practices. ASGM operations in many regions of the world are linked with the use of mercury, a persistent environmental contaminant. Jewellers sourcing their gold through a certification programme can identify how far their practice and products are enmeshed with that activity. Some schemes even offer the opportunity to purchase gold that has been extracted without any recourse to mercury.

Materials Reuse

In the context of crafts and applied arts materials reuse is highly problematic. This is due to the impossibility of making generalisations that hold across all specialisms. For some materials, the reuse of the raw material is so established as practice it is not noteworthy. In others it is impossible.

In the case of gold, recycling claims could be construed as greenwashing, as the gold industries have always employed reuse strategies: what is now being touted as 'recycling' used to be called recovery. With gold, the critical question is *recycled from where?* Some refineries, such as Umicore, specialise in the processing of electronic waste, also called e-waste, a definite case of CE style reuse. But most refineries accept gold wastes from several sources, including mine processing facilities, which contravenes CE principles.

In other contexts, such as textiles, using the term recycling is less contentious. The recovery and reuse of fibres from discarded fabrics makes a direct and immediate impact. It is notable that the practice was once widespread in Europe but has declined as the economic margins have been squeezed by cheap clothing made using unsustainably sourced materials.

After peaking in the 1990's, there has been a global decline of the woollen industry, with wool fabrics being substituted by mixes of synthetic fibres and blends. (Gro Intelligence, 2017). In 2019, John and his wife Linda, co-founded iinouiio (acronym: 'It Is Never Over Until It Is Over') to re-energise the 'endangered' craft of traditional UK textile recycling.
In 2021 iinouiio built a £165k mechanical textiles recycling plant using funding from WRAP. The R&D was supported by a government backed scheme from The Business of Fashion, Textiles and Technology, https://bftt.org.uk/ to deliver market leading innovation in textile recycling. The new mechanical plant is the only machine of its kind in the world and iinouiio are the only known R&D facility providing recycling with pre and post-consumer wool and luxury fibres. To reuse textile fibres, it is necessary to overcome the issue of the reduction in fibre length that is an inevitable consequence of the currently available recycling processes. Whilst this is not insurmountable it entails a different type of design approach to the linear economy, where such material limitations are typically resolved by using ever more virgin materials.

Upcycling

From some perspectives upcycling is indistinguishable from recycling. However, as upcycling involves a significant element of added value, in practice, upcycling businesses operate within a distinctive set of parameters. It typically starts with a very low-value component and uses a combination of brand promotion and design input to raise the status of the finished goods.

One of the most successful upcycling brands in the accessories field is the Swiss company Freitag (https://www.freitag.ch/en), which upcycles lorry tarpaulins into runs of one-off bags. The resulting unique items – each bag being made from a different part of a tarpaulin means no two are identical in terms of their surface pattern - are carefully constructed and sell at high price points in boutiques and through Freitag's online store. The brand reinforces its sustainability credentials by offering a repair service.

Other examples of upcycling are the Taiwanese glasses company Hibang, which makes its frames from discarded fishing nets. The same nylon plastic source has been used by many watch manufacturers, including: Alpina, Awake, The Horse, Luminox, Nixon, MVMT, Shinola, Tide Ocean Material, Tom ford, Triwa, and Ulysse Nardin. In all these cases the piece is claimed to be a statement on ocean pollution, a rationale that appears to have a wide resonance with watch lovers.

Upcycling is at the core of the Upcycled Glass Project in Devon, which is developing a glass suitable for glassblowing using waste window glass, which is currently dumped and has very restricted reuse potential (Hankey, 2021).

Extending Product Life

Craft products are typically well-made from appropriate and high-quality materials and therefore comparatively durable. The application of material knowledge and effort that goes into in material selection in craft practice tends to lead to the resulting goods having extended lifespans (LVMH 2021; Kering 2021).

