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New Routes to Sustainability – strategies for realising craft's potential

Abstract:

The constantly shifting dynamic between craft and design is at the crux of this keynote address, which challenges us all to progress the debate on craft and sustainable development.

I begin by briefly reviewing the valuable progress made in this area of critical enquiry over the past five years. Specifically, I outline the assumptions we are now able to make regarding the value of craft knowledge and skills - both as impetuses to materials and product lifecycle innovation, and as tools for communicating about environmental and ethical issues. In doing so, I suggest that we now seek to build on this knowledge, looking beyond the issue of value to also consider actual mechanisms by which craft's innovation potential can be best fulfilled within the sustainable development movement.

In opening up this debate, I consider the current status of craft practice, as defined by its relationship with design. I outline the impact of developments in communications and manufacturing technology, and of shifts in consumer values: in particular, I explore collaboration as an impetus to creative craft and design innovation.

I propose that interdisciplinary collaboration, bridging craft with science, technology and engineering, is one strategy with particular significance for the sustainable development agenda. Referring to new examples in the fields of environmental sustainability and social innovation, I show how makers and STEM subject professionals are working together: both to frame environmental and ethical research questions rooted in real-world issues, and to pool the resources needed to find solutions. In the process, I explore how – at its best – such collaboration can unite distinctive yet complementary ways of seeing, understanding and responding to the world.

This approach presents the craft sector with both opportunities and challenges, particularly in terms of 'mainstreaming' progressive approaches to craft and design practice. Collaborative programmes, supported by universities and sector support agencies, play a vital role. Yet public spending cuts are underpinned by a political and institutional separation of the arts and humanities from the sciences, technology and engineering. Focusing particularly on education, I conclude by exploring specific challenges posed by education reforms at school level and by Higher Education funding priorities, outlining the Crafts Council's strategy for addressing these challenges through advocacy and research.

The Crafts Council - the national development agency for contemporary craft in England - is pleased to have participated actively in all three of the Making Futures conferences. Research is crucial to our work, not only informing our own education, training, exhibition and market development programmes but also enabling us to engage with government and influence policy. Over the past four years, we've increasingly valued the Making Futures conference, and the work it's done both to build the literature around contemporary craft and to strengthen the academic craft community.

I want to challenge us all to push forward the debate on craft and sustainable development: to build on what we've learned from events and associated research and to extend our thinking in new directions. As part of this, I think it is important that we take a minute to consider our starting point – the learning we have gone through over the past few years, and the assumptions that this means we carry.

Clearly, as representative of the Crafts Council I bring a particular perspective to the debate. Working with many of this country's most progressive makers - through our professional development, exhibitions and acquisitions programmes – gives us an unusual insight into current trends in craft practice. But we also conduct our own research in the field. At the last Making Futures conference, in 2011, we reported on research that showed that just under a third of makers said they had changed their practice in the previous three years, in response to environmental concerns; and that around half that number had responded to ethical issues in their work. Since then, we have published a series of nine research

briefings that investigate craft's contribution to the economic, social and cultural fabric of the UK; and environmental sustainability and well-being are amongst the topics we've investigated in depth in this way.

This work has led us, over the past couple of years, to conceptualise craft's contribution to the environmental and social innovation agendas as a kind of jigsaw of related pieces.

Studio Swine: Hair Glasses

First, we see a great strength in **materials innovation**, covering a wide spectrum of work - from those makers working to find new uses for recycled, reclaimed and 'difficult' replenishable materials, through to those who are pioneering new eco-smart materials for the future. I was struck by a paper from Faith Kane and her colleagues, presented at Making Futures 2, that drew similar conclusions to our research, around the role of craft knowledge and craft methodologies in unlocking innovation. As an example, these spectacles by Studio Swine are made from human hair suspended in a biodegradable, plant-based resin. In contrast to the more common metal or petroleum-based plastic frames, their construction uses little energy and releases no harmful substances into the environment.

