This book is about DIY culture and how it meets participatory, inclusive and community-based forms of creative practice.

Critical kits are toolboxes, resources, instructions for how to make great, or simply interesting, things happen with technology. But they also ask that we question why, and to be aware of the network of effects technologies participate in.

Critical Kits includes a selection of case studies from artists and makers working in the kit form, a series of essays on the theory, historical and contemporary contexts for kit making and distribution, and an in depth look Gym Jams, a kit-based project which took place in a public leisure centre.

It is designed to be useful for artists, makers, students of art-tech work, and anyone interested in current participatory and technology practices.

τ Torque Editions
ISBN 978-09932487-5-7

CRITICAL KITS AND HOW WE USE THEM RE-DOCK

CRITICAL KITS AND HOW WE USE THEM

τ RE-DOCK

designed by Hwa Young Jung
published in Liverpool by Torque Editions
www.torquetorque.net

ISBN 978-0-9932487-5-7

Supported by Arts Council Grants for the Arts

RE-DOCK

Supported using public funding by
ARTS COUNCIL ENGLAND

Table of Contents

INTRODUCTION

Neil Winterburn

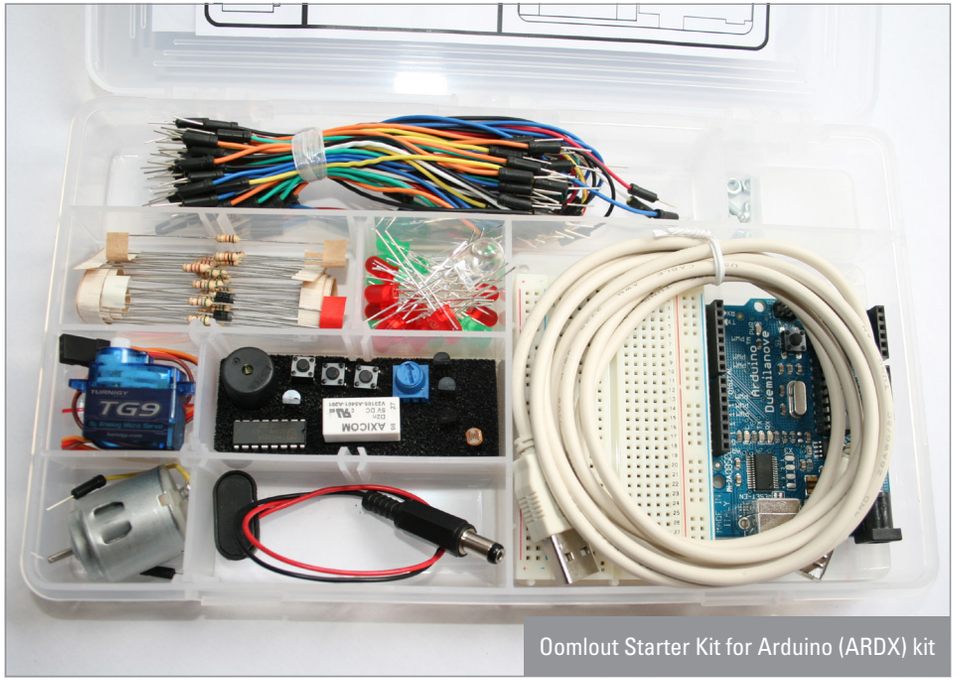
Re-Dock[1] are an artist collective whose work grows out of the intersection of kit making culture and public art. We make participatory art in non gallery spaces (libraries, leisure centres, shopping centres, canal towpaths) that explore people's relationship to emerging technologies. Since we formed in 2008, one of our key interests has been unpicking the obsessions and processes of artists in order to open them out for the active involvement of other people. We've set up independent volunteer run cinemas in working class communities, prototyped digital art systems in libraries with children and ex-miners, built text adventures envisioning the future of the Northern Powerhouse with teenagers across the north, and open sourced swan pedalos on canals between Liverpool and Leeds. Although these projects were all initiated by artists in response to specific places and communities, we have found ways to reconstruct them with different communities in different places. This process has led us to view some aspects of participatory art practice as a kind of a kit.

This book operates within a wider context of 100 years of art practice that engages with popular educational formats such as kits, recipes and instructions. We understand a kit to be a collection of materials and some guidance that with interaction makes something. Kit based artworks mark the convergence of two threads of practice, the use of pedagogy to stimulate experiments in social action, for example Tania Bruguera's *Behavioural Art School*[2] and the use of expanded publications to distribute art experiences, for example *Fluxkits*.[3] Art kits click into place between instructional art, interactive art and expanded publication. Instructional art provides instructions without materials, interactive art offer materials for manipulation without an instructional framework and expanded publications offer objects and text to be seen, read and held, but not necessarily used as tools for construction. In this book, we introduce the term **Critical Kit**, to describe artworks that use the kit format to distribute and reconstruct critical and poetic art experiences. Although the kits described in this book could be applied for educational or social uses, this is rarely the primary motivation for making them. For us, the bottom line is finding new moves for participatory art, moves that use digital making to question our relationship to technology and explore multiple and alternate possibilities for its role in our lives.

1 http://re-dock.org/
2 http://www.taniabruguera.com/cms/492-0-Ctedra+Arte+de+Conducta+Behavior+Art+School.htm
3 https://www.moma.org/interactives/exhibitions/2011/fluxus_editions/category_works/fluxkit

Hobbyists, artists, educators and businesses have been making kits for hundreds of years, but the production of kits is now being disrupted by the same digital revolution that is confusing every other aspect of our life. In addition globalised supply chains and cheap labour in the developing world have made electronics components cheaper and more accessible for people in the developed world. *Make Magazine* promotes 'Geek Culture', rebranding tinkering with electronics as a mainstream leisure activity and Arduino may not have been the first micro controller, but it effectively launched the open hardware revolution, making physical computing accessible to millions of people. As more and more people from different creative fields started to use computers to make things happen in the real world, the vagueness of the name *Makers* felt like a useful catch-all term. The movement that came from all this combines a fun DIY culture with an open approach to the sharing of knowledge and an enthusiasm for commerce.

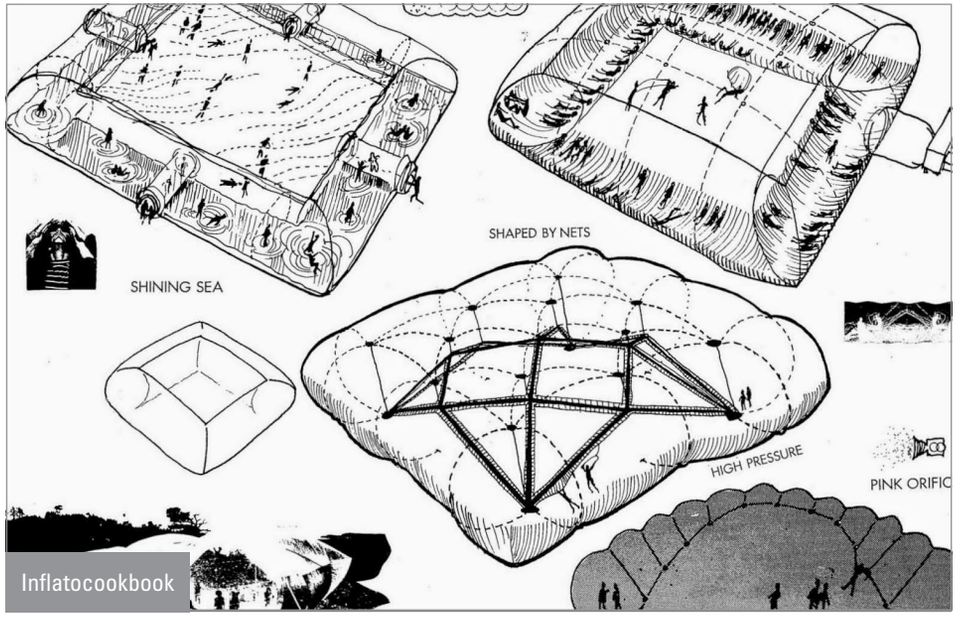
As the maker movement has grown in the UK, an increasing number of artists have engaged with it, either through collaboration with makers, use of maker spaces, showing at Maker Faires or by documenting and distributing their work in kit form. To give some sense of the genealogy of artist and maker kits, alongside this book we have produced a set of Trump Cards featuring highly influential kits.



Oomlout Starter Kit for Arduino (ARDX) kit

In the here and now, our approach to kits differs to those using instructional guides and cookbooks to explore speculative responses to social and technological change. Much as we take huge inspiration from projects like the *Additivists Cookbook*,[4] what we are doing is different, our approach to kits is not speculative, we make kits to be used. We agree with Bruguera[5] that *the time for speculation is over*, we want people outside of the art world to use our kits in the mix of their everyday lives. Learning from previous radical attempts to involve the public with experimental art practice such as Arte Povera,[6] we are aware that the barrier to active engagement with art is not just access to materials, but also time, education and support networks. While we are excited by the possibility of distributing participatory art[7] experiences without the presence of the artist, we focus on embedding the co-creation and use of kits in communities through socially engaged art practice.

As a relatively new art form, maker kits have huge possibilities, but also dangers. When people start talking about *scaling up* art projects, many artists and producers start to get twitchy, and often rightly so. There is a real risk that the kitification of participatory art practice could be used by institutions to roll out art engagement on the cheap, losing the nuance that emerges when artists are present with communities to negotiate the



Inflatocookbook

4 http://additivism.org
5 Bruguera, T. (2012). Reflexions on Arte Útil (Useful Art).
6 Cullinan, N. (2008). From Vietnam to Fiat-nam : The Politics of Arte Povera *. October 124, 8–30.
7 Bishop, C. (2012). Artificial Hells. October-Cambridge Massachusetts-, 390.

development of an artwork. Some of these concerns remind me of the complaints of the folkies when Dylan went electric, but a better analogy might be Socrates famous criticism of written culture. As Greek culture started to privilege the written word over the spoken word, Socrates claimed that this led to forgetfulness and miscommunication.

> *And every word, when once it is written, is bandied about, alike among those who understand and those who have no interest in it, and it knows not to whom to speak or not to speak; when ill-treated or unjustly reviled it always needs its father to help it; for it has no power to protect or help itself.*[8]


Critical Kit Symposium : Genelogy of kits workshop

8 Greene, W. (1951). The Spoken and the Written Word. Harvard Studies in Classical Philology, 60, 23-59. doi:10.2307/310884

We could just as easily apply this logic to kits, seeing them as art techniques that are *written* as instructions and materials, helpless as orphans, vulnerable to misinterpretation, co-option and misuse. It is true, when we make a kit we can't control where and when someone might use it, what mood they might be in and the approach they might have to physically making things, but this is exactly what makes kits an interesting public art form. Instead of a frustration, this lack of control over reception and use is exactly what is specific and exciting about kits.

Gordon Wells[9] defines literacy as "the ability to communicate with an audience not in the immediate physical or temporal context." Maker kits are a new form of technological and cultural literacy that enable us to extend building and making activities across space and time. Artists have a responsibility to take a critical approach to this new literacy. What happens when an art activity is deconstructed as a kit, to be reconstructed by an unknown user in an unknown context as part of a culture of making?

9 Wells, G. (1981). Learning Through Interaction: Volume 1: The Study of Language Development (Vol. 1). Cambridge University Press.

Critical Kits is our response to this question. We have been using the term at Re-Dock for a while, but now we're offering it for your scrutiny. We started to use it as a shorthand for our desire to make and distribute participatory digital work and take part in maker culture, while at the same time fostering a critical sensibility. We are not writing this to *take a lead* and define the relationship between participatory art and digital making. We are writing it to start a much needed discussion about the way artists relate to maker culture.

In section one of this book, we introduce the critical kits concept and reflect on the Critical Kits Symposium. Section two features a selection of kits made by a network of artists from across the North of England. Section three takes apart and analyses the development of a Re-Dock critical kit as part of **GYM JAMS**, a sport-art collaboration and public art intervention that took place in a leisure centre in Wigan. **GYM JAMS** was a concentration of, and test-bed for, many of the issues explored in this book and the challenges of embedding the critical use of technology and participation in a skatepark, jungle gym and dance studio on a busy Saturday afternoon.

GYM JAMS : RoboGames – Fill the Board

KIT THEORY

Re-Dock organised the **Critical Kits Symposium** at the Liverpool Small Cinema, 30th November 2016. Through the symposium we tried to understand how we can use critical kits to better communicate the multilayered richness that can emerge when art engages with both participation and technology. Taking the term further to enact *kit critique*, to explore what is critical to these kits, and how critique itself can become *kit* in form.

To summarise, we see Kit Theroy as:

- Kits that are critical, engaged in analysis, engagement and critique of personal identity and social structures.
- Being critical of kits, as a tool of neoliberalism's adoption of maker-culture.

CRITICAL KITS SYMPOSIUM

Ross Dalziel & Neil Winterburn

Critical Kits came out of conversations following Laura Pullig's Nature & Technology symposium, which took place at METAL Liverpool in early 2016. We noticed everyone seemed to be talking about *kits* or using the kit format to distribute what they did. This started a whole series of reflections over the impact of accessible technology, the *maker meme* and the general surge of crafting, making and creative technology over the past 10 years.

Dale Dougherty[10] described making as an innate human activity that connects our desire to make good food, our grandparents necessary practice of tinkering to fix cars, radios and typewriters and the pioneering DIY spirit that started the computing industry.