The high level of conservatism in process found in most crafts is linked to this aspect of sustainability, as is the general lack of rampant experimentation in form and surface amongst professional craft practitioners. Both are in part due to a sound functional solution having been determined by previous generations of practitioners. It is notable that craft or traditional fashion (including bespoke tailoring and the home knitting of clothes) is materially and conceptually at the opposite end of the spectrum from the faddish short-termism in garment ownership that is associated with fast fashion.

It is, however, worth noting that the further craft moves towards contemporary fine art practice, the more innovation or novelty becomes valued at the expense of material expertise and control. This tension has an impact on the overall quality and material integrity of the consequent outputs.

Repair

As the development of repair and refurbishment is identified as a key element of a circular economy, it is interesting to note that in some craft disciplines this is an embedded part of established practice, whereas in others it is almost entirely absent. In the craft jewellery sector and in leatherworking, specifically cordwainery, repair and renovation are often part of the ongoing after service offered to clients. As noted earlier, this can extend to accessories made from plastics, as exemplified by Freitag. Repair is also a significant

element of the clock and watch trades and bookbinding. It is the raison-d'etre of the entire art restoration sector.

In recent years repair has extended to jewellers' advertising: some jewellers will design new pieces that incorporate old (usually inherited) gemstones, or will use the gold from old family heirloom rings to manufacture new, more fashionable ones. It is perhaps worth noting this activity is far from novel. High-end jewellers have historically offered the service of re-setting stones for their established clientele. but this was undertaken and justified based on the stones' economic value, rather than any environmental or social justice associations.

Another long-standing repair tradition is shoe-making, especially at the bespoke ned of the market. More recently, this has filtered down to the higher end of the ready-to-wear market e.g. Loakes shoes offers a postal repair service.

Ceramics are difficult to repair in terms of individual items. But for dining sets the long-term production of specific ranges facilitates continuity of use of a set when individual items are broken. This is an important aspect of the high-end casual dining trend in the hospitality industry, where characterful craft ceramics are used to help create an informal but highly aesthetic ambience.

It is worth noting that craft practices operating around repair have been the focus of recent exhibitions. The show presented at Somerset House: *Eternally Yours* which ran from June to September 2022, featured work by a selection of professional practitioners working across a range of materials (https://www.somersethouse.org.uk/whats-on/eternally-yours). The show included live repair sessions run by lifestyle brand TOAST (https://www.toa.st/) and the Beasley Brothers Repair Shop, an installation based on the East End repair shops of the early 20th century (https://www.scp.co.uk/collections/beasley-brothers-repair-shop).

Part 6. Craft as a channel for educating about sustainability

It is noteworthy that in many cases, craftworkers have become successful online ambassadors for their own products. Examples include the successful shoemakers CarréDucker (see https://www.carreducker.com/) and the woodworker Gareth Neal (see https://www.garethneal.co.uk/).

However, it is not inevitable that a craft practitioner possesses the ability to communicate their insights about the sustainability of their products to potential owners. Clearly and persuasively explaining why users should select a particular object made from a particular material in a particular way is an advanced soft skill. It is also currently not a substantial aspect of craft training, or most craft related HE courses; these tend to focus more on the making process itself. Equally, presenting information through online media requires an additional skillset to doing so face-to-face. The medium can easily compromise a message, even if it has integrity.

In conducting research for the SMICI project we discovered that online the role of craft champion is often taken by third-party influencers. These include the journalist Simon Crompton, whose Permanent Style website (https://www.permanentstyle.com/) tirelessly and effectively promotes craftspeople working in the field of men's fashion. Similarly, the broadcaster, journalist, and curator Corinne Julius champions UK crafts through a combination of media articles (e.g. https://grantondesign.com/Corinne-Julius) and in-person curated exhibitions. The latter includes the 2017 show *Silver Speaks: Idea to Object* held at

the Victoria and Albert Museum. However, to date these promoters have not focused on craft's sustainability credentials.

Crafts magazine, published by the Crafts Council, has made efforts to engage with the sustainability agenda, recently devoting an entire issue to the subject (Restore, Repair, Renew Issue 291). It has also published online material that focuses on specific craft media, such as ceramics (https://www.craftscouncil.org.uk/stories/how-make-your-pottery-practice-greener) However, the extent to which *Crafts* or similar lifestyle publications can present a critical viewpoint or initiate direct debate around the issues associated with adopting circular economy principles is limited by their format, circulation figures, and core audience.