Product lifecycle innovation is a second strong area of practice. Here we see work made using sustainable technologies such as Ian Hankey's glass-blowing furnace, showcased at Making Futures 2. We see work that is designed to promote sustainable consumption, using a range of approaches that encourage people to keep and adapt the objects they buy, rather than replacing them. It also embraces choices such as direct selling and local and ethical trading, that makers often build into their businesses. Yuli Somme and Amy Twigger-Holroyd's papers, presented at Making Futures 1 back in 2009, were important in defining this field of work, with each maker having developed a business that promotes sustainable sourcing, making and consumption across the whole product lifecycle.

Third, many makers focus on influencing and challenging attitudes towards sustainability, whether through education or through the work they exhibit. Environmental messaging is important here, with one example being the work of bookmaker Tracey Rowledge, who the Crafts Council supported as part of the 2008 *Cape Farewell* mission. This is not the whole story though: the idea of craft making as a way of envisaging and prototyping an alternative, more sustainable future is also important in the current discourse. Kate Soper, Mary Loveday-Edwards and Chris Smith, all spoke on this topic at Making Futures 2, their papers introducing the idea of the creativity, nostalgia and 'alternative hedonism' to be found in making, to the sustainability debate.

Finally, our research shows that craft can contribute to **social innovation** outcomes around work, health and relationships, all of which are crucial to individual and community well-being. Our research has identified how craft participation can provide relief for older people in chronic pain; and can give young people with learning disabilities a sense of control over their environment. We have seen how craft activities can create a sense of connectedness for people excluded from communities, bridging cultural and language barriers. We have also seen how craft programmes can engage young people at risk of exclusion from the workforce, and how craft education at degree level promotes social mobility within the graduate population in a way that other art and design subjects do not. So whether as a first step towards self-confidence or as a springboard to self-employment, facilitated craft learning can promote and enable the social equity that is at the root of many social innovation programmes.

Revisiting what we already know allows us to face forwards with confidence and focus. And that is what the Making Futures conference theme this year challenges us to do. It is correct to push the debate in a new direction - and it is right in particular to focus in on the evolving relationship between craft and design, and its influence on the craft and sustainability debate.

The Crafts Council was 40 year' old last year, and our history reminds us that this dynamic - between craft and design - is in constant flux, shaped by economic, cultural, social and political change. The moment we find ourselves at is not so much a sudden shift as part of an ongoing process. How to define this moment? Well, the conference introduction suggests a 'disappearance of making', but it's our view that craft is enjoying a moment of particular cultural prominence. Yes, craft is still held back by current education policy – and I will come back to that shortly. But at the same time, it has a current popularity perhaps not experienced since the 1970s. Exhibition visitor numbers have remained strong over the past few years.

Craft's current popularity should not surprise us: in fact it is argued that craft has a particular resonance in times of political, social, economic and cultural crisis. But the way that it is connecting with – and is both shaping and being shaped by design trends - is a product of particular times. I would like to take a minute to explore this, here.

First, we are currently seeing huge consumer interest in the handmade aesthetic – in mass-produced goods embodying qualities more often associated with craft. This is a pervasive design trend explored by the most progressive Milan Furniture Fair exhibitors, yet one which global brands have also capitalised on - in both design and marketing terms. It is also the subject of a thriving discourse ranging from academic critique to consumer trends analysis. This discourse suggests that our immersion in the digital world has led us to value the physical and the tactile in new ways: that an object with 'imperfections' feels more authentic and has more personality, for us, than just another digital device; that, as our books, music and photos become hidden, we value distinctive, even personalised objects that say something about our taste; that things that are handmade – or that look handmade – can offer a comforting sense of familiarity and even nostalgia, in difficult economic times.

In this context, David Pye's concept of the 'workmanship of risk' (1978, p.4) has renewed social and cultural resonance, refocusing design and craft around a shared aesthetic. And the boundaries between the two disciplines are being further blurred by new manufacturing technologies. We have all seen how designers are using 3D printing and rapid prototyping technologies, connected to online user interfaces and smart materials, to bring qualities previously associated only with the handmade object, to mass production. At the same time, these same tools – and others - are being not only adopted but also creatively transformed by makers. Craft – as a specialist form of materials knowledge, and as a process of reflectively working with and pushing against the boundaries of a medium – is finding a new role in developing tools for the next generation of designers and makers.