> *The maker movement has come about in part because of people's need to engage passionately with objects in ways that make them more than just consumers. But other influences are in play as well, many of which closely align the maker movement with new technologies and digital tools. Makers at their core are enthusiasts, such as those engaged in the early days of the computer industry in Silicon Valley.*

As more people from different creative fields started to use computers to make things happen in everyday life, the vagueness of the name *Makers* felt like a useful catch-all term. The Maker movement combines a fun and DIY culture, an open approach to sharing knowledge and an enthusiasm for commerce. This leads us to the question that baffles so many artists, trained as we are to critique and analyse themes and motivations for months sometimes even years before action, *Why are they making all this stuff?* Dougherty draws the connection again between makers and the early stages of the computing industry, with participants making just to enjoy the process. *They didn't know what they wanted computers to do and they didn't have particular goals in mind. They learned by making things*

UKMaker Belt Association map

10 Dougherty, D. (2012). The Maker Movement. Innovations: Technology, Governance, Globalization, 7(3), 11–14. https://doi.org/10.1162/INOV_a_00135

and taking them apart and putting them back together again, and by trying many different things. Chris Anderson[11] gives the big picture of Maker culture, as a renaissance in the open sharing of knowledge, but also as an engine of innovation, the monetising of new practices. He agrees that we are all *born Makers* but identifies the performative sharing of the making processes online as the step change from earlier DIY and small business cultures. Through public sharing of instructional guides and kits online *Millions of DIYers, once working alone, suddenly start working together.* He continues:

> *The simple act of 'making in public' can become the engine of innovation, even if that was not the intent. It is simply what ideas do: spread when shared.*

Makers, like artists, are perfect neoliberal subjects, terminally unstable in work, constantly iterating new products and processes to trade in economies of creativity, social responsibility and innovation.

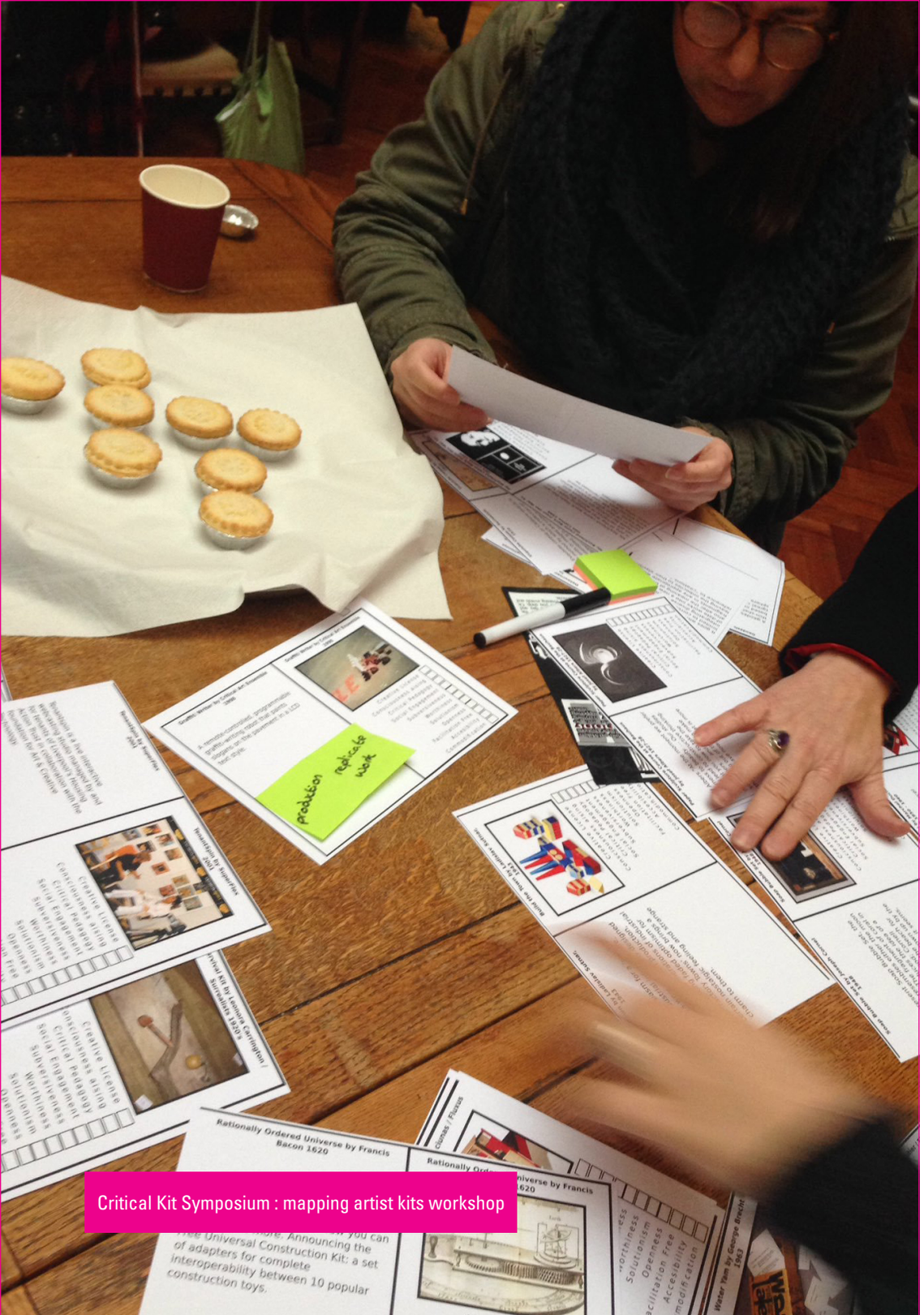
We were interested in the relationship between socially engaged art practice and the broader *technical* and *participatory* cultures that manifest as part of Maker culture. These cultures are often found in so called *MakerSpaces*, with organisational practices emerging from digitally distributed collaboration via platforms and tools like git/GitHub, wikis, and online forums, sharing many elements of hackspaces[12] and around a central cultural form of Maker and broader technical culture; instructional guides and documentation. We used the term *critical kits* as a shorthand for issues around documenting and sharing participatory artistic practice that uses technology: not just projects that use kits. We were keen to appropriate methods from Maker culture, but we also saw the kits we made as cultural artefacts, to be used playfully to critique the current uses of technology and explore alternate visions of life for ourselves and our communities.

As part of a network of artists from across the North of England, whose work gives equal focus to both participation and technology, we felt like we had identified a problem to do with the documentation of this practice: Much of the documentation of tech-based participatory work fails to capture the complexity involved in working across contemporary art practice, community engagement and technical cultures. The documentation we were creating focused on technical issues and pragmatics such as audience numbers, neglecting the critical and poetic thought, discussion and actions that characterise these projects. Reports can be useful to describe the process from the bird's eye view of project management, but it is so hard to avoid using the language of social instrumentalisation, and let us be honest, they tend to be pretty dull reading. Although narrative documentation methods can be effective in capturing what it is like to observe the context, behaviour and personal stories of a participatory project in action, they fail to articulate one vital aspect; the first-hand experience of actively making something happen. This is the utopian promise of kits: that they can offer secondary audiences the chance to encounter artworks first hand, by constructing them for themselves.

11 Anderson, C. (2013). Makers. Nieuw Amsterdam
12 https://www.hackspace.org.uk/

Critical Kit Symposium : Chris Hufee pinhole camera making session


Critical Kit Symposium : partcipants



Critical Kit Symposium : mapping artist kits workshop

SHOULD CRITICAL KITS BE DIFFICULT TO USE?

Neil Winterburn

One of the successes of the Critical Kits Symposium was that it revealed interesting fault lines between art culture & Maker culture. The day brought artists, educators and makers together to discuss kits from different perspectives. While it was exciting to find common ground in kits as active, provocative documents and usable archives, if we want to set up a richer exchange of ideas around them, we have to acknowledge some key differences in the thinking around kits from, for example, a skills based workshop leader, a conceptual artist and a member of the maker community. You can't translate if you can't acknowledge that you're speaking different languages. One of the faultlines we found was the issue of accessibility. I am going to characterise two of the more extreme positions, even though in reality most people adopted a more nuanced view.

The *extreme artist* position placed an emphasis on the responsibility to subvert the rationalist, functionalist logic of instructional guides found in maker kits. Chris Wood's GPS Tarot, which is documented in this book, is a kit consisting of a card which advertises the service of a mobile text based tarot reading, informed by the position of satellites. The *extreme maker/educator* position saw accessibility through clarity of instructions and usability of components as fundamental to a good kit. As Gemma May Latham in this book states: *Kits should be accessible, easy to use and intuitive in their methods.*

Are these two positions really the distinction between critical kits and kits? I'm not sure. One way to judge an art kit is on the richness and criticality of the space it opens up for the person using it. As with other artforms, if an artist puts accessibility and didacticism before everything else, then it is going to be hard to stimulate the criticality of the user, but criticality and usability aren't mutually exclusive. If a young person comes away from a *difficult to use* kit feeling frustrated, stupid and critical of themselves, then it is hard to argue that it is criticality has been a success.

Polina Zioga suggests that *challenge*[13] as employed to understand the flow of gameplay, could be a useful term to understand experiences of kits. Because gaming is such a well established cultural form, levels of gaming literacy, tacit knowledge of how game mechanics, dynamics and aesthetics operate are quite high. Artists have been subverting gaming for decades now, so it feels easier to get a handle on how art games challenge

13 Chen, M. J. (n.d.). Flow in Games (and everything else). Communications of the ACM, 50(4), 31-34.

norms and conventions – such as how games should look and feel, how their mechanics affect behaviour, and which themes games should and shouldn't explore. Artist duo Jodi's performative practice of Wrongplay,[14] playing computer games in a way that aims to disrupt the mechanic and break the illusion of the world, is a seminal example of this. At the Critical Kits Symposium, artist Laura Pullig made the point that kits can have high levels of usability and still be challenging due to the subject matter they deal with or the experience they offer: Depression Quest[15] for example upset many men on the internet because it challenged their idea of what games should be about, not because it had poor usability.

Part of the power of kits, but also the difficulty of using them to distribute art is not knowing who will use the kit and how they will want to use it. Not all paintings have to be about the formal process of painting, not all artworks using networks have a responsibility to unmask the spectacle of surveillance infrastructure, and not all kit artworks have a responsibility to focus on the formal qualities of kits. But, as Nathan Jones wrote in the Piratepad debate, there has been a long history of interactive artworks that problematise interaction, so why shouldn't kits problematise making? Artists from Nam June Paik onwards have hacked together ad-hoc and functionally transparent systems to demystify and disturb the polished user experience of consumer goods.

Of course, artists should be free to go with or against the grain of whichever cultural form they are working with. But we should be wary of repeating the binary arguments between functionalist and anti-functionalist art and design that dominated the 20th century. For example, Jean Tinguely's[16] dysfunctional machines highlight the effectiveness of modern mechanisation rather than challenge it. The difficult to navigate or the oblique architecture of Claude Parent & Paul Virillio[17] serves to remind us how much easier everything is when we have flat floors. The dumbness of Simon Penny's wonky *Petit Mal*[18] robot, a Wallace and Grommit style robot that wanders aimlessly around art galleries, getting stuck and bumping into things, makes robots like Boston Dynamics's *Big Dog*[19]

14 https://www.eai.org/titles/untitled-street-legal

15 Parkin, S. (2014). Zoe Quinn's Depression Quest. The New Yorker. Retrieved from http://www.newyorker.com/tech/elements/zoe-quinns-depression-quest

16 Hanor, S. J., & Charlesworth, M. (2003). Jean Tinguely : Useless Machines and Mechanical Performers , 1955 – 1970

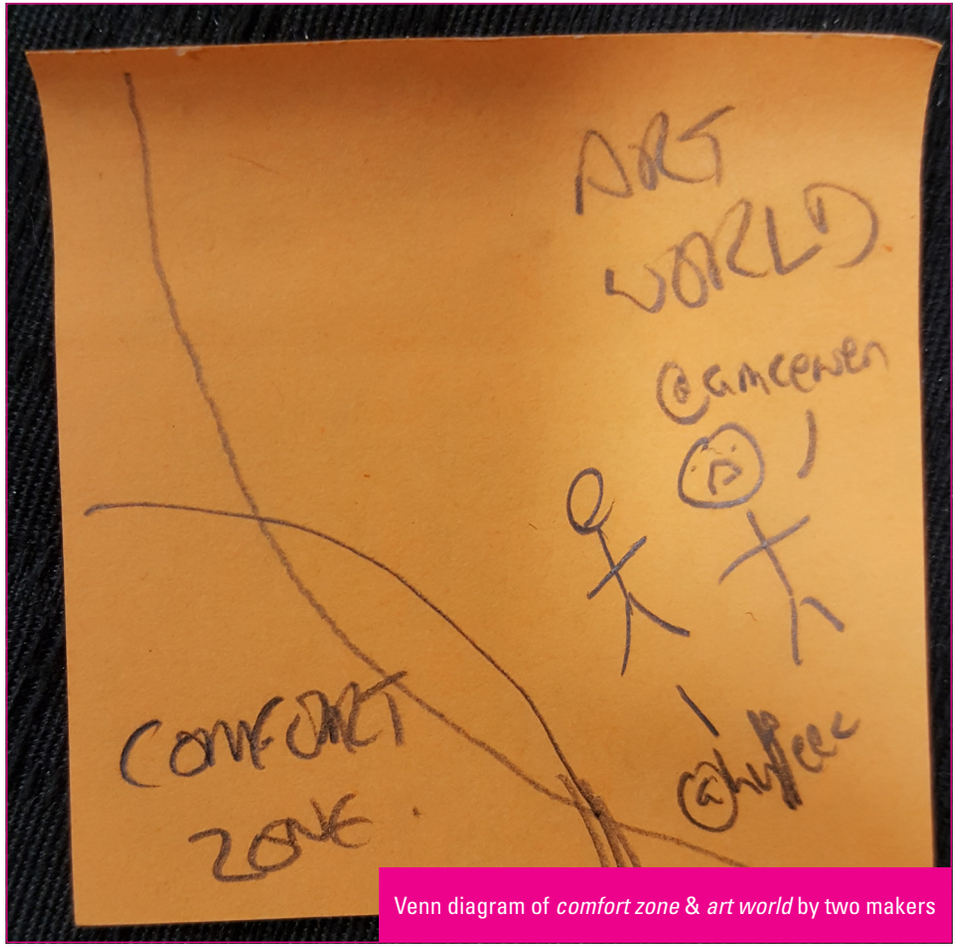
17 Redhead, S. (2006). Toward a theory of critical modernity: The post-architecture of Claude Parent and Paul Virilio. Topia: Canadian Journal of Cultural Studies.

