



Craft & the Digital World

Dr. Karen Yair

Research Associate, Crafts Council



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A passion for working with materials and processes is fundamental to craft. Makers – quick to explore, transform and create new materials and processes – are early adopters in the material world: studio glass furnaces, knitting machines, paper clay and the new sustainable composite materials profiled [here](#), are all part of an ongoing tradition of maker-led innovation.

But what happens when makers' work takes them beyond traditional craft materials – clay, wood, fabric – and into the realm of post-industrial, digital manufacturing and communication technologies?

In this briefing note, issued in the week of the [FutureEverything](#) conference, we look at how makers are harnessing digital tools ranging from rapid prototyping and Quick Response (QR) codes to Computer Generated Imagery (CGI) and augmented reality, to push the boundaries of both the physical and the digital worlds.

Making the Digital Object

Post-industrial manufacturing technologies have been adopted as craft tools by a new generation of progressive makers, supported by digital workshops such as [Metropolitan Works](#) and [FabLabs](#). Rapid prototyping, in particular, now offers seemingly unlimited opportunities for the creative and conceptual exploration of materials and form.

Makers [Tavs Jorgensen](#) and [Geoffrey Mann](#) have both adopted this technology, working respectively with digitized arms and motion sensors alongside conventional models and moulds. Systematically capturing the digital data that tracks a dove's flight path or the movement of a human hand, and translating it into three dimensional forms, they create almost alien objects in glass and nylon which serve to embody the virtual.

[Michael Eden](#) also uses rapid prototyping – alternatively known as 3D printing – to develop a new visual language: pieces such as the award-winning Wedgwoodn't Tureen achieve 'impossible' forms through additive, layer-based digital model making. Michael's work is also beginning to challenge the boundaries between the viewer's real-world and virtual experience: his latest pieces, such as the Babel Vessel are built up from QR codes which connect the viewer to online interpretative material via smartphone.

Digital communications have become still more significant for other makers working with wearable technologies, who are developing fabric and jewellery as new types of interface between people and technology.

In our briefing note on [Craft and Wellbeing](#), we profile jeweller [Dr Jayne Wallace's](#) work creating 'digital memory boxes' to support dementia sufferers and their families. Another example is jeweller [Hazel White](#), whose future-oriented research into digital communications technologies has shifted in scale from the personal to the societal. Hazel's research began with jewellery designed to capture and recall specific individual experiences, and has more recently led to a collaboration with healthcare providers in the remote Shetland



Islands. This collaboration, designed to make telecare technology fit more seamlessly into the lives of people with support needs, enables independent living and health directly by making essential communications technologies genuinely person-centred and easy to use.

Another maker stretching the capabilities of digital technologies, in a very different context, is [Cj O'Neill](#). Profiled in [recent research](#) from the Crafts Council, Cj is a ceramicist whose exhibition work conveys the hidden stories and secrets held within objects, through layers of imagery fired – and refired – onto ceramic dinner plates. Cj's work with Chesterfield company Control Water Jet led this company to pierce curved ceramic surfaces for the first time, not only extending the conceptual scope for her own work, but at the same time creating a new and marketable service for the company.

At the same time, of course, post-industrial manufacturing technologies can play a straightforward role in enabling makers to grow their businesses: with relatively low set-up costs, it is possible for makers to produce components in larger volumes – and with higher profit margins – by laser cutter than it is by hand.

This is a strategy that works well for makers such as [Melanie Tomlinson](#) – profiled in our [recent research](#) – a metalsmith making boxes and brooches alongside her collectible, hand painted works. Having her metal jewellery blanks cut to size, in small volumes, by Birmingham engineering supplier Precision Micro has helped Melanie to build a business with multiple revenue streams and a solid foundation for growth. As 3D printers become increasingly affordable, this trend towards hybrid manufactured and hand making – enabled by digital technology – can be expected to grow amongst professional and amateur makers alike.

Making the Digital World

Looking beyond the physical object, digital media have become tools in their own right for a number of makers applying their craft skills and materials knowledge to the creation of digital environments.

One such maker is animator [Amy Houghton](#), who works with digital video, textiles and porcelain. Profiled in [recent research](#) from the Crafts Council, Amy refers explicitly to her background in textiles as an ongoing influence on her work. Her stop-frame animations feature the 'forensic unpicking' of old garments in a quest to understand these objects' hidden histories, and in the process to explore our own needs for authenticity, provenance and nostalgia.

[Dr Jane Harris](#) is another maker turned digital animator, profiled in our [recent research](#). Working in virtual environments, Jane draws on textiles knowledge to create digital fabrics which depict future fashion and historic dress. In one project with the Museum of London, supported by an Arts & Humanities Research Council Innovation Award, Jane brought to life a 200-year-old dress from the Museum of London's collection, showing how it might have moved as worn by an 18th century woman.

Jane's work brings a new sophistication to Computer Generated Imagery (CGI), whose tools and effects, she says, can be fairly crude in their depiction of material qualities. Collaborating with a CGI operator, Jane sets these standard



tools aside and instead looks for glitches in the technology which she can manipulate to produce more subtle, 'real world' effects.