A third characteristic of the evolving dynamic between craft and design – and one I want to focus on today - is collaboration. The idea of collaboration as an innovator accelerator is established in the management literature: by working together, it is said, people with different but complementary expertise can challenge conventional thinking and find unexpected new directions in their work. In practice, increasing numbers of designers and makers are choosing to work in collectives and on collaborative projects, pooling resources and expertise in a way that presents an alternative to the traditional craft model of the solo studio practitioner. Though of course this push towards collaboration is not limited to professionals – today it is usual for technology companies to involve their users in product development and beta testing, emulating the kind of relationship once more commonly found between makers and the clients who commission them. As communications technologies and social networks become increasingly sophisticated, it becomes easier still for people to find collaborators and work together despite geographical distance. And as trend continues, so design and making – as separate yet connected disciplines – will continue to evolve.

The collaboration I am describing is not just happening between makers, but also across disciplines. What I want to consider now, is how this type of interdisciplinary collaboration can reinvigorate our approach to environmental sustainability and social innovation, particularly when collaboration brings makers together with professionals in the fields of science, technology and engineering.

So, what does this mean for craft and sustainability? Looking first at innovation in the environmental sustainability field, this is work from *LoopPh*, a creative agency with its roots in textiles and a specialist in designing urban space.

LoopPh: TreeSkins

For this project, *LoopPh* synthesised scientific research from Taiwan, the US and the UK Genticists, in the fields of nanotechnology, synthetic biology and genetics. The resulting 'TreeSkins' allow trees to sense and respond to environmental change, by coupling smart textile 'skins' with genetic enhancement of the tree's natural functions. For example, the 'TreeSkin' pictured on the left uses tiny hairs to capture and neutralise air-borne carbon particles, 10 times more efficiently than an untreated tree.

Studio Swine: Sea Chair

The Sea Chair is a response from *Studio Swine* to the current plight of the oceans and of the English fishing communities that once depended on it. It proposes an open source sifting machine and mould system that allows waste plastic particles to be collected and reformed into a 'sea chair'. The 'sea chair' system is designed as a prototype for future systems that could reduce the size of the 'Pacific Garbage Patch' that stretches from California to Japan, whilst creating new sources of income for struggling fishing communities.

Julian Ellis: stitched textile composite

Julian Ellis's surgical stents may be familiar to you from the *Power of Making* exhibition, a partnership between the Crafts Council and the Victoria & Albert Museum in 2011. Julian is an engineer who has developed a specialism in embroidery, and his work has also found application in the auto and aerospace industries. Fuel costs and efficiency regulations are increasingly concerning manufacturers in these industries, as well as environmentally-conscious consumers, and Julian's work uses embroidery to bind layers of fabric into composite body panels that are light enough to make a significant difference to fuel consumption.

There are many other innovative examples too, of course:

Marin Sawa, whose *Algaerium* project has created a new type of bio-power in the form of light from bioluminescent algae, pumped into living textiles for the home; Markus Kayser, whose Solar Sinter uses concentrated sunlight to fuse desert sand into solid forms – a kind of zero-energy 3D printer; Suzanne Lee, who – working with scientists at Imperial College London – has created fabric that can be grown from bacteria and made into clothing; Zane Berzina, whose work explores the potential of electrostatic as a zero-energy, interactive material.

