

## Conference review

### **Craft Meets Science: A review of *Make:Shift 2016*, Biannual Crafts Council conference, Museum of Science and Industry, Manchester, 10–11 November 2016**

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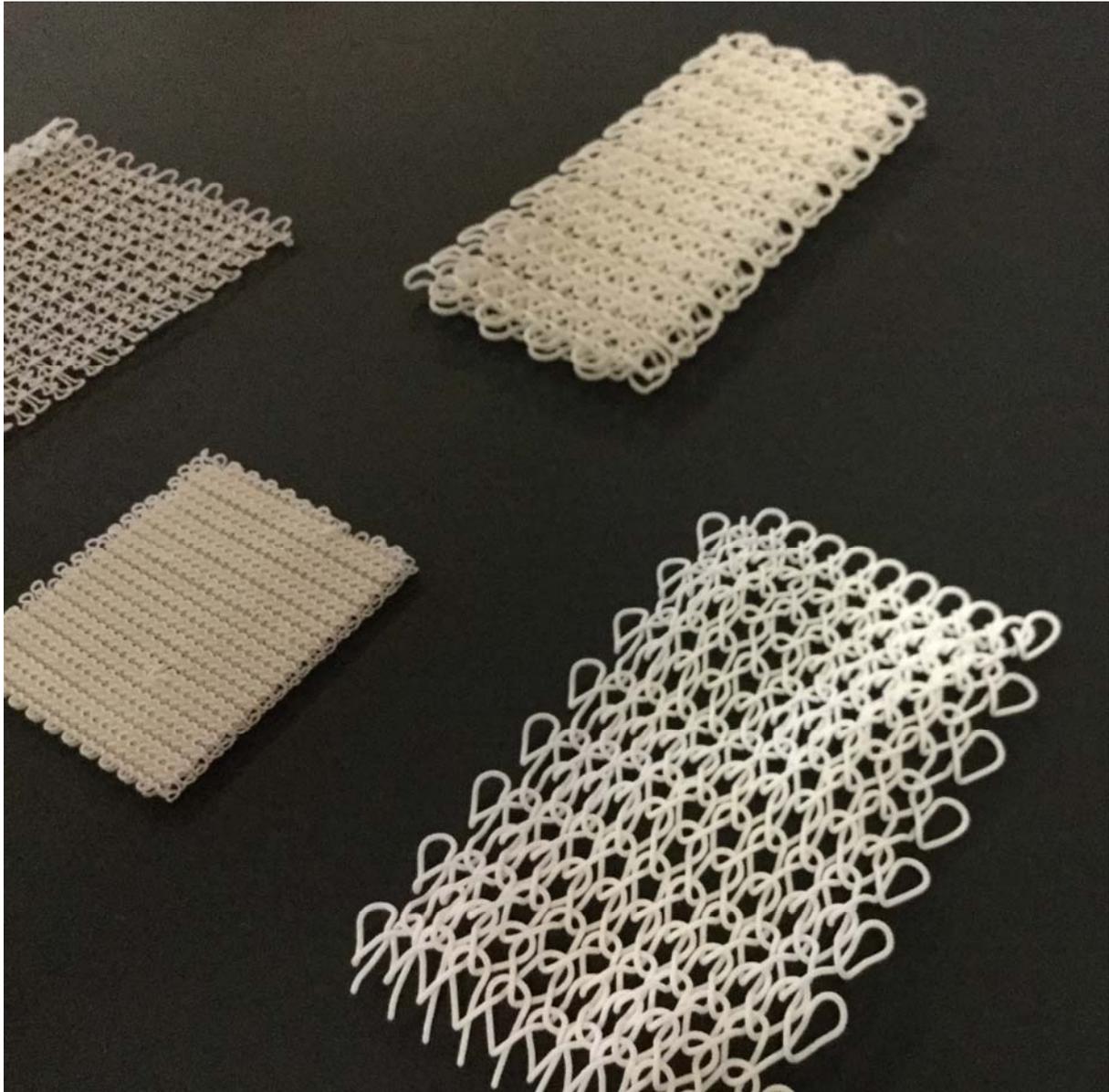
*Make:Shift 2016* blew away any ideas that makers always sit alone, happily crafting with old-fashioned materials, whilst scientists work in a completely different sphere and write about it dryly, in the third person. The conference sought to show where craft is bridging boundaries between disciplines and finding some answers to difficult questions about society, health care and the environment. It brought together makers, academics and others interested in working on the boundary between craft, art, science and engineering. The event was preceded by two Crafts Council Salons, earlier in 2016, at Central Saint Martins and Nottingham Trent University. ‘Crafting Connections’ at Nottingham Trent University addressed the theme of ‘connected wearables’ and both prior events paved the way for *Make:Shift* through discussions of ways in which the use of craft is expanding into areas such as electronics. The conference combined the essence of these events with the philosophy of the Institute of Making (University College London Engineering n.d.), which brings together makers and a vast range of materials, both old and new.