18 Penny, S. (1997). at the intersection Embodied Cultural Agents : of Robotics , Cognitive Science and Interactive Art. Cognitive Science, 103–105

19 https://www.bostondynamics.com/bigdog

seem all the more impressive. So while there is lots of fun to be had with difficult to use kits, personally I want to get beyond the *wonky = art* Heath Robinson aesthetic. Then again I've been telling myself that since art school. Artists like Maywa Denki, who turned their dad's electronic business into an artwork parodying consumer gadget fetishism, offer an interesting example of how this going beyond could be done.

At the symposium we developed a set of conversations and references that enabled some first steps toward a critical cultural-literacy of kits. Critical kits expand the aesthetic and formal qualities of instructions and parts: the behaviours and experiences that they generate, and their relationship to mainstream Maker culture. In short, reengineering the kit as a tool for exploring and rethinking our relation to technology.



Venn diagram of *comfort zone* & *art world* by two makers

REFLECTING ON CRITICAL KITS

Ross Dalziel

I remember discussing with the Owl Project in 2008 how they could sell their wooden iLog[20] audio interfaces in the FACT gallery shop not as a product but as a kit with a ticket to a workshop to make them, well before the Maker meme really had traction. Arduino was little known then; Steve Symons built his own hardware platform *muio* to help make the technology based work they required.

Artists making kits is now standard practice. The Critical Kits Symposium set out to explore opportunities and problems this raises for artists. Neil Winterburn jokingly tweeted recently that I had tied myself to *the mast of Maker culture*, referring to Turner's experiential research for his storm studies and landscapes. I am indeed embedded in the Maker community in Liverpool moving from an artist studio to DoESLiverpool[21], a co-working space with digital fabrication facilities and a strong community focus. This wasn't to do with authenticity, but partly about access to equipment and building deeper participation with the cultures around the technologies I use. I suppose that is a kind of 'mast tying', participating in a culture changes the form of research and the encounters you have with it. Just thinking of technology as a tool to a specific end, a mere widening of the technical *palette*, is not enough.

I think artists participation in technical culture is at the core of artists using or referencing kits: building a system to make (and have others make) your work can embody not just a process, but an ethos; or function as a form of credential to validate your 'place' in that culture. Building a kit can be part of a critical response to the proprietary tools we are sold or as a form of resilience and sustainability. It can also be something that might generate actual cash to sustain what we do.

In many ways the logical implication of kit and Maker culture would be for makers and artists to begin to manufacture things and start making and distributing at the scale of the mass production processes they reference or critique; following the Maker and hacker promise of free information and controlling the means of production. From Walter Benjamin to McKenzie Wark, people are critically mapping out these implications. I'm not sure of the extent artists and their kits are following these maps or operating beyond speculative design in the way that some maker businesses, creative technologists or

20 http://owlproject.com/iLogs
21 https://doesliverpool.com/

product designers are, albeit driven by arguably more *business as usual* and less critical engines.

Critical art and maker kits seem limited to slow and small scale manufacturing. I once proposed the idea for a Makerspace 'factory' on a canal barge. It would slowly manufacture kits that responded to the context it was passing through. The texture of each kit would respond to where it had been built and where it would be used. Rather than a *universal* kit it would be *hyperlocal* and its value highly contextual. But it feeds into the idea of a revolution in manufacturing and work through the network, where diverse creative co-working and making grow circular economies and re-distribute wealth. Some kind of collaboration from the small critical kit creators and the big corporate data and distribution centres may be the only way to realise this.

This kind of local making would need contextual documentation: Why and in what setting would you use it? What assumptions were made of its user base or its utility? Should this be as well documented as the assembly diagram and if so how should we do that? Where are the components from and why? Part of the Critical Kits Symposium was to imagine tools like github or docs.readthedocs.io applied to context.

Critical Kit Symposium : Ross presenting Desktop Prosthetics

Critical Kit Trump cards

Thought of as a way of documenting context, the kit has the potential to tell a story better than a video or blog. Perhaps this space for kits as documentation or distribution of information is what is interesting. Kits have the potential to embody a story that is not a summary or a sound-bite but something more technical, *useful* and with real encounters with knowledge.

The **Critical Kits Trump** cards document an artist tradition of taking ideas from making, manufacturing and technical cultures. For the future we should also be mapping any tradition in the reverse direction where technical culture is influenced by artistic practice. If high volume products also contained more contextual information rather than just operation instructions then contextual kits could be highly influential; potentially it could help to get the idea of the circular economy and sustainability into the design chain. Already there are products that can be part of a supportive contextual ecosystem (a key feature of open-source projects) like platformio.org even if it takes place through hardware or software specification.

John Berger said that oil painting is less like *an imaginary window open on to the world* and more like *a safe let into the wall, a safe in which the visible has been deposited.*[22] These power and property relations potentially inhabit and underlie contemporary art and tech *kit-ness* even more. Many of us are only able to develop electronic kits or open-source projects due to macro-economics and market driven *price points* of electronic components, server infrastructure and not to mention the privilege of the time to learn how.

As influential as kit and Maker cultures seems to be and its integration into everything from schools, libraries, manufacturing, the high street and academia, can we really hope to become more than the users, distributors or at best the shop stewards of the technology that we are building our practices around?

22 Berger, John (1972) Ways of Seeing, ISBN 0-14-013515-4, https://www.worldcat.org/oclc/23135054

PROTOTYPING KITS WITH YOUNG PEOPLE

Neil Winterburn

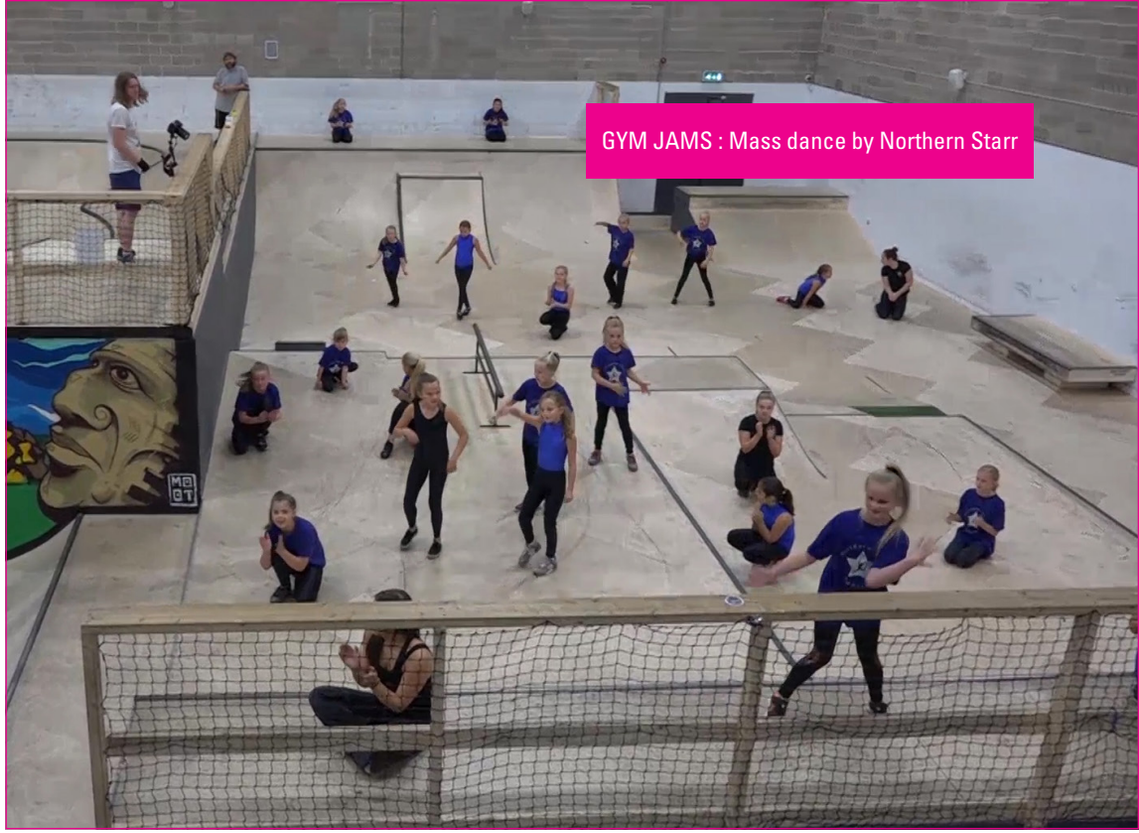
Prototyping is a term taken from computer science, and before that from engineering. It is already a well-used term in the arts, but similar to *lab*, it is a word that gets thrown around a lot and could probably use a bit of clarifying. This article aims to do that by comparing the different ways that the term is used by artists co-creating digital art with children and by CCI (Child Computer Interaction) researchers.

CCI was defined by Janet Read as *an area of scientific investigation that concerns the phenomena surrounding the interaction between children and computational and communication technologies*[23]. CCI research combines a range of empirical methods from developmental psychology, learning sciences, interaction design and computer science. It has a practical focus, using design and evaluation studies to better understand how to develop technology for children. CCI has a focus on objectively measuring how children experience systems, it questions design and function. As with the rest of computer science, due to the complexity of interactive systems, clear use of language is at a premium, a spade is a spade and a resistor is a resistor – not a metaphor for emotional labour.

CCI researchers use the term *prototype* to describe an artefact that is being used to *Represent different states of an evolving design and to explore options.*[24] Due to the complexity of interactive systems, it makes sense to test limited versions of different aspects of a system, building it step by step, rather than all at once. The thing that makes a system a prototype is not what it looks like, what it's made from, or its state of completion, but how it is used. *What is significant is not what media or tools are used to create them, but how they are used by a designer to explore or demonstrate some aspect of the future artifact.*[25]

The key to the successful use of a prototype in Human Computer Interaction more broadly, is being able to use it within the framework of an evaluation, to find out something very specific. *Choosing the right kind of more focused prototype to build is an art in itself, and communicating its limited purposes to its various audiences is a critical aspect of its use.*[26]

23 Read, J. C., & Markopoulos, P. (2013). International Journal of Child-Computer Interaction, 1(1), 2–6.
24 Houde, S., & Hill, C. (1997). What do prototypes prototype? Handbook of Human Computer Interaction, 1–16.
25 Ibid
26 Ibid



GYM JAMS : Mass dance by Northern Starr

Prototypes in CCI aim to narrow down a problem space towards the solution of a clearly identified problem. In CCI a prototype is always a limited step towards a finished product, the distance from this can be measured both because there is a general consensus around what constitutes a good user experience and because the criteria for success, developing a system that either solves a problem or makes money, can also be measured objectively. The cycle of user centred design acts as a feedback loop, to support designers narrowing the gap between a clearly identified problem and a technological solution.

No matter how deeply enmeshed they are in computing culture, artists tend to be interested in meaning as least as much as they are in function. In an art context technical system can have both a function and be a metaphor for any number of things. Artists use prototypes to open up new ways to explore the symbolic meaning of systems, we tend to privilege a richness of language to encourage an openness of interpretation. Although each artwork is free to identify its own specific aims, generally speaking, if we're testing an artwork, it is to explore how to increase its propensity to trigger multiple and alternate interpretations of itself: its subject. To create space for poetic and critical questioning of the social context through which we experience it.

Tania Bruguera has done more than most artists to examine the relationship between art and social function through *Arte Útil* (useful art), which explores visions for the future, by experimenting practically within the conditions we have now. *Arte Útil has to do with the understanding that art, only as a proposal, is not enough now. Arte Útil goes from the state of proposal to that of application in reality.*[27] Artists making useful art are challenged to devise activities that enact a future they want to see, even if the conditions to support that future are not there yet. *Although Arte Útil may be like a pilot or betaprogram, where participants may experience how it feels to live in the world that is being proposed, it must be launched as something real.*[28] In *Artificial Hells* Claire Bishop reflects on Arte Util's challenge to us to appraise social interventions for their ethical as well as their aesthetic qualities, describing it as art that is: *Both symbolic and useful, refuting the traditional Western assumption that art is useless or without function.*[29]

Those of us wanting to co-create digital art kits with young people face an inverse challenge: as millennials grew up in a culture that assumes that technology is made to solve social problems, the challenge is to support them to explore the symbolic meaning of technical systems. In my experience, when engaging young people with digital making, we talk mostly about their technical and social function and struggle to involve them in more aesthetic and poetic discussions around what these systems might mean.