We can see from these examples that this kind of intersection between craft and the science, technology and engineering disciplines is happening in many different ways, through collaborations ranging from information exchange and consultation to partnership. But in all cases, there is some kind of interaction between a craft specialist and a professional from an entirely different discipline. Why does this produce such powerful innovation? Finding the answers involves talking to scientists, as well as makers. And what we found when we did is that scientists value the challenge of working with makers. As molecular biologist Ellen Jorgensen said at our Assemble 2012 conference, 'We scientists love it when artists and makers bring us wild ideas to work on.' Likewise, Greg Siegle, a Pittsburg neuroscientist who runs a programme connecting scientific researchers with artists and makers, describes how each project pushes his research centre 'up to and beyond the limits of our technologies'. But also we know from research, that makers bring very particular, distinctive skills, knowledge and approaches to interdisciplinary working. They are:

Reflection in action

Broadly speaking, scientists test hypotheses for success or failure; whereas makers and designers explore problems and open out new questions through a process of action, reflection and change. Making is in itself a way of understanding the world, that involves working with and around resistance, rather than avoiding or trying to defeat it. From Sennett, we are familiar with the idea that this characteristic of craft thinking is not only highly applicable to other professional disciplines - including science, technology and engineering – but also that it facilitates team working. Indeed, Sennett describes the craftsperson as a 'sociable expert, able to facilitate innovation by engaging with other people in a way that stretches their thinking.

Material knowledge and making skills

It seems obvious that makers are materials specialists. But, being tacit, this knowledge is often undervalued. In fact, combined with their reflective thinking style, makers' understanding of materials' affordances and tolerances, of how they react to heat or pressure, is an invaluable stimulus to innovation. Gained predominantly through practical experience, it is very different from the scientist's more theoretical knowledge. In practice, makers know how to push a material or tool to its limits without breaking it, and they have an insatiable desire to know more. As a result, they often see opportunities overlooked by scientists and have the will and tenacity to see these opportunities through to innovation.

Human interaction

An intimate understanding of how people respond to materials and objects is another aspect of craft knowledge. This understanding includes how to convey and evoke human responses through materials and form, as well as to create objects that fit the body and function well. And it is invaluable in prompting innovation by connecting scientific knowledge with the real world. Indeed, scientists themselves - including Greg Siegle, the neuroscientist we mentioned above - describe the ability to work with human emotion as a gap in their own professional knowledge that collaboration with makers and artists can fill.

So now I am going to turn our attention towards interdisciplinary collaboration in the field of social innovation. Because it seems to me that the dynamic is a little different here.

Hazel White: Hamefarers' Kist

The *Hamefarers' Kist* project was inspired by maker Hazel White's realisation that older people in remote areas continue to experience isolation from their families, despite the ubiquity of digital communications technologies. Following visits to care homes in the Shetlands, Hazel realised how often older people are distanced from families who have moved away in search of work, and how their relationships could be improved through access to up-to-date digital images. Having consulted with the older people she met, Hazel worked with app developer Paul McKinnon to find a solution that would replace a digital interface with something more human and familiar. The resulting *Hamefarers' Kist* is a box containing several knitted pincushions, each with a different pattern associated with specific people, places or events. Placing one of the pincushions in the box brings up images from a person or event on the screen in the box lid. The images are uploaded by younger relatives on the other side of the world so, crucially, the box's owner needs no technological know-how to operate it. Hazel's approach shows using craft knowledge not just to provide an innovative solution to a social problem, but also to involve users and technology specialists in its creation.

Other makers, including Jayne Wallace and Chloe Meineck, have used similar technologies and collaborative ways of working to help people with dementia. This is Chloe's *Musical Memory Box*, an existing project which was further developed during a Craft + Technology Residency co-ordinated by the Crafts Council with Watershed, and supported by the *Autonomatic* Research Group at Falmouth University.

Working with Barbara, an early stage dementia patient, Chloe collected a series of 'treasures', each associated with a piece of music and a particular memory from the past. Placing the object in the box triggers the music, providing a multi-sensory prompt for the recollection of stories from Barbara's childhood, marriage and latter years. For example, the ceramic rabbit we see here was given to Barbara by her grandmother when she had chicken pox; and when placed in the box it 'plays' a polka that prompts Barbara's recollections of dancing together. Chloe has since undertaken a residency at the Design Museum – an opportunity which illustrates interdisciplinary collaboration in action.