Working in this way, Jane has enhanced the learning experience of visitors to the Museum of London, and has taken CGI beyond the cartoon aesthetic familiar from mainstream digital animation. Overall, her work suggests new opportunities for materials specialists, intimate with materials' characteristics, to contribute to the development of the digital environment.

Making Digital Systems

As well as creating new types of digital object and environment, makers are using digital technologies to reshape the systems enabling craft production and consumption. This week's [Handmade's Digital](#) event at [FutureEverything](#) suggests that:

A new maker community is emerging, connecting the culture of traditional skills and materials with modern-day digital production, distribution and interaction techniques.

Connected with DIY culture and the [environmental movement](#), this community works to empower consumers through direct involvement in the design and making process. Through [blogs](#), [websites](#) and online tutorials, it transforms consumers into co-designers of consumer textiles ([Melanie Bowles](#), exhibiting at FutureEverything) and knitting machine hackers ([Becky Stern](#)). Boundaries between amateur and professional practice are blurred, as Open Source technologies encourage input from all: [embroidery](#) has become the focus of one Open Source community, whilst [Fab@Home](#), a self-build, desktop 3D printer is at the centre of another.

In this community, makers are often as involved in developing new digital systems for making and selling craft, as they are in producing new objects – or digital content – themselves.

[Etsy.com](#), set up by a group of New York makers to sell their own work and now boasting annual transactions worth £193m, is just one example. New and increasingly sophisticated online retail mechanisms are being pioneered by companies including [Holition](#), founded by jeweller Lynne Murray, which enables customers to 'try on' jewellery and luxury apparel online. London-based Holition's clients include brand managers at BMW and IBM, as well as jewellers Tacori and Hannah Martin.

Makers are equally active in creating new, digital systems for designing and making consumer products. At the [Autonomic](#) research cluster at the University of Falmouth, for example, [Dr Justin Marshall](#) is developing new design systems which allow consumers to 'freeze' and 3D print an ever-evolving digital object. At [Edinburgh College of Art](#), [Ann Marie Shillito](#) has developed Cloud 9, a haptic interface with associated software, which creates a new range of creative expression for both makers and digital designers by bringing the experience of touch into CAD (computer aided design).

The Value of Craft

Recent research from the Crafts Council shows that the specific skills, knowledge and creative methodologies associated with craft have far-reaching



application. It appears that post-industrial manufacturing and digital content production are no exception.

The individuals profiled above are working to make digital tools more expressive, to enhance the quality of the digital worlds we inhabit, and to generate new creative potential in the digital world. And they all bring to this work a background in craft and a strong sensibility for making.

Tavs Jorgensen, in a video produced for the Crafts Council's [OnViewOnline](#) exhibition programme, talks of his need to work without technicians, getting as close to the technology as possible in order to understand it and learn how to manipulate it. And his craft skills are evident as he is shown smoothly bending a metal mould into the exact form produced by the digital arm. Cj O'Neill, profiled in recent [Crafts Council research](#), describes how crucial her knowledge of materials and processes has been in enabling the collaboration with Control Water Jet which led to new innovations in water jet cutting. Michael Eden, speaking at Assemble 2010: the Crafts Council conference, says that his tools are now software and 3D printing, but that he retains the trial and error approach to working with materials perfected over 20 years as a studio potter. This trial and error – or 'reflective dialogue', and its value to makers working collaboratively with others and beyond craft itself – is something we explore in detail in our [recent research](#).

Final Word

Of course, digital craft – to use a catch-all phrase – poses both opportunities and challenges to the organisations supporting makers' work. How can makers and audiences be supported to engage with digital technologies, and how can the potential for makers to work in digital environments be fully realised?

Having developed strong social media platforms for makers ([Craft Rally](#)) and craft educators ([Craft Action Network](#)), the Crafts Council is currently developing a range of digital initiatives and piloting new resources.

A smartphone app, launched at Collect 2011, was designed to test the market, and we are researching options for more extensive provision in future, including geo-location based content and options for games and learning.

In January 2011 we provided data to the first [Culture Hack](#), bringing cultural organisations together with software developers and creative technologists to make interesting new projects and explore possibilities for making information more widely accessible.

We are currently touring the groundbreaking [Lab Craft](#) exhibition alongside our ongoing programme of [online exhibitions](#). We are also working to engage craft curators with the digital agenda, through programmes such as our 2010 curators' forum on [Craft & New Technologies](#) and have plans for a major project to expand the digital information contextualising the Crafts Council's Collection online and to encourage greater interactivity and understanding of contemporary craft.

[Recent acquisitions](#) to the Crafts Council Collection have reflected new developments in the digital field, and include both the [Wedgwoodn't Tureen](#) and work by textiles maker Phillipa Brock which fuses the digital with loom-based



weaving technologies. In common with other organisations, the Crafts Council's development of rich, online content about both these and other items in its collection is something that will be prioritised in coming years.

We welcome your thoughts on the future of 'digital craft' and on how we – as a community of makers, consumers, educators and support organizations – can best support and enable it.

Please email us at digital@craftscouncil.org.uk

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