In CCI there are well defined models for the involvement of children at different stages of the development process. Allison Druin's[30] *Onion model* differentiates *users* from testers, and *informants* (children we talk with), from design partners (children who get to make creative decisions). In the arts we tend to cast young people as either active participants or passive viewers, with little nuance in between. We often privilege the role of design partner over informant or tester, this creates pressure to make overstated claims about the agency of young people. One response to these challenges would be to move beyond the usual binary of participation, in which we involve young people as either co-creators or users /viewers of artworks. We could start to explore how to involve them as 'Tester/ Reviewers' of prototype systems combining evaluation methods from CCI & critical reflection activities from gallery education. Discussing methods for involving teenagers with interaction design Janet Read writes: *In many situations, and given the right tools, teenagers may be the best evaluators of technologies, and with their imaginative risk taking minds, the best designers of products.*[31]

For the same reasons, teenagers with their emergent brains are the perfect age group to ask for feedback on the usability and social usefulness of a system, but also for their take on it's cultural meaning. In exchange teenagers can learn how digital artworks are developed through direct experience and conversation with artists. This is a meaningful role for teenagers, which avoids the tokenistic collection and (all too often) rejection of their creative contributions, sometimes seen when they are involved in the early ideation stages of a project.

For example in this book, we look at **GYM JAMS**. It is clear that the RoboGames element of this project needed a framework to engage the young people in the role of tester/ reviewers. This is something I normally do through informal conversation with small

27 Bruguera, T. (2012). Reflexions on Arte Útil (Useful Art)

28 Ibid

29 Bishop, C. (2012). Artificial Hells. October-Cambridge Massachusetts-, 390

30 Druin, A. (2002). The role of children in the design of new technology. Behaviour & Information Technology, 21(1), 1–25.

31 Read, J. C. C., Horton, M., Iversen, O., Fitton, D., & Little, L. (2013). Methods of working with teenagers in interaction design. In CHI '13 Extended Abstracts on Human Factors in Computing Systems (pp. 3243–3246). New York, NY, USA: ACM.

GYM JAMS : RoboGames – Pixel Workout

groups. This wasn't really possible with a group of 50 young people scattered across a noisy skatepark which made me realise how important these conversations are. If I had prepared to run the activity as a test, I could have explained that the thing they were going to use was a prototype kit, used to play games that were somewhere between sport and art. I could have told them about the motivations of the artwork, the aims of the test and then run post test activities to capture both usability feedback and more interestingly their personal responses to the artwork.

The RoboGames was a chance to explore how these activities play out on (small) societal scale, when we ask 50 young people, to ignore their intuitive individuality and instead walk, throw and exercise as robotic agents in a system. From a CCI perspective we needed to understand if these rules would produce games that were fun and satisfying to play, but from an art perspective we needed to understand what these activities meant to the young people in relation to their experience of sport, technology and culture.

In CCI there are plenty of tried and tested methods for engaging young people as evaluators of interactive prototypes[32]. In art we have methods from gallery education and formal research methods that aim to quantify responses to artworks.[33] Informally, the most important thing we have is the way we speak between ourselves in our studios when we are critiquing and problem solving a project. These are the kinds of conversations that we need to engage young people with, however tempting it is to translate and edit what we say to them, they are more than capable of tackling the themes and ideas we are working with. The activity of testing a kit gives us a framework to discuss the kinds of experience we want a work in progress to offer young people, and the kinds of questions we hope it raises. Artists can get genuinely useful feedback and the young people get to create/recreate the artistic process themselves. Testing and reviewing kits could be the right combination of role and activity to scaffold more critical conversations about art and technology with young people.

32 Markopoulos, P., Read, J. C., & MacFarlane, S. (2008). Evaluating children's interactive products: principles and practices for interaction designers. Morgan Kaufmann Pub.

33 Muller, L., Bennett, J., Froggett, L., & Bartlett, V. (2015). Understanding Third Space : Evaluating Art-Science Collaboration. Proceedings from the 21st International Symposium on Electronic Art.

GYM JAMS : RoboGames – Robot Rubgy

MAKER CULTURE AND DIY PUBLISHING

Andrew Wilson

If there is a popular image of Maker culture at the moment, it is probably of men messing around with 3D printers, laser cutters and Arduinos. That will not do as a definition, if only because it leaves out, through no fault of the people who fit the description, all the people working with ceramics, textiles, jewellery-making and more, who also (with as much justification and longer history) call themselves makers.

It might be more productive to talk about Makerspace cultures. There will be as many Makerspace cultures as there are spaces, defined by the people who set them up, go there regularly, and the wider social, political, economic and cultural contexts in which they are placed. There may though be a set of founding ambitions, principles and architectures (literally and in governance) that are shared and mutually recognisable from one makerspace to another, with a different emphasis in each depending on local cultures.

The first of these, and less trivial than it sounds, is that it's a permanent physical space with regular and long opening hours, and a select group of regular users. This isn't only to do with access to materials and machines (whether 3D printing or weaving) but also the way regular users get to know things, and how that knowledge is shared. In Makerspaces, access to tools is combined with craft knowledge, learned by doing. It's assumed skills should be shared, and this sharing will be done by showing and talking. The second could be that all of the space and equipment is held in common. There might be different areas for different activities, but they are all equally open to everyone. And the third is that this communality extends to the governance of the space. It's more or less understood that in principle the running of a Makerspace is everyone's collective responsibility, even if in practice that is delegated to paid or voluntary staff – or more regular users. These recognisable ambitions of Makerspace culture could cover spaces with an emphasis ranging from bio-hacking to traditional craft skills, and they feel just different enough to make a distinction from collectively run artist studios, co-working spaces, and factories.

Makerspace culture frequently overlaps with that of DIY Publishing. Kim Searle, an artist and maker with a background in textiles, has recently set up a monthly Zine Club at the Makerspace[34] where I'm a member. Kim has a library of examples that she's picked up

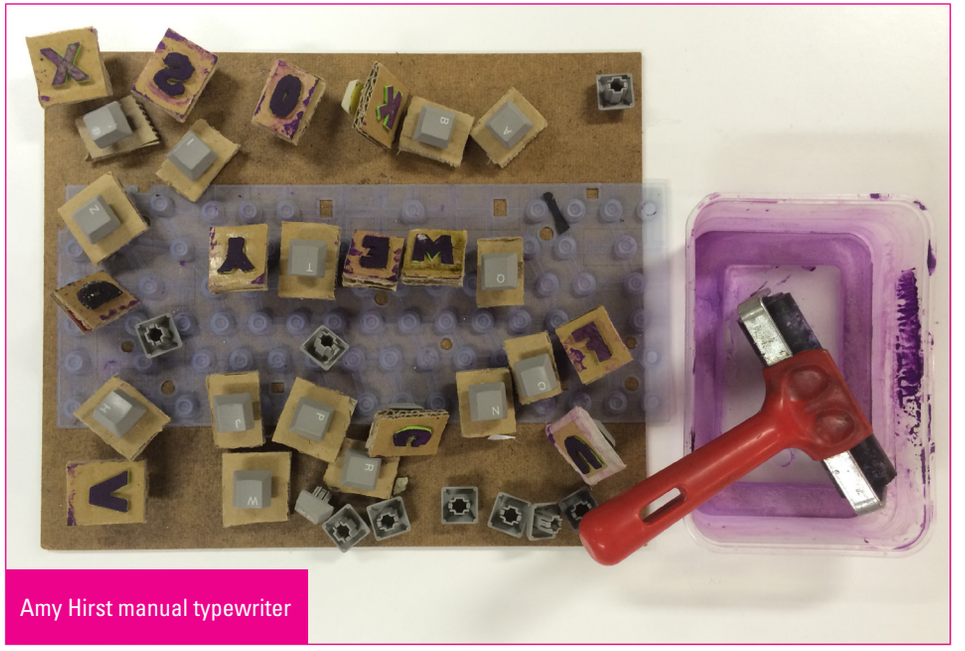
34 www.themaking.space

Kim Searle zine library

from zine fairs over the years, which illustrate both techniques for making zines and possible subjects. There are materials on hand, including the fantastic *manual typewriter* made by Amy Hirst, another member. They also have a photocopier to publish the final results. People who come along can spend a couple of hours making a zine and learning new techniques by watching, talking and doing.

The Zine Club is a great example of publishing as a maker space activity, but examples from writing and publishing that mirror the organisational and physical structures of maker spaces are harder to find. One is a Sheffield based organisation The Poetry Business. Active for more than 25 years, for all that time The Poetry Business have run a small-press poetry imprint (an imprint is *a trade name under which it publishes a work*) called Smith/Doorstop Books, and a twice-yearly magazine called *The North*. The organisation has only had three offices in those years, and whilst these were never communal in the same way as a Makerspace, people can and do often drop in if they are passing.

Closest in spirit to a Makerspace are the monthly Saturday writing days that The Poetry Business have run every month of their 25 years. These writing days are open to anyone who turns up, and participants, usually about 12 people, sit round a table and write new poems in short ten-minute exercises by following a format that is given to everyone, for



Amy Hirst manual typewriter

example the same first line to start with. At the end of each exercise people can read out what they've written, and get a response both from others in the group and the people running the event, who, after 25 years, have an incredible body of expertise.

Thousands of people must have taken part in this process over the years, including two of Britain's most famous poets, Carol Ann Duffy and Simon Armitage. Among the people taking part there is always a mixture of experience, from those there for the first time to people who have been dozens of times.

While the writing part is done in silence, the learning what to write is social and done by talking and listening in a way that does seem to parallel some aspects of learning in Makerspace culture. Is the Poetry Business as close to a *writer space* as it's possible to get? And perhaps more importantly, what can Makerspaces learn from the communal, silent exercises of writing workshops?

Amy Hirst manual typewriter

A LIST OF CRITICAL KITS

TicTacTec – Rachel Clarke
PatternCraft – Gemma May Latham
GPS Tarot – Chris Wood
Ok Sparks! Tiffin Tin – Domestic Science
Plant Synth – Laura Pullig
RoboGames – Neil Winterburn

TICTACTEC
Rachel Clarke

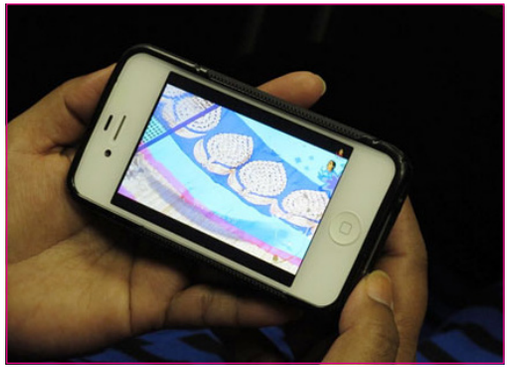
TicTacTec travelling e-textiles kits use existing off-the-shelf electronics for lights, switches and speakers, that can be stitched into textiles. The focus of the design is to create opportunities for communities to explore and reflect on histories of migration and trade connected with both contemporary and traditional international textiles.

The project began as a collaboration between the Angelou Centre, a black-led women's centre based in the Newcastle upon Tyne, Culture Lab at Newcastle University and myself. A group of staff and volunteers were interested in finding ways to build connections between younger women and older generations at the centre. Many of the older women had been entrepreneurs when they first arrived in the U.K. establishing fabric and clothing import businesses serving a much needed gap for families from South Asia. This aspect of local community heritage was undocumented within local archives which had largely focused on migration histories associated with the steel and shipping industries, rather than the micro-enterprises established by entrepreneurial women in textiles. Most importantly for the community of women who visited the centre, these stories of skill and innovation were unknown and untold by many of those older women who still live in Newcastle.

Each kit includes a carrying case that was designed and made by women at the centre, so that the pieces of the kit can be carried together. They contain basic electronics (batteries, conductive thread, switches, conductive beads, LEDs, speakers) and everyday sewing items so that groups could keep the different elements together. They also contain a number of paper based resources and activities from practical instructions to group activities encouraging reflection on global textile production, trade and genders. Each kit is furnished with a set of culturally specific examples of textiles, photographs and stories connected with particular communities and instructions to show how particular examples can be made. For instance, how Nigerian headgears are made, Hollandaise and Dutch Wax print symbolism, from Indonesia to West Africa, and North Indian Makeesh metal weaving.

The kits were designed to enable anyone with an interest in exploring textile heritage and its future, to create small flexible interactive pieces. The idea was that once people had got their heads around making a basic circuit work, which they could embellish it when and where suitable, depending on the needs of particular groups. Items included were carefully selected and tried and designed with women at the centre over a period of a year. Written, visual and video instructions were also made to further provide structured support. There were 4 kits made as part of a dedicated funded project and these were taken up and used by artists in the region working with women's groups for an exhibition.

All aspects of the kit, including the case, were designed to be made with basic skills in textiles. The critical aspect came through the process of constantly questioning who this was for and how reflective conversations and stories could be structured and supported around the kit. Our intention was never to make the kit heavy with critical theory, rather to develop a critical openness to being flexible and adaptive. Where we really saw the kit taking on this role was when volunteers from the centre ran their own sessions with other women and with local heritage practitioners and museum professionals. Here they became the experts of the kit, because they had so much involvement in making decisions about its form and contents.