Many social innovation and social design projects in the developing world have been criticised for imposing Western solutions onto local communities. One of the challenges that social innovators and social designers therefore face is how to genuinely engage a community – and potentially one with its own language, values and priorities - and support it in addressing its own needs. Sarah Rhodes' research, presented at Making Futures 2, profiled two exemplary fair trade initiatives, operating in Botswana and Kenya. These programmes employ Western makers, but not as designers of products suitable for Western markets, to be reproduced by local artisans albeit at a fair price. Instead, the Western makers had worked collaboratively with local communities, to translate craft traditions and skills into income-generating activities in a way that addressed poverty and environmental protection simultaneously. The result was improved standards of living and education for children, as well as the preservation of community-based cultural traditions.

To give another example, colleagues who were at Making Futures in 2011 will also remember Dr Trevor Marchand's research with Yemini minaret builders. For those who were not there, Dr Marchand is an anthropologist who uses making as a research methodology: in fact, he undertook a whole apprenticeship – with the minaret builders – as part of his doctoral research. The understanding he developed of the life and working culture of a specific community is fascinating in itself. But, by demonstrating craft's potential as an anthropological research methodology, he also reveals its role as a social innovation tool. Using his approach, craft can engage and potentially mobilise local knowledge, leading to social innovation solutions that are facilitated but not dictated by Western designers and aid organisations.

Other examples we could look to here include several featured at previous Making Futures conference – the *Craftspace Shelanu* collective, the *Autonomatic* project 1479 plates and the *Ethical Metalsmiths* project. And this is not to mention numerous education-focused projects that use craft to engage and improve the lives of young people at risk, children with disabilities and older people with dementia, some of which we profiled in the *Making Value* research we published in 2010.

Again, the intersection between craft, science, technology and engineering plays out in different ways in the social innovation field. Reflection in action, materials knowledge and understanding of how people relate to objects remain important, but there are other roles for craft knowledge that relate particularly to the engineering-focused examples we've just been talking about. My colleague Karen Yair has written about this, and I want to pick out a couple of her points.

As we have seen, making has a specific value in promoting understanding across language and cultural barriers. By working together on practical tasks, craft can unlock our understanding of unfamiliar contexts, and help to foster socially equitable, collaborative relationships that engage people as participants in a programme rather than as its beneficiaries.

In a similar way, craft can help people from different backgrounds to work together, identifying and prototyping improvements to the place where they live. Innovative urban planning games and community consultation systems use materials to encourage people to think spatially and communicate through making. And in both multi-cultural Western communities and developing countries, the richness and complexity of craft materials and making processes can add a further dimension, helping to unlock community creativity by prompting ideas about aspiration and identity.

At the last Making Futures, in 2011, we discussed the value of the contribution made by makers to the environmental sustainability agenda. This year I have been keen to look at how this contribution is actually happening. And in this respect, the convergence between design and craft, and the collaborative mind-set opened up in each field, is a key influence. What we are seeing is that progressive makers are working in all sorts of collaborative scenarios, with communities and with professionals, from other disciplines as well as their own. As well as their technical skills and aesthetic capabilities, these collaborating makers are bringing distinctive yet complementary ways of thinking and working to an interdisciplinary team.

Craft is unlikely to usurp science by craft – and placing the arts and sciences in diametric opposition is deeply unhelpful: instead, we see the two disciplines as distinctive yet complementary ways of tackling the same real-world problems. Empirical evidence shows the value of craft in challenging convention, pushing boundaries and producing innovation in technology, engineering and science. And such collaboration is critical, if the science, technology and engineering disciplines are to fulfil their human potential.

This is a time of great potential for makers to drive innovation in science, technology and engineering. The rapid pace of technological change is enabling innovation-focused collaboration between specialists from different disciplines, whilst the proliferation of online collaboration platforms is reinforcing a new culture of shared innovation. However, interdisciplinary working currently remains at the cutting edge of craft and science/technology/engineering practice: the examples that we have seen today represent craft at its most progressive. Whilst we need to retain the very specialist, studio-focused models of craft practice that predominated in the past, we also need to encourage these new, more collaborative models to flourish. As Gavin Ford said, one of the teachers involved in our *Firing Up* programme re-introducing ceramics into schools,

> "It's been really good working with children in the science departments and then coming down here into the art department and seeing the application of their scientific practice in the ceramics they've made."