The venue was Manchester’s Museum of Science and Industry: part of the Science Museum Group’s creative vision to conserve and demonstrate the grandeur and the grind of Manchester’s industrial heritage (Science Museum Group n.d.). The conference programme was packed, giving few opportunities to nip out and view the exhibits, but any forays into the museum were worthwhile. For example, an exhibit on graphene, *Wonder Materials: Graphene and Beyond* (Museum of Science and Industry 2016) displayed material samples alongside photos of key scientists as adults and as children, reinforcing the importance of the people involved in ground-breaking scientific developments. Impressive pieces of machinery, such as *Baby* (Meet Baby | Museum of Science and Industry n.d.), were fitted into the lofty spaces of the museum, as well as a conference suite. Over two days a mixture of keynotes, presentations, and discussions took place, as in most conferences, but with the significant

addition of workshops and opportunities to view and handle artefacts, as well as live music at the conference reception.

Mark Miodownik's keynote provided an inspiring start to the proceedings, where he stressed the tensions between craft and science. He asked where living materials and animate matter fit into craft, exemplified by challenging a Michelin-starred chef to a competition by testing whether scientific methods could be employed to produce food cooked as well as that made by the chef (British Broadcasting Company 2017)? The answer was a resounding 'No!', but the exercise illustrated the point that both methods of preparing food required 'understanding, care and love', using different approaches. Miodownik's lecture raised awareness of human culture's ongoing challenge to see how such diverse art/science approaches can potentially be applied in dissimilar areas of research and making. A vision of self-healing roads that grow by themselves and require gardening to keep them in order was an example. This would require collaboration between road menders and scientists. Adventurous possibilities for problem solving started to appear.

Separate strands of the conference included a Speaker Space, Conversation Space and Workshops, some of which overlapped. Opportunities were also provided to view artefacts, which proved as important in conveying new ideas as the oral presentations. There were tours of the museum's Collection Centre archives, and an 'Innovation Up Close' conference strand: a mini exhibition of crafted objects made from a wide variety of materials, by methods both old and new. The latter gave delegates the opportunity to handle and discuss pieces made from materials as diverse as silver, wood and plastics. 3D-prints of knitted structures were particularly fascinating to manipulate, as the individual loops slipped over each other, allowing the structure to flex, but still be limited by the solidity of each, interconnected element (Figure 1).



**Figure 1:** Mark Beecroft's 3D knitted samples made from selective laser-sintered nylon. © D. Hardy, 2016.

Particularly popular sessions of the conference included workshops on 'Innovation through Collaboration' that were fully booked from the start of the conference. A tantalizing glimpse into their content was given by an envelope containing different types of paper: blank and ready to take, shape, inscribe and forward as ideas for use in forthcoming workshops in other sessions at the conference. The 'Conversation Space' was almost too popular for the size of room in which it was held. Short presentations from makers showed innovative exploration and problem solving. Collaborations included one between physics students at Kings College, London, their lecturer Riccardo Sapienza, and two makers: John Grayson and Shelley James. The makers' expertise in metal manufacturing craft skills and glass making helped the