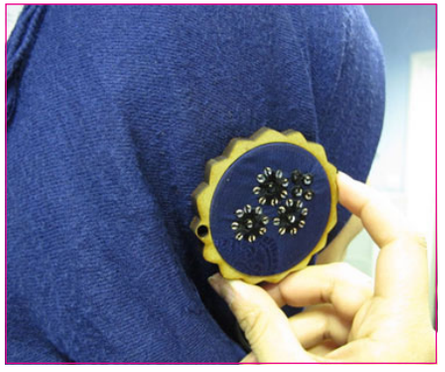
Our original plan was to make all the instructions available online but we ran out of time and energy in trying to get all the different elements of the kit together all at once. Working towards

an inclusive and engaging distributed kit that could be used in women's centres turned out to be quite complicated – anticipating what would work beyond the centre where we were closely working together for a long time. So far the kit has been distributed beyond the project and several women's centres in the northeast, but there has been little follow-up time to see what has worked and what hasn't.

Making kits, especially that are conceptually rich and engaging for people was really valuable as it made me think as an artist and researcher about the assumptions we can often make about creativity and making. There's a lot of rhetoric today about Maker culture and how everyone is a designer, and so originally on starting the project we discussed and tried very complicated technologies that required a lot of maintenance and not much creativity. Thinking in terms of kits, made us all think really hard about who was actually going to use this and get the most out of it and we found we had to constantly simplify over and over again, because our audience were coming from such diverse backgrounds with hugely diverse educational backgrounds and skills that couldn't be taken for granted.

The biggest challenge was keeping momentum and reminding ourselves what the aim was and trying to avoid being didactic with what was being produced. Kit making in multiples requires a lot of detail and skill and we spent a lot of time trying things out to find they didn't work as soon as someone tried it on their own without us being there. Furthermore, we were also mindful to make and present the technology unembellished to avoid competing with flashy apps and phones, which also presented a challenge since sometimes younger women wanted more flashy complicated technology to work with. There were also issues of sustainability too. Making something that groups or even families could take on as a project and buy all the bits they needed online or from local shops affordably.

As an artist, it felt there was both a great release and fear in developing something and seeing where it might go, without being there to see the results or necessarily steer the results. People appropriated the kit in really interesting ways, which was a great testament to both the open and constrained opportunities that we tried to develop through the kit structure.



PATTERNCRAFT

Gemma May Latham

As a participatory artist, my work is often temporal and focussed on process that invites members of the public to engage in activity with few permanent outcomes. This limits the distribution of my artwork to facilitated spaces and is generally only shared through traditional forms of documentation. It is difficult to convey the experiences of participants and capture the true engagement levels through these passive accounts.

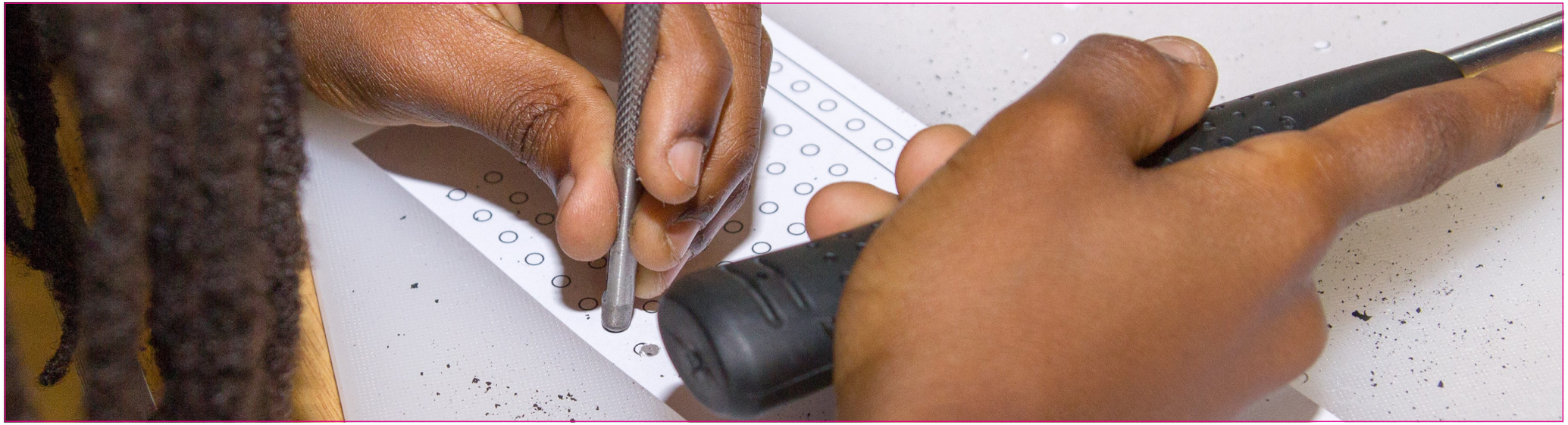
PatternCraft is an analogue to digital punchcard reader developed as part of my ongoing participatory practice that is concerned with the crossovers between textile making and coding. Fundamentally it uses a physical punched card to encode data and a digital reader to decode it. The reader is used in the delivery of participatory activities that connect the public to archives and heritage.

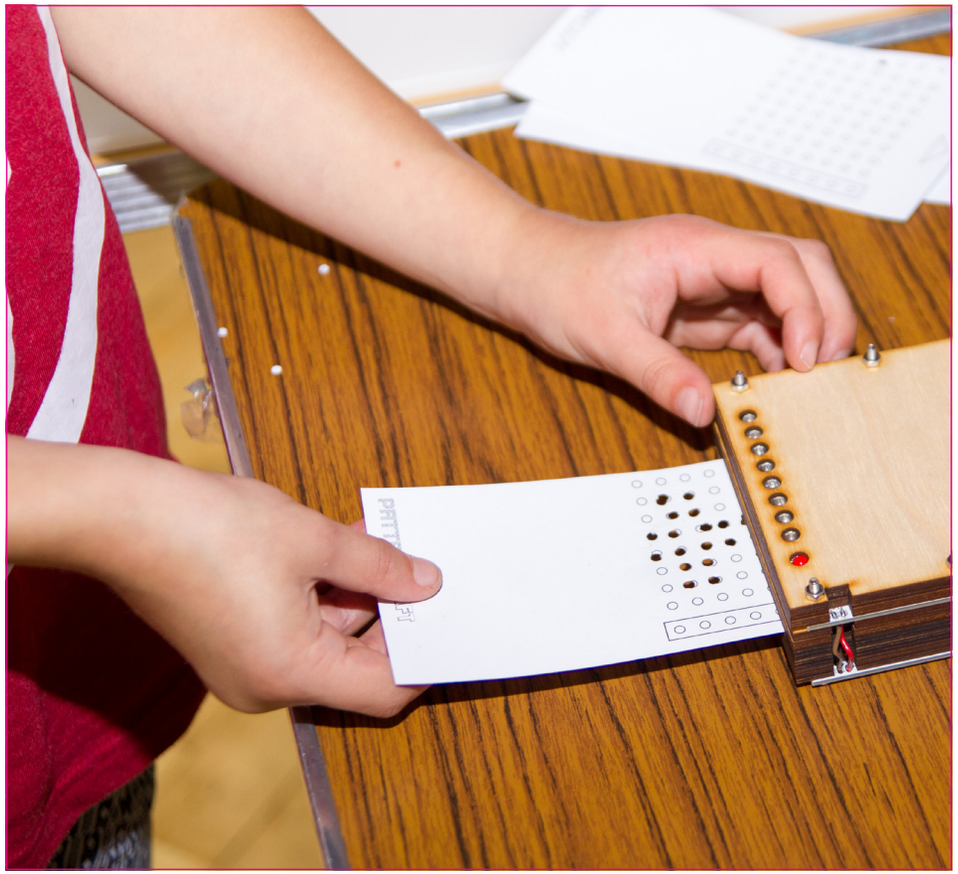
Due to the temporal constraints of my practice, I try to embed elements of recording and feedback into an activity. Activities such as **PatternCraft** become self documenting. Each punched card becomes a record of someone's participation, a form of documentation that is hard to part with and many take home their cards as a souvenir. Equally, there is a digital record of participation with digital patterns the card has created in Minecraft worlds and other software platforms with the card itself acting as a storage device for a repeatable program.

PatternCraft is a tool for engagement, learning, interaction, expanding, documentation. The physical reader, made up of two electronic boards and casing of layered construction, is currently being developed into an open source product and kit of parts, for home assembly. Producing a physical kit that can be passed on and used on a singular basis with one individual making the object from the kit. But the card reader is more than that, I believe kits can be developed for co-creation, kits can provide the tools for participation, collaboration and interaction in public spaces.

As a kit for both construction and a kit for co-creation in the participation that the reader adopts, an assembled reader is a tool kit. In essence, in this form, the reader itself must encode and decode its purpose in order to be accessed.

PatternCraft represents an approach that I feel is relevant to all kits. *Kits should be accessible, easy to use and intuitive in their methods*. A kit should explain itself in the first instance. This emphasis on co-creation should not only be the case for the physical making of a reader as a kit of parts but it is vital for the use of the reader as an activity, whether used by a single person or in a group. When using the reader at events, participants can pick up a punchcard and glean from the card layout, the tools available and the reader design what necessary actions are to be taken in order to take part. This isn't prescriptive, it's implied; and one participation tends to snowball into others, each informing the next. One participant may be given direction as to what to do, others observe this and follow lead. As numbers grow, participants share their learning, passing on hints and tips to newcomers. A simple set of materials and tools and





outline instructions that bring people together and enable ownership with no barrier to engagement.

The overall aim for **PatternCraft** is for it to be simple to use and accessible to all yet expandable, serving as an open platform for developing new interactive works. This potential can be evidenced in the work of James Medd[35] who used three PatternCraft readers as part of a live music performance, taking the original intentions for the reader's use and re-incorporating them into his own practice. The joy of PatternCraft as a *kit for co-creation* is that I can not predict or control its use beyond my own facilitation, but its roots will remain there.

35 http://www.jamesmedd.co.uk/

GPS TAROT

Chris Wood

GPS Tarot expands our notion of *kit* to include instructions to collaborate with the artist via text message, in the use of tarot cards and satellite location data materials. This places an emphasis on use and performance, over building and making, putting this kit in the lineage performance artworks shared as instructions. Perhaps therefore, this model should be seen less as a way of recreating work across time and place and more as an intrinsic means of distribution.

GPS Tarot is a kit which takes the simple and mobile form of a business card advertising a messaging service. After texting the number, the participant receives a dedicated tarot reading, with the cards arranged according to the position of overhead GPS satellites. The reading is not automated, but performed by the artist, documented and messaged back to the participant. The kit creates a unique, personal, directed interaction every time it is used.

The overlaps between stars and the satellites used for GPS are considerable: An array of satellites is called a constellation; in the same ways our ancestors used stars for navigation, we typically use GPS to orientate ourselves. But star constellations are also used to tell us who we are, or who we will be. Horoscopes are now available in daily newspapers, and by phoning numbers.

GPS Tarot offers a new mythology for GPS infrastructure, exploring the satellites potential to give advice on life choices in a similar way to star signs. By offering this new

perspective, the work seeks to critique the deterministic way in which technological developments intersect with our experience. It has become such a reflex to go to your phone to check where you are that it becomes difficult to imagine a time when getting lost (at least spatially) was a real concern. Earlier technologies, like a paper map, begin to seem quaint and outdated. By bringing the GPS infrastructure back into focus and rethinking what uses we make of it, the work provides space for reflection. This reflection is reinforced by the act of asking for and receiving a tarot reading – an esoteric, if not mystical, way of reading.

Question

Should I move to from Dublin to London?

Tarot Reading

After an initial period of great potential you move through the world with a strong force, bounded on either side with the potential for combining earthly and spiritual/creative energies (Chariot flanked by Pope and Devil cards)..... To answer the question, you have the energy to forge any path you wish, but the cards indicate the presence of a call to action which should be answered (Judgement card) do not ignore this call.

As an object the kit is highly mobile and has the potential to appear in unexpected places. To date, cards have been passed to friends and contacts and, thereby, allowed to circulate through personal connection and conversation. An inspiration was the small flyers and business cards handed out by healers and sorcerers in markets or on the street.

One card has been left in a public place – on the announcements board of a supermarket in rural Canada. I don't believe this card has led to any contact. However, this raises another issue around this type of kit. It is very difficult to track the movement and impact of such a business card. Indeed, when a request for a reading arrives, the number is typically unknown, with the country code being the only identifying feature. The chaotic and untrackable distribution of the kit adds to the mystery implied by its content.

The interactions created by the card are unique according to the question asked and the position of the satellites overhead, but could equally be seen as part of a larger

networked set of interactions, which pass from a given moment into an archive of experience for both the artist and participant.

It may be difficult to understand this project as a model for others to follow, as the form of the card kit is so enmeshed in the content of the work. However, for other practices based around interpersonal interaction or which want to play with the symbolism of the service industry, this card kit model could be fruitful. Even if the kit does not match thematically with other projects, the extreme mobility and unpredictability of the kit could act as a form of inspiration for other kits.

OK SPARKS! TIFFIN TIN

Domestic Science

The **OK Sparks! Tiffin Tin** was produced to partly document, represent and distribute Domestic Science's artist residency and research around the layers of history and multiple tenancies of Wray Castle in Cumbria, a Victorian folly and family home. Now owned by the National Trust previous tenants the *Freshwater Biological Association (FBA)* and *The Royal Merchant Navy* give the site a rich local history of science and communication – a history that has tended to be obscured by a prevailing tourism narrative based on Beatrix Potter's brief summer residency in the area. The artist residency by Domestic Science and subsequent weekender events aimed to redress the balance and reveal this heritage by allowing people to explore the heritage of science and communication more thoroughly.