Clearly, education has a clear role to play here, especially as political and institutional separation of the arts and humanities from the sciences, technology and engineering risks undermining the dynamic, cross-disciplinary energy we see here. As one of our conference sub-themes, education's strategic development is a topic I would like to close with today.

We at the Crafts Council are active in campaigning for a strengthening of craft education's place in the school curriculum and the HE and FE landscape. To this end, we regularly contribute to government consultations – on subjects ranging from school

curriculum development to Higher Education funding - and we engage proactively with policy makers and the media on such topics. We continue, for example, to campaign for recognition of craft as an independent subject in the school curriculum reflected in the title 'Art, craft and design'.

Focusing in on education measures that promote collaboration between craft and other disciplines, we see the following policy issues as having particular strategic importance:

the importance of ensuring that creative subjects are not marginalised by the emphasis on academic subjects at GCSE, driven by the new EBacc performance framework for schools. This is also fuelling old fears, that parity of esteem between academic and vocational subjects will be weakened. We need to maintain the pipeline of makers into their professions.

In terms of school curriculum development, we are encouraged to see craft included in the draft National Curriculum Programme of Study Proposals for Art & Design and Design & Technology. However, we are concerned about the focus within the draft curriculum on craft appreciation and history, rather than on learning through making itself. Learning through making – in addition to learning about making – is not only a valuable pedagogy in its own right, but also lends itself to alliances with other curriculum areas and subjects. Connecting craft with both STEM and arts subjects, as well as the study of literacy and numeracy, expands the range of learning styles available to children and fosters a cross-disciplinary approach to problem-solving. In terms of developing craft as an 'expanded field', we see this development as crucial and continue to advocate for its inclusion in the DfE's draft programmes of study.

At the Higher Education research level, we are encouraged that the AHRC's current funding plan encourages collaboration between arts and STEM disciplines. We also note that, whatever our perspective is on the 'impact' agenda and its consequences, it is likely to create new opportunities for cross-disciplinary research focused on real-world issues. We remain anxious, however, that HE research funding has been increasingly concentrated within the Russell Group universities, to the detriment of specialist arts institutions. This development is of particular concern to craft, and indeed to the wider art and design research community. As a relatively new area of academic enquiry, we have not yet had the opportunity to build up the scale of research activity or academic infrastructure seen in more established disciplines. The increasing research funding focus on 'elite' institutions will undoubtedly hold back newer fields of academic enquiry, like craft research, and inhibit its ability to deliver on the government's own economic development policies.

Unfortunately, over the past 12 months the funding focus on 'elite' institutions has also become a cause of concern in relation to Higher Education Knowledge Exchange policy. Nonetheless, there remain good opportunities to promote interdisciplinary working through the AHRC's creative economy Knowledge Exchange hubs. The Crafts Council supported the bid for the REACT Hub, based at the Pervasive Media Studio in Bristol and working with HEIs from Bristol, Exeter, Bath and Cardiff as well as a range of creative industry partners. We call on the AHRC and its partner research councils – under the guidance of Research Councils UK – to maintain and build on this kind of emerging interdisciplinary infrastructure.

Understanding the impact of these evolving policy areas on schools, colleges and HEIs is crucial in focusing our future work. The Crafts Council published research briefings summarising Higher Education policy developments – along with course, qualifications and student statistics in 2008, 2010 and 2012. It is now building this work into the ongoing monitoring of craft education data from Key Stage 3 upwards. Our Craft Education Study published in February 2014 represents the start of the process, equipping us with baseline data and case studies that we hope to update regularly in future. You may also be interested in our Craft Education Literature Review (2012) which summarises recent pedagogic research at school level.

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