Conclusion

Considering crafts and applied arts through the lens of sustainability is far from simple. However, certain common themes do emerge. The material basis of craft disciplines means that material issues are a very large part of the story. This has positive and negative inflections. Some materials (e.g. lead crystal) are inherently problematic, whilst with others their level of sustainability depends on the context of their sourcing and processing. The relatively low volumes of materials needed and the low-tech nature of the preparation processes can make localised production and processing a more viable option. Craft offers much in terms of repair expertise, and in some disciplines repair activities are established and unremarkable practices. The potential this holds for shifting expectations elsewhere could be exploited. Lastly, craft overall holds strong potential for changing attitudes towards a more circular economy, though this potential has not yet been capitalised on to the extent it could be.

A FINE BALANCE

For a new wave of craft businesses, social and environmental values have equal weight to profit. ***Debika Ray*** *speaks to four companies that are rethinking what success means today*

OTTER SURFBOARDS

Crafts Magazine Issue 291 Restore, Repair, Renew pp 58-59.

References

Adamson, G., 2007. *Thinking Through Craft.* Berg

Adamson, G., 2013. *The Invention of Craft.* Bloomsbury Visual Arts

Albers, A., 1966. *On Weaving.* Studio Vista

Bloomfield, M.J., 2017. *Dirty Gold: How Activism Transformed the Jewelry Industry.* Cambridge, MT: MIT Press.

Brown, P., 2011. *Specieswatch: The English walnut*. The Guardian. https://www.theguardian.com/environment/2011/apr/25/specieswatch-english-persian-walnut. Accessed 03.12.2021

Clanford, D., 2020. *Sand Buchanan on childhood influences, material sustainability and the healing power of design and making*.. Material Source. https://www.materialsource.co.uk/thinking-about-where-their-furniture-comes-from-who-made-it-where-the-materials-are-sourced-and-the-story-behind-it/. Accessed 03.12.2021.

Crafts Council, 2021. *The Power of Experiences*. https://media.craftscouncil.org.uk/documents/The_Power_of_Experiences_guidebook.pdf

Crafts Magazine. *Restore, Repair, Renew.* Issue 291. November/December 2021.

Department for International Trade. 2020. *Small and medium-sized enterprises action plan 2020 to 2022.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/961722/SME-Action-Plan.pdf

De Waal, E., 2013. *Bernard Leach*. Tate Publishing.

Donzé, P., 2015. *History of the Swiss Watch Industry: from Jacques David to Nicolas Hayek*. Bern: Peter Lang

Environmental Justice Foundation, 2005. *White Gold: The True Cost of Cotton*. https://ejfoundation.org/resources/downloads/white_gold_the_true_cost_of_cotton.pdf

Environmental Justice Foundation, 2012. The True Costs of Cotton: cotton production and water insecurity https://ejfoundation.org/resources/downloads/EJF_Aral_report_cotton_net_ok.pdf

Errede, S., 2017. *Sustainability and Musical Instruments*. Department of Physics, University of Illinois. https://courses.physics.illinois.edu/phys406/sp2017/Lecture_Notes/P406POM_Lecture_Notes/P406POM_Lect16.pdf.

Glasmeier, A.K., 2000. *Manufacturing Time.* New York and London: Guilford.

Green, T., 1985. *The New World of Gold.* London: George Weidenfield & Nicholson.

Hankey, I., 2021. The Upcycled Glass Project. https://www.crowdfunder.co.uk/the-upcycled-glass-project accessed 05.12.2021.

Harrison, R., 2013. *Sustainable Ceramics*. Bloomsbury.