The **OK Sparks! Tiffin Tin** kit was designed to be sold to the public at the OK Sparks! Wray Castle weekend programme in May 2016 as an alternative *local science tourism* National Trust shop product. We hoped sales would help balance funding with the ambition that visitors inspired by this local science heritage could continue to participate in it on a low level and distribute the artist's approach.

Tiffin tins are a sturdy stainless steel water proof container with 4 compartments famously used to distribute hot lunches in India. They were a convenient ready-made container to house petri-dishes, coasters and looped waterproof temperature sensors while being strong, waterproof and available off the shelf at restaurant trade shops. The tiffin tin layers each represent an area of research, an element of each artist's practice and a companion to the artworks and events *kit-ified*.

Tiffin layers, associated themes and list of contents

- Tin 1 (Lid) – Overview for the visitor, funder and tourist
  - Laser cut acrylic coasters of bathymetric data of Lake Windermere and microscope slide of a fish scale
- Tin 2 – FBA Easter Class event (Hwa Young)
  - Freshwater testing pH meters kit
  - Petri-dish
  - Rare original photographs of freshwater diatoms
- Tin 3– Heritage through Games (Glenn)
  - The Wray Castle Board Game made of 20 tokens
  - 4 markers
  - 12 sided dice
- Tin 4 (Bottom) – Ok Sparks! Radio Day (Ross)
  - Cocklecraft-of-things[36]
  - ESP8266/Arduino Internet Of Things (IoT) water temperature sensing kit
  - Essential documentation and background to the project with web-links to tutorials for the cocklecraft-of-things water sensing kit

The **OK Sparks! Tiffin Tin** had ideas referenced from other educational science kits; keeping it partly self assembled, with extensive instructions and a set of activities with diverse levels of engagement without *dumbing-down*; you could use the coasters, play a game, test freshwater samples or setup a water sensing network. They feel like documentation that you could re-use and potentially participate in. However the large amount of development and design time that went into every element and component in the kit, meant that building kits for even small-scale commercial sales was beyond the scope of the project. Developing a kit even to explore the most simple subject in the most generic way takes a lot of design thinking; to attempt to make a kit that worked on many levels of context and heritage at a good price became difficult and any kind of sustainable profit margin became impossible.

Negotiating a point of sale for the kit also became problematic – many of the electronic components where uncertifiable and it quickly became untenable for the kit to be a product we could sell in the gift shop. It became much more like tangible documentation of not just the events and the research, but the context of the project and an embodiment of the artists' approach and practice. The presence of the tins at all the informal table-top events provoked conversations and as people opened them up and explored the contents this dialogue was given added tangibility and depth.

36 https://github.com/mcqn/cocklecraft-of-things/

Since the project ended the kits have become more of a tool to describe our approach to art practice. It can be tricky explaining how you work with groups of people in a particular field, build relationships and collaboratively design and build events or systems that facilitate dialogue to reveal and share knowledge. Opening up a physical object gives a much more intimate understanding with the opportunity for questions and answers.

The development of the **OK Sparks! Tiffin Tin** took place alongside the other pre-cursors of the critical-kits project, ShrimpCraft and RF-Craft , which was presented at Laura Pullig's Nature & Technology symposium; and the concerns around the **OK Sparks! Tiffin Tin**, successes and failures have informed much of our thinking around kit-culture.

PLANT SYNTH

Laura Pullig

Plant Synth kit can be used to build a simple synthesiser which is played by incorporating and manipulating plants into an electronic circuit. I use copper foil traces to layout a basic circuit which people can build a synth on top of using conductive tape to attach components. The circuit uses a 555 chip[37] and once complete becomes a simple oscillator circuit. The system makes sounds which change as the voltage flowing through the chip varies, which in this case is done by attaching plants, leaves or moss to the circuit.

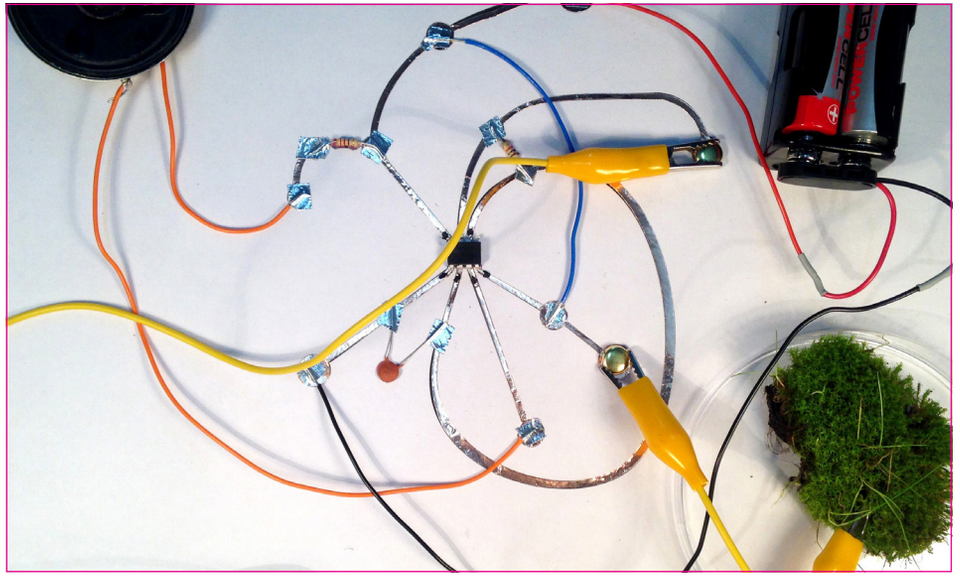
The kit was made as part of a research and development project exploring the theme of *Plants as Performers*. The project investigates the concept of plants as interfaces and performers and how people can engage with the environment by analogue electronics and simple digital systems, initially by using plants as sensors. The use of simple technologies relates to their functional transparency: I want audiences to be able to see the system and gain an understanding of what is happening. I often use lots of simple circuits repeated many times which can create more complex effects in an emergent way, like simple organisms. By creating interactions between electronic and natural systems I want to draw parallels between these networks: making them visible, engaging audiences with nature through technology.

As part of this project I designed the kit so I could deliver workshops exploring this theme with people and potentially make it available for people to buy. The kit was designed so that people of all ages and experience in electronics could make and keep an accessible and affordable version of the work I am developing. The circuit is visible and part of the aesthetic of the kit rather than using more traditional materials such as breadboards (in which the circuitry is hidden). This is because I think circuits can be beautiful things as well as functional. This is in part to engage people who would not usually work with electronics but also to encourage people to look at circuits in a different way. When people can see the workings of a piece that uses technology it can be part of what is engaging for the viewer.

Tim Hawkinson is an artist who often uses functional transparency in his work. In his piece *Uber Organ*, light sensitive switches are triggered by a giant musical score causing notes to be played through the organ itself, which is a huge inflated structure filling the space where it is installed. This piece would not have the same impact if the

37 https://en.wikipedia.org/wiki/555_timer_IC

workings were hidden from view, as well as allowing light through the sculpture it allows viewers to gain an understanding of how the piece works. Hawkinson is fascinated with machines and their workings, by including the mechanisms and electronics visibly in his pieces he shares this fascination with the viewer.



For me this method of working is also informed by e-textiles. I first started using the techniques of e-textiles in my practice nearly ten years ago. Initially it offered solutions for incorporating electronics into surfaces and sculptures. Subsequently, I realised that using these methods helped me to understand how circuits and systems worked, because the way they are laid out in e-textiles and paper-electronics mean that the connections are visible. Currently there is a lot of emphasis on learning to code but I also think it is important for people to have an understanding of how the electronic systems that underpin code function.

Producing the kit I have encountered challenges both practically and critically. Designing a kit was more time consuming than I anticipated. In turn this meant that while in the process of designing, the focus of the project tended to shift towards production issues, such as sourcing and testing materials. I experimented with various ways to make the paper circuit including gold leaf and making my own conductive ink, before using adhesive-backed copper sheet. Each method required some re-design of the circuit layout to suit its properties. There are still elements I am developing, in terms of affordability of materials in particular. One challenge has been to weigh the effectiveness

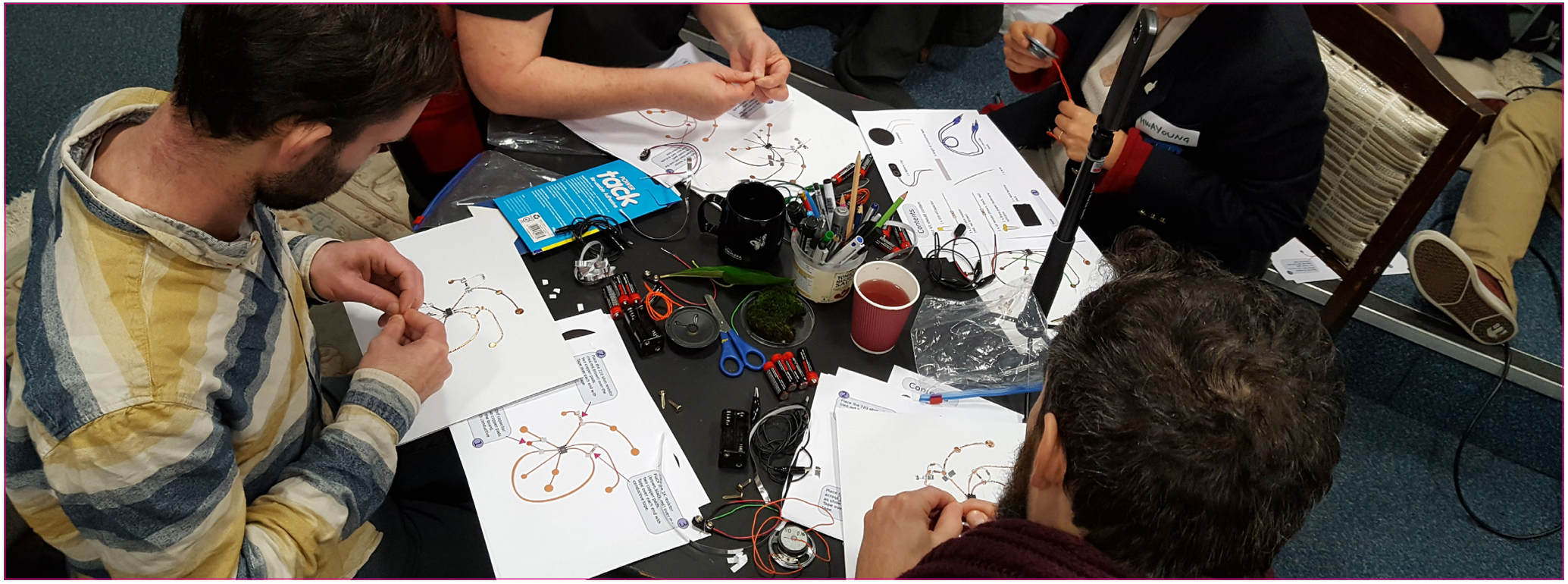
and openness of the kit architecture, and its affordability against the time consuming nature of using hand-made elements. The hand-made aspect of the kit is important, rather than making my own Printed circuit board (PCB) or breadboard based kit, as I think this can appeal to those who would not normally engage in electronics. And, it has meant that I can dictate the form of visibility in the final product also.

From an educational perspective I find making and using kits in workshops a useful way of working and sharing practice. However, I also wonder if, as the kits become more refined, the learning potential for participants may decrease. For example, in the earlier stages of prototyping the kit I used gold leaf to make the circuits. Although this was more challenging and less reliable, it meant participants had to find the faults in their circuit using a multimeter and repair it themselves. This had more potential for participants to problem solve creatively than in the more recent versions.

One of the main challenges I found which the Critical Kits Symposium highlighted is the balance of *usability* and *criticality*. Although a kit needs to be usable to a certain extent there is a danger that becoming too product focused can cause the project to lose sight of the artworks original intent – particularly if this intent has to do with openness and flexibility. This has prompted me to keep questioning the purpose of the kit and of working with kits in general, and also to question where the boundaries lie between a commercial product and a kit as an artwork.

Another interesting discussion at the Critical Kits Symposium was about what constitutes a kit. One of the points we discussed was whether instructions and sharing methods of production could be considered kits. An example of this expanded kit is *Kit of No Parts,*[38] a project by Hannah-Perner Wilson, where she shares different *ingredients* and *recipes* for making *materially diverse, functionally transparent and expressive electronics*. Rather than giving people the instructions for making a complete project she shares the ideas, knowledge and materials for others to build their own. Perhaps this form of kit is a more constructive method of sharing practice, investing time to create and share resources for others to creatively use. This allows for further development of ideas and pieces of technology rather than encouraging the replication of one idea.