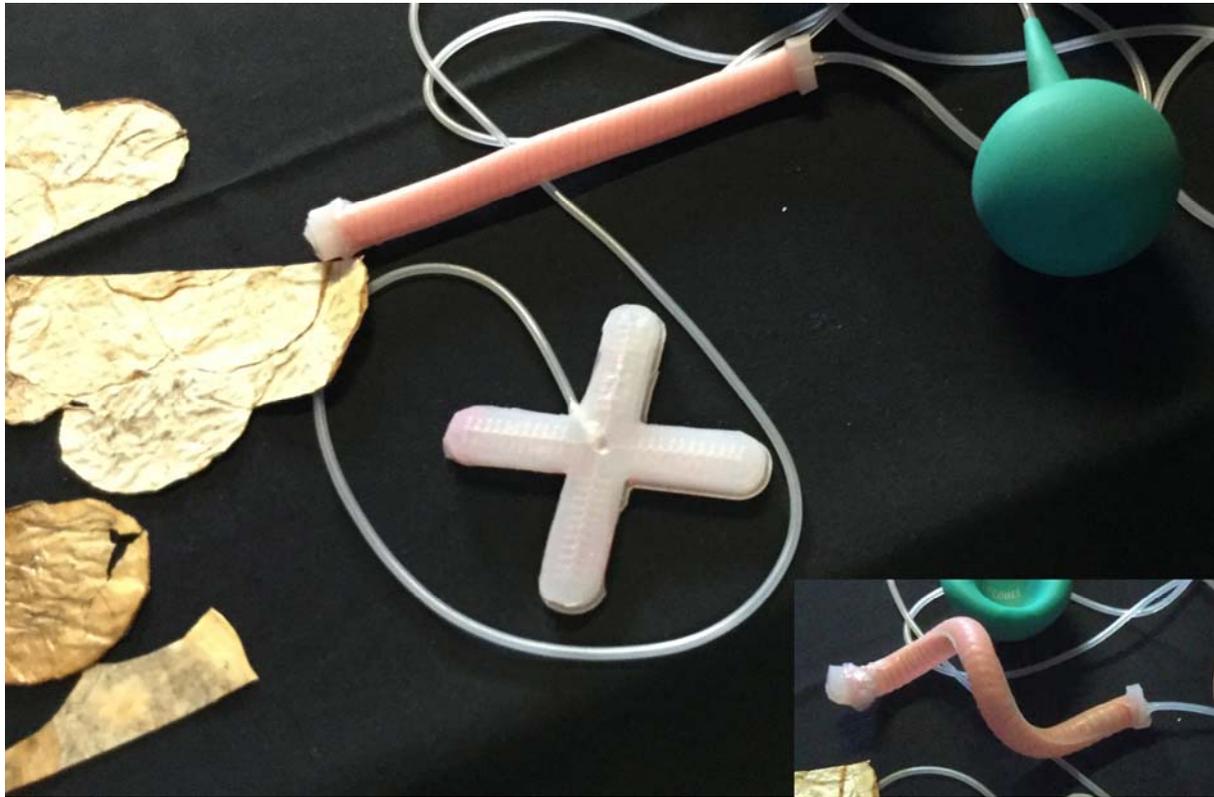
students to make and measure more effectively within their own, planned lab-work, as well as giving them the opportunity to explore new avenues: a bobbing piece of automation that is started by a motion sensor made an entertaining addition to a showcase outside a lab. It demonstrated some of the fruits of the collaboration both in the mechanical design and in the work required on the electronics and power requirements.

The evening reception at the end of the first day included the Manchester Camerata performing the intriguing 'Mr. Babbage is coming to dinner' from Barry Guy's score that included swirls of colour to guide improvisatory sections. The performance was best appreciated in a silence that competed a little with the excitement of the many networking possibilities that were happening continuously throughout the conference. A conference programme as full as this opened up tantalizing ideas for collaborations that could only hope to scratch the topical surface during the two days of the event.

Further opportunities to handle crafted objects also occurred during presentations. One such opportunity arose on the second day at the 'Maker Breakfast', where breakfast was served alongside an invitation for the audience to engage with simulated organs, soft robotics, kinetic sculptures and a most memorable presentation exploring the concept of what a book is, manifested by our favourite quote of the day 'this is not a book – it's a fish'. These were just some of the fascinating series of ten-minute presentations by research students, academics and independent makers covering a medley of subjects, but with the distinct flavour of innovative craft methodology in common.