Kempe, N., 2017. *The price of gold – the new planning application at Cononish.* parkswatchscotland. http://parkswatchscotland.co.uk/2017/05/04/price-gold-new-planning-application-cononish/ accessed 05.12.2021

Kempe, N., 2021. *Cononish goldmine – the unfolding environmental disaster*. parkswatchscotland. http://parkswatchscotland.co.uk/2021/05/23/cononish-goldmine-the-unfolding-environmental-disaster/ accessed 05.12.2021.

Kering, 2021. Preserving Craftsmanship https://www.kering.com/en/sustainability/people-in-the-supply-chain/preserving-craftsmanship/ accessed 05.12.2021

Kirchherr, J., Reike, D., and Hekkert, M., 2017. Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation & Recycling* 127 pp221-232.

LBMA, 2021. *About the LBMA*. *https://www.lbma.org.uk/about-us/about-the-lbma* (accessed 25/08/2021).

Leach, B. 1945. *A Potter's Book*. Faber & Faber

Liu, M., 2015. 'Chopard's Caroline Scheufele on its use of ethically sourced gold', *Financial Times,* 23 Oct 2015. https://www.ft.com/content/48548f6a-7332-11e5-bdb1-e6e4767162cc.

London Urban Forest Partnership, 2020. *London Urban Forest Plan*. https://www.london.gov.uk/sites/default/files/londonurbanforestplan_final.pdf. Accessed 03.12.2021.

LVMH 2021. Métiers d'Excellence https://www.lvmh.com/talents/metiers-dexcellence/les-metiers-dexcellence-lvmh/ accessed 05.12.2021

Maldar, S., 2011. *Fairtrade and Fairmined Gold.* London: Fairtrade

Martin Roll, 2021. *Hermès – The Strategy Insights Behind The Iconic Luxury Brand.* https://martinroll.com/resources/articles/strategy/hermes-the-strategy-behind-the-global-luxury-success/ accessed 05.12.2021

Miller, K., 2020. *Taylor Guitars Take On a Shade of Green*. Bloomberg Green. https://www.bloomberg.com/features/2020-taylor-guitars-sustainability/.

Morris Hargreaves McIntyre, 2020. *The Market for Craft.* Crafts Council. https://www.craftscouncil.org.uk/documents/879/Market_for_craft_executive_summary_2020.pdf

Oakley, P., 2015. 'Introducing Fairtrade and Fairmined Gold: An attempt to reconfigure the social identity of a substance', in: Adam Drazin and Susanne Kuechler (eds), *The Social Life of Materials.* Bloomsbury, pp155-174

Oakley, P., Mock, R., Findley, J., Jansen, I., Bauer, S., Lardeur, R., and Macdonald, E., 2022. *Sustainable Materials in the Creative Industries: a scoping report for the AHRC* (Redacted Version). London: Royal College of Art.

O'Callaghan, G., 1993. *The Structure and Operation of the World Gold Market.* Washington, DC: International Monetary Fund.

OECD, 2005. *OECD SME and Entrepreneurship Outlook: 2005*. OECD Paris

Pye , D. 1968. *The Nature and Art of Workmanship* . Cambridge University Press

Satke, R. 2021. Central Asian Dought Highlights Water Vunerability. PreventionWeb. https://www.preventionweb.net/news/central-asian-drought-highlights-water-vulnerability

Schwarcz, J. 2019. Alcohol should not be stored in leaded crystal decanters. McGill Office for Science and Society. https://www.mcgill.ca/oss/article/it-dangerous-store-alcoholic-beverages-decanters-made-lead-crystal

The Scotsman, 2010. *Scotgold loses gloss after mine refusal.* 12.09.2021. https://www.scotsman.com/business/scotgold-loses-gloss-after-mine-refusal-1704794

Sennet, R. 2008. *The Craftsman.* Allen Lane

Stahel, W.R., 2019*. The Circular Economy: A User's Guide.* Routledge.

Vibrant Cities Lab, https://www.vibrantcitieslab.com/

Wardell Armstrong LLP, 2021. *Restoration and Tipping Strategy for the St Austell China Clay area. https://www.cornwall.gov.uk/media/eczlyhpa/restoration-tipping-strategy-spd-consultation- draft-march-21-web-version.pdf*