38 http://kit-of-no-parts.at/



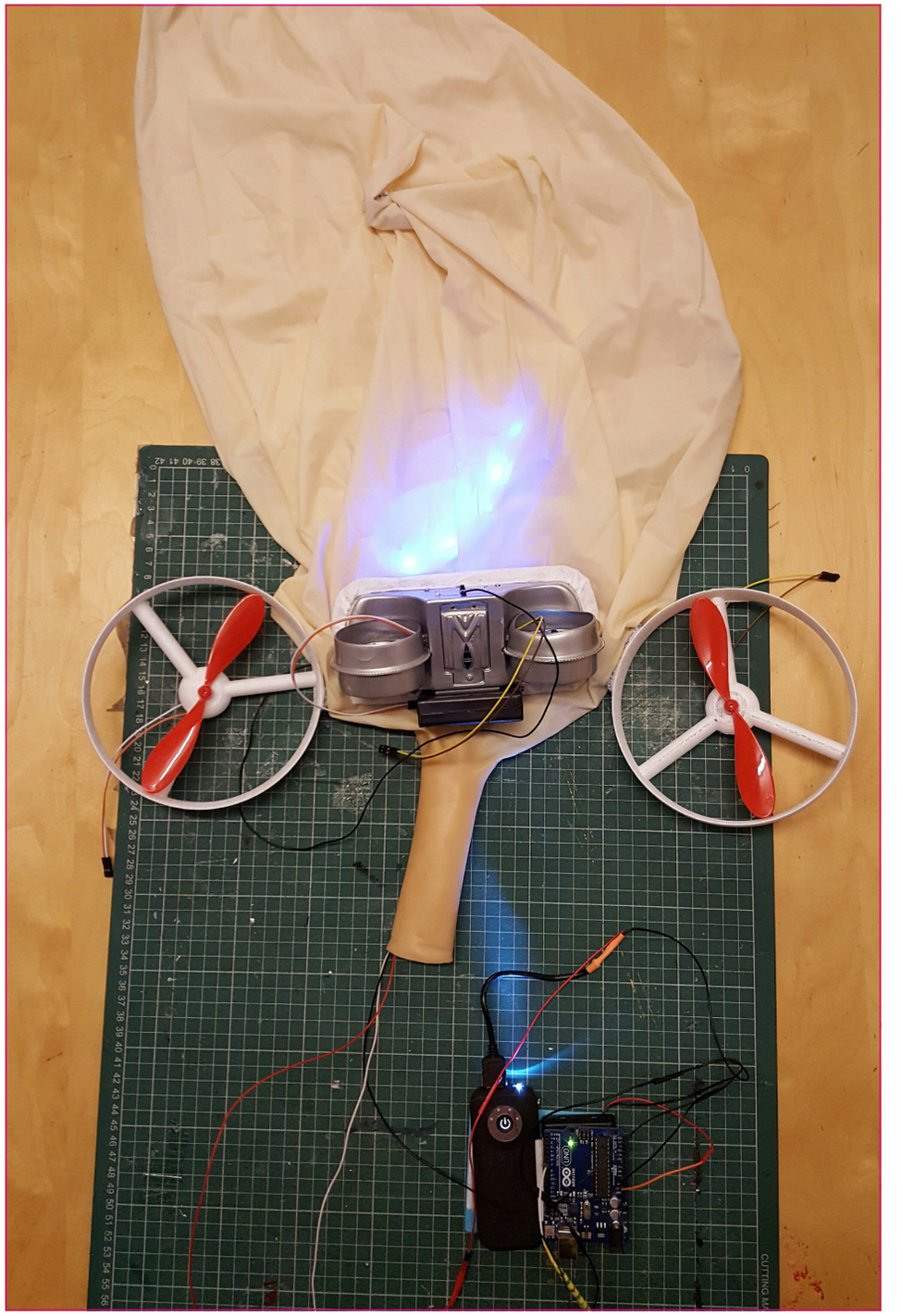
ROBOGAMES

Neil Winterburn

The **RoboGames** kit was designed to feature a giant floating robot called OLO and a set of buttons worn on players' backs. It was created to stimulate and support young people to explore different approaches to group movement, by playing robotic remixes of playground games in the BMX bowl and the skate park. The technical build for the project was over ambitious and on the day of the event our system was unfinished. As the dance troupes arrived by the coach load, I realised we had have to fall back on my experience facilitating games as a youth worker and play the **RoboGames** without the system we had spent the past month building. We didn't want to admit it to ourselves at the time but were user testing a prototype digital art kit, with 50 odd young people, in a huge noisy skate park. It was a scary experience, but it need not have been. This threw up a host of challenges that I was not quite ready for at the time. This was partly because of the noisy complexity of the venue and the number of participants, but mostly because I had blind faith that our system would work, so I had not planned or prepared to carry out a testing session.

Moteino micro controllers were embedded within OLO and the buttons to transmit information to a *Game Manager* Moteino about the state of the game via radio. OLO's body is a weather balloon with a maximum diameter of two meters when filled with helium, a rare earth gas used as a cooling medium for MRI scanners and the Large Hadron Collider. Helium is a finite resource, so the more it is used for activities like this, the more expensive it becomes. A discussion about the ethics of this was had at the Critical Kits Symposium, and other methods of floatation were proposed. Attached to the base of the weather balloon are two 3D printed propellers which are controlled by a remote control module hacked from a blimp toy.

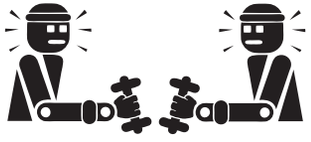
A Neopixel strip, a line of addressable RGB LED lights, connected to OLO's Moteino, is attached to its base. At a later stage we suspended the Neopixels inside the balloon by an arrangement of small high powered magnets, but at **GYM JAMS** they were taped on. The colour and intensity of the LEDs in the Neopixel strip responded to information coming from the buttons. There are two sets of four back buttons, four red, four blue. They were made by inserting classic arcade buttons into the top of dome shaped sports markers, housed onto a plywood base. During game time, players interact by tagging each other's back buttons, this information is transmitted via radio to OLO, which changed its colour. For example at the start of play the LED strip inside OLO is 50% red



and 50% blue. During play, teams compete to control the colour of OLO. A player from the red team tags a player from the blue team, OLO flashes a bright red for a couple of seconds and then OLO is 60% red and 40% blue. The three RoboGame activities, which as described earlier, on the day itself the technology didn't work, so we simplified the rules and found a way of playing the games without the tech, using a GoPro mounted on the weather balloon to document what happened. The descriptions should give you an idea of the vision for the games.

Fill The Board was a game of tag, in teams, in a BMX bowl, overseen by a giant floating robot. There are two teams, red and blue, with 4 players per team. Each player wears a button on their back. Teams compete to press the other team's buttons as many times as they can in 3 minutes. The team that tags the most opposition players wins.

Robot Rugby[39] was a slow motion version of rugby, in which players move as if they are on a grid. Like conventional rugby, points are scored by manoeuvring the ball into the opposition team's zone. The game is played to a soundtrack with a very slow beat. Players only move on the beat, taking one short step forwards or backwards, or turning 90° left or right. Players steal possession by tagging the player with the ball. When possession changes, the ball is given to the nearest player of the team that gained possession and everyone steps 5 yards away from the ball.



Pixel Workout was a mass group movement activity, in which dancers are given simple instructions over the PA system which told them how to move e.g. Walk in a straight line and turn right 90° if you bump into a wall or another dancer. Dancers were given 3 different coloured hats and given different movement instructions depending on their hat's colour.

39 The game was invented by Re-Dock and children at Allanson Street primary school in St. Helens in 2007.

I had two motivations for developing **RoboGames**, which came together in quite an opportunistic way in response to the commission. We were asked to create an artwork that explored new ways to engage leisure centre visitors and I had an idea on the back burner to create giant autonomous floating robots. As the idea developed through collaboration with the rest of the team, we realised that the spectacle of giant floating robots wasn't participatory enough, so came up with the idea of using a floating robot to stimulate movement based activities with community dance groups.

Decentralised systems are systems in which complex behaviours emerges from simple interactions between many agents. A good example of this is the flocking of birds and the common misconception that flocking movement is organised and coordinated by a leader bird, when in fact each bird simple follows three simple rules defined by *Craig Reynolds* for his Boids[40] simulation. Reynolds's rules are Separation: steer to avoid crowding local flockmates; Alignment: steer towards the average heading of local flockmates; Cohesion: steer to move toward the average position of local flockmates. In his book, *Termites,*

40 Reynolds, C. W. (1987). Flocks, herds and schools: A distributed behavioral model. ACM SIGGRAPH Computer Graphics, 21(4), 25–34. http://doi.org/10.1145/37402.37406

Turtles and Traffic Jams Mitchel Resnick[41] describes decentralisation as a completely different way of thinking about the world. Understanding decentralised systems runs counter to our intuition that things are the way they are because we assume that someone or something in control is organising things from a central point.

Decentralised simulations have been used to understand how ecologies, politics and stock markets work for decades, but now we are on the verge of huge social changes as AI's and cryptocurrencies built on decentralised systems such as blockchain are used to coordinate our society. Whole STEM education programs have been developed to support children to construct decentralised systems within a techno-solutionist educational framework. A great example of this are the *Participatory Simulations* developed by Vanessa Collela,[42] for which children take on the role of agents, following simple behavioural scripts to enact the role of atoms or animals and observing what happens to their behaviour as a group.

In creating the **RoboGames**, I wanted to explore a how an approach similar to Collela's could be used to deconstruct everyday cultural forms like playground games, in a space that was meaningful to our participants. I wanted to see if restricting their movements to simple behavioural scripts would trigger the young people to move through the irregular geometric space of the skate park in new and interesting ways. Luckily for me, the young people that took part in **GYM JAMS** were generous enough to indulge me in that.

41 Resnick, M. (1997). Turtles, Termites, and Traffic Jams: Explorations in Massively Parallel Microworlds. Book. MIT Press. Retrieved from http://www.amazon.ca/exec/obidos/redirect?tag=citeulike09-20&path=ASIN/0262680939

42 Colella, V. (2009). Participatory Simulations: Building Collaborative Understanding Through Immersive Dynamic Modeling. The Journal of the Learning Sciences, 9(4), 471–500. http://doi.org/10.1207/S15327809JLS0904

GYM JAMS

Neil Winterburn

In *Be Very Afraid: Cyborg Athletes, Transhuman Ideals & Posthumanity*, Andy Miah presents elite sport as the cutting edge of hyper individualised posthumanism. Athletics is the arena in which our heroes are stretching the boundaries of what it is to be human, extending their performance with drugs, prosthetics or biotech:

> *Posthumanity is already present in elite sporting practices. In this context, where sport is largely recognised as a moral pursuit, championing human values, athletes are identifiable as already posthuman in their biological constitution and in the manner of approaching technology as an enhancing resource.*[43]

GYM JAMS was a high tempo clash of art and sport at Howe Bridge Leisure Centre on September 24th 2016. Re-Dock are interested in how sports venues like leisure centres can be used as spaces to experiment with and co-create new kinds of communal experiences. We're excited less by individual excellence, than by sports and fitness activities as commonly understood rule based social systems, ripe to be unpicked, remixed and played around with.

We're not the first group of artists to reinvent games as a vision for future society. One of the ways that Bill Harpe and others at the Black-E, Liverpool invented what we came to know as community art, was through the *upside downing*[44] of traditional party games. A signature game in their repertoire was a version of musical chairs in which floor tiles replaced chairs and for which players are challenged to work together to help each other fit on ever fewer numbers of tiles, instead of competing to eject each other. Whereas the Black-E's motivation to remix games was to introduce children to utopian visions for future societies, ours was to introduce the idea that game, social and technological systems are things that we can tweak and remix, that they are ours to change.

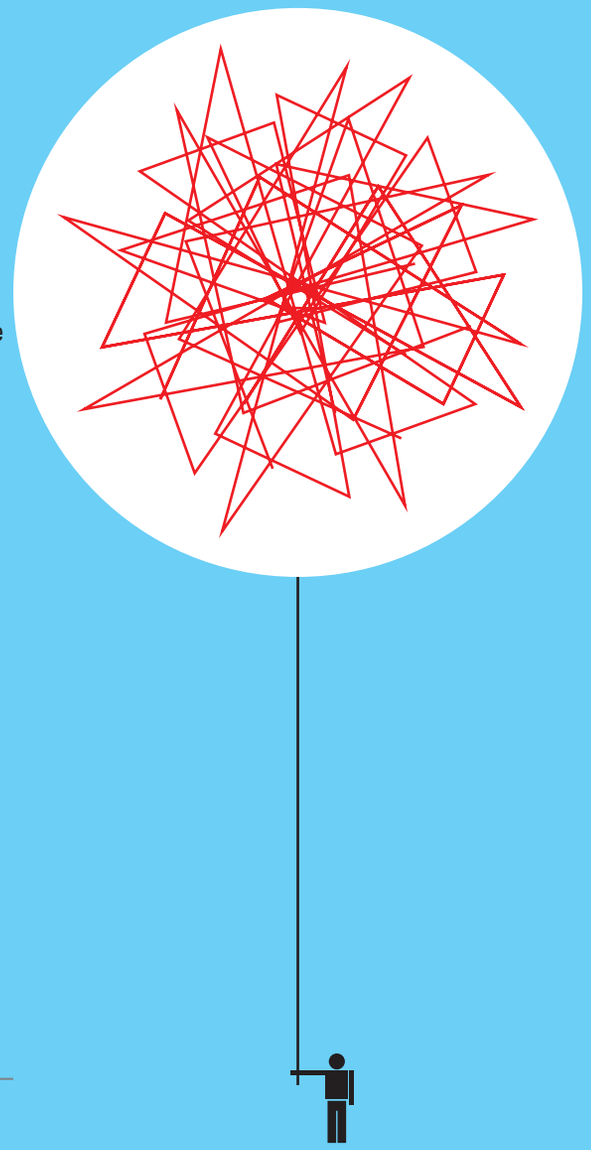
Our focus with **GYM JAMS** wasn't just the reinvention of new rules for games, but exploring different kinds of art and cultural interventions in the leisure centre, a space normally reserved for sport and fitness.

43 Miah, A. (2003). Be Very Afraid: Cyborg Athletes, Transhuman Ideals, and Posthumanity. Journal of Evolution and Technology, 13(2), http://www.jetpress.org/volume13/miah.html.