Opening the breakfast event, Jonathan Rowley, Design Director of Digits2Widgets, (one of the biggest UK-based, 3D printing service providers), coolly addressed the audience with an additive manufacturing reality check. He reminded us all that there are many 'tools-in-the-toolbox' at the disposal of all artists, crafters and designers. 'Tools', that should be considered equally, alongside the ever-ready plethora of 3D printing technology and materials. Jonathan went on to explain how craft innovations that capitalize on diverse, often acrobatic, fabrication methodologies, are able to foster unique physical outcomes. An interesting concept well received, and with growing support in the craft community. Capturing the audience with fast-paced fun, the morning was rounded off with an interactive, and occasionally grisly, demonstration of multidisciplinary craft research that displayed all the attributes of collaboration on a grand scale. The range of crafted work included artificial human body parts for training of medical staff as well as fabric *grown* from fungus (shown on

the left in Figure 2). This reiterated the importance of innovative practice through collaboration. Many of the presenters brought examples of their work to for the audience to handle. In the case of the soft robotics presented by Caroline Yan Zheng this involved squeezing small pumps to make robots move by changing shape (see Figure 2).



**Figure 2:** Fabric samples grown from mushroom mycelium by Aniela Hoitink (left) with soft robotics by Caroline Yan Zheng (centre and inset that shows a robot changing shape when air is manually pumped in). © D. Hardy, 2016.

A session on Health care and Well-being later in the morning brought together a great range of ideas. This included Sarah Kettley's description of work on facilitating the making of interactive accessories and how mental health service users have been empowered through involvement in the process of making and pride in the resulting textile-based outcomes. Robots were next up, made by Matthew Howard's group at King's College, London. Howard's team demonstrated how the prototypes can be controlled by body movements and gestures, presenting new possibilities for interaction between machines and human beings for control of machinery. Another talk about the crafting of a prosthetic leg for a paralympic cyclist showed how far and how fast innovative craft skills can move a product on. The

project had to be undertaken in a short timescale before the 2012 Olympic Games. The design included methods of introducing flexibility at key points where pressure could cause pain and rigidity at power transmission points. Paul Sochi proudly showed a photo of a meeting with Barack Obama and Angela Merkel that had resulted from this innovative work. This was not the only section of the conference in which prosthetic limbs were discussed. Mika Satomi discussed strategies for choosing appropriate materials for prostheses. The aim was to find materials and colours that are appealing, and not to attempt to mimic human skin colours and textures, which can lead to feelings of revulsion when an artificial limb does not quite match expected norms.

The ‘business of making’: how to make and what to put together with whom, was central to the whole conference. Nat Hunter’s talk on makerspaces showed the thought and effort that is required in creating sustainable practice. Customers can be involved in the design and even the fabrication of furniture, which is then more likely to be treasured than disposed of. This complimented Hannah-Perner Wilson’s talk in the Conversation Space where she showed her portable toolkit in which tools for working with electronics and textiles were secured within clothing. Textile tools such as thimbles were adapted for use with electronics. Emerging strands of making that use new combinations of materials are opening the door to new approaches to studio practice.

Arguably one of the most exciting craft events of the year, Make-Shift 2016 celebrated the diligence and adaptability of makers across the United Kingdom, demonstrating that the core of craft practice can often lead to complex interdisciplinary questions that frequently arrive at fascinating, multifaceted answers. This event provided an opportunity to find out about ways to employ craft skills within different environments and contexts. *Make:Shift 2016* has provided a benchmark by demonstrating the extent to which this can be achieved, at the same time as starting the discussions about the next useful and inspiring collaborations that may address the social, environmental and health issues of our time. This review has only been able to touch on some of the highlights of this thought-provoking conference.

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Richard Arm is a Ph.D. candidate researching into biological simulations. His current role as Flexural Composites Research Fellow entails steering several live defence medicine projects, funded by the Royal Centre for Defence Medicine, Cranfield University Defence Academy of the UK, and the Defence Science Technology Laboratory. Reaching out to the wider learning

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