44 Bishop, C. (2012). Artificial Hells. October-Cambridge Massachusetts-, 390. https://doi.org/10.1017/CBO9781107415324.004

The broader aim was to provide a mixing ground to test experimental cultural and technological activities that explored the potential of Howe Bridge, beyond its use as a workout space. The day weaved the testing of a prototype artwork in amongst skating boarding lessons, a mass dance showcase by local groups from Ashton, Golbourne, and Hagfold with special choreography from *Dance Manchester*[45]. Drumming & sound beam workshop from *More than Words,*[46] Wigan. A pop-up cinema in the dance studio screening the 1982 film *Breakin'*.

On the day, the technical aspect of the RoboGames didn't work and although this was really frustrating at the time, it gives us a chance to unpack and talk openly about what went well and what didn't work. The unpacking of a project that in some ways failed feels important, both in relation to the theme of kits and the wider question of how we transmit this kind of practice. If we only ever share exemplary projects and *best practice* then how are we, collectively, going to move on?



GYM JAMS was funded by Inspiring Healthy Lifestyles and Arts Council Grants for the Arts.

45 http://www.digm.org/

46 http://www.morethanwordsadvocacy.co.uk/

JAMMING THE GYM

Hwa Young Jung

The seed of what would eventually become **GYM JAMS** was planted in March 2016, with funding made available through *Inspiring Healthy Lifestyles* (formerly Wigan Leisure and Culture Trust), a social enterprise delivering services to Wigan Council. They had some money earmarked with the lofty aims of bringing art to Wigan, a borough of Greater Manchester with a predominantly sports-driven culture. I was not sure if the rebranding activity of the organisation was intended to bring about a behavioural change, or emphasis campaigning above open cultural programmes. Either way I found a supporter in Helen Seddon at IHL who understood the benefits of arts-based activities and who became an enthusiastic supporter of applying arts-informed activities to the work undertaken by her division within the council, and whose enthusiasm and championing became critical to the programme's development.

With a higher-than-national-average level of deprivation, manifest in a 10-year lower life expectancy than the rest of the country, the newly refurbished Howe Bridge Leisure Centre faced pressure from an austerity-squeezed council to improve people's health and generate revenue. Offering an indoor skate park, BMX bowl and climbing wall, as well as the usual high-spec gym equipment, spin room and dance studios, its location between Atherton and Leigh covered a catchment area with even harsher life outcome demographics than the rest of the borough. After a consultation programme with local youth skaters to design and implement the skate park, Helen could see the value and increased engagement that outward-facing arts activities could achieve, particularly with regards to providing return-on-investment for an already challenged budget. She approached Re-Dock with an open brief aimed at establishing similar levels of engagement, and realising increased ownership around the new IHL gym at Howe Bridge.

The central question behind the brief from Helen was *how do you bring culture to a community with little to no arts engagement?* Re-Dock's approach – long-term relationship building – conceals the complexity and hard work involved in realising it. Many arts and engagement programmes have taken a form focussed around individual artists and residencies, partly because the nature of funding and advertising attracts practitioners decoupled from the location where the activity takes place, and partly because known artists have an established programme and focus around their activities. Whilst well-intentioned, these artist-centred projects can often seem to involve

parachuting in an *outsider* to deliver a short set of workshops or activities. After the programme ends, these often leave no legacy or on-the-ground impact with the very people they were intended to serve, failing to grow into the fabric of the locality's life. At the worst end of the spectrum, they risk creating hostility and suspicion of the arts, with trust and participation abandoned once the funding runs out and the artist moves on, taking the processes and framework of the activity with them.

We took a collaborative approach, which incurs a tougher start-up programme, but aims to reconfigure relationships and strengthen community fabrics as a core part of the programme development. This involves an extensive programme of discovery and engagement, mapping out the range of local people and groups – not only traditional *stakeholders* but those who may be overlooked in traditional engagement programmes – and undertaking the legwork necessary to understand their needs and ways they could benefit from both a programme and interacting with other communities, taking a lead from their everyday activities and preferred environments.

Six months is not enough time to really embed ourselves in the community, but funded projects have deadlines and delivery dates. However, to overcome the risk of being another flown-in programme, we put in place a steering group, composed of people grounded in the local community – members of IHL (from the education, engagement and well-being departments), and managers from local housing associations and the leisure centre. This ensured the programme would be informed by local needs and concerns, and develop trust and ownership for these nominated stakeholders and their communities; we set a five-month time frame to explore and identify needs within this

phase of the project. Our aim was to centre the activities around grass roots needs, rather than deliver a top-down programme. To achieve this, we had to enthuse and excite this group sufficiently to want to promote it to their own networks, and to make them see it from their own perspectives and distinct needs; shared activities, non-traditional leisure, or just a different reason to visit a leisure centre that may challenge their preconceptions of what happens there. We listened to what these groups would tell us – both explicitly and implicitly – while explaining the broad objectives of the project, without being prescriptive with visuals or pre-defined activities. Helen was a critical partner in this activity, providing the links and insights into the make-up of local communities, and identifying partners across Atherton and Leigh in Wigan.

Helen identified the potential reticence many stakeholders may have had working with an organisation like Re-Dock, who may associate an arts organisation with more traditional arts and crafts-driven engagement projects; she became critical to the successful delivery of the project as she understood the fluid and open nature of our delivery, and that negotiation and dialogue was as important a part of the programme as the final delivery of activities. Her understanding of our aims helped surmount the potential nervousness partners could have in working with new and non-prescriptive programming for the arts, and helped bring people on board as engaged partners, rather than participants following a path of least resistance.

Ultimately, it is the people that constitute a partnership, not their organisational entities. This may seem obvious at first glance, but when managing the needs of a wide range of groups, it was a message we had to keep reminding ourselves. Over the six months of activity, we found ourselves in a spectrum of situations to realise this ambition. To get to know the stakeholders, I had several coffee mornings in Atherton and Leigh (two areas keen to distinguish themselves from one another) and ran a *Creative Practitioner Development*[47] workshop with Neil involving helium balloons in Howe Bridge. This brought into sharp focus the different agendas the various stakeholders were concentrating on – ranging from physical and mental well-being, education and healthy eating.

To work with the community, we ran a Doodlebot workshop during *National Play Day*[48] in Wigan a month prior to **GYM JAMS** to get to know local groups with similar interests. The line up of activities during the actual day were a mixture of local talent and Re-Dock led projects. We wanted the people living in the area to perform; bring friends and family to create an event wider than we could on our own. **GYM JAMS** kicked off with free

47 http://www.jobs.ac.uk/careers-advice/resources/ebooks-and-toolkits/interactive-cpd-toolkit/
48 http://www.wiganeventsguide.com/event/national-play-day-3/

skate boarding lessons arranged by Howe Bridge, specifically targeting girls. Two mass dance performances performing in the unusual spaces of the leisure centre were made up of local groups. Two mass dance performances performed by local groups (Ashton, Golbourne, Hagfold) in the unusual spaces of the skate park and a soft play area, working together for the first time. We connected them with professional choreographer Malachi Simmons from *Dance Manchester*. Seasoned dancers *Northern Starr*[49] performed in the skate park, this connection brought about by Emma Thompson, a member of the troupe and employee at Howe Bridge. We invited *More Than Words*, a Wigan based special needs advocacy group, to run drumming and sound beam workshops. We brought a cohort of artists from Wigan, Liverpool and Manchester to take part in the creative technologist activities, and sought out employees at Howe Bridge join us, as referees and furry mascots – all to bring together people to realise our overarching aim of unifying arts, culture and sports in an otherwise unassuming leisure centre in Wigan.

I don't know how to measure the outcomes of this project. As noted by several people in this book, most of the tech fell over on the day, although most of the people didn't realise that happened. I find it difficult to quantify engagement levels with community or stakeholders. So I'll have to go on what Simon Byrom, the manager of Howe Bridge, said. He had gone from being sceptical of the process to realising, at the end of the days' activities, that it had broken down traditional barriers and engaged people who *[thought leisure centres were full of] all super-fit people*; he was keen to do another one. This was our measure of success; we knew that Simon could see the broader effect it had beyond the day of activities into reaching new people and changing how they thought about leisure centres, and opened them up to taking advantage of them. Later on **GYM JAMS** was a finalist in the Sporta Awards[50] 2017 *Community Impact through combined Culture and Leisure* category. Even though it didn't win, that recognition will make it easier to work with IHL and Wigan again. This is all part of the long-term relationship building process.

Personally, I learned a lot by running **GYM JAMS**, and thought about best methods of sharing my experiences; could it be *kitified* as a set of instructions? Would it be enough to document the process and events? Would this essay be the *kit*? I haven't identified any approaches that don't sound like easy-answer self-help book titles, so my answer is probably, *I'm not sure*.

Hwa Young was the head coach

49 http://www.northernstarr.co.uk/
50 http://sporta.org/sporta-awards

GYM JAMS POST MATCH SUMMARY

Stef Bradley

A version of this review was originally published on Re-Dock.org in October 2016

Challenging notions of art on a pedestal, this project was designed to engage visitors in artistic experiences outside of traditional arts spaces, raising the question of how a leisure centre could become a place to experience art and exploring how technology can be used to bring together people, creativity and sport – essentially an experiment in what mayhem ensues when the trusting management of a leisure centre allow a group of technologists to take over.

Not normally used to exercising much more than my big mouth, I'd not stepped foot in a leisure centre since school trips for an obligatory 10 minute game of squash and the promise of a McDonald's drive-through reward on the minibus ride home. It seems that these sports centres have changed a whole lot in the last decade though. The Disneyland of leisure centres, Howe Bridge is a treasure trove of fun with climbing walls, a skatepark, BMX bowl, an intimidating soft play assault course, retro arcade games and even their own irresistible, cuddly mascot bear! There is definitely an argument that the designers were fans of Fun House and it would be hard for even the most puny of weaklings to resist flexing their triceps here.

Undoubtedly, the highlight of the day was **RoboGames**: a competitive tournament of robot-themed activities, which even featured a game of electronic tag in the centre's BMX bowl. Here, familiar sports day tropes and playground games were distorted into unfamiliar territory, as participants suited up in large coloured buttons, repurposed from school-issued PE cones, which could then wirelessly register when a participant was tagged by a member of the opposing team. All this was designed to sync up with an animated scoreboard, a stunning visual detail which sadly didn't make it beyond the makeshift workshop floor we'd staked out behind the reception desk – an occupational hazard, I'm told, when working with an unpredictable medium like digital technology. However, this did not detract from the overall fun of the event as participants still found new and creative ways to make use of their workout space, under the watch of floating robot OLO.

The attention to detail in the planning was impressive, from **RoboGames** distinctive pixel logos, to the theme music composed by Alex Germains, as well as the energetic sports commentary provided by Dave Mee and Dan Farrimond, dressed in their Match of the Day finest. Not to mention Re-Dock roping-in expert pals from across Liverpool's digital community – from DoES Liverpool to LJMU's Graphic Arts department. Like any great team sport, this was truly a group effort.

When asked about the creation of their art and their focus on encouraging audience collaboration, I've once heard these artists remark that their work could be described as *just fancy framing*. This is a modest comment, but one that reflects Re-Dock's belief in the co-creation of work with communities, where – rather than producing artworks in isolation – they act as facilitators (or framers) of artistic experiences, inviting participants to engage as collaborators and co-creators. The kind of art that Re-Dock produce occurs through participation, so technology is not merely functional but audiences are encouraged to interact imaginatively and misuse things.

Though the rise of exercise apps such as Fitbits and the increasing use of digital media within competitive sport, many gym users are already comfortable with technical interfaces, so technology is not necessarily out of place within this context. However Re-Dock have attempted to shift the axis of expectation when visiting a space like a leisure centre. Using innovative digital inventions and encouraging community participation, they open up new ways for visitors to approach exercise and make use of this workout space. A far cry from the vapid squash courts of my youth, the result is a day of creative sports that not even the most seasoned couch potato could resist.

Stef was the sports reporter at GYM JAMS

DIFFICULTY WITH LEISURE FACILITIES

Nathan Jones

Howe Bridge is an immense leisure facility in the borough of Wigan, in the North West of England. The term *facility* makes me think of space stations. And indeed as we walk up the path from the car port it seems like the entire complex is hovering over the broken soil, or has only recently embedded itself after falling from a 1970s cinema depiction of the future. What is this quality of council infrastructure to appear as though it is recently arrived, hugely dated and uncannily alien all at once? The language of them now not only evoking some imagined space-age, but also demanding a form of engaged usage once imagined by socialist-utopian sci-fi: *Hubs* we will revolve around and propagate from; a *Studio*, consisting of rows of exercise bikes, like a scriptorium where patrons produce knowledge in the pure form of physical exertion (a slogan on the wall reads *get what you wish for, get what you work for* tangling the cognitive and physical demands of this new self-imposed labour with something approaching big brother style assurance); *3G Pitches* which presumably apply additional gravitation to produce the feeling of rushing through space while running after a ball.

We are indeed, spun out, continually, by leisure facilities, job centres, libraries, perhaps most particularly hospitals. Anywhere the corporate beast, its eggs laid in the civic body, finds a public apparatus in which to hatch. These contradictory, suspicious, retro-pian tropes creep out, coating every surface – an uncanny, flickering signifier covering the socialist dream that's crumbling behind, melting our inherent resistance to having our collective inheritance sold down the river.

The Howe Bridge Facility arches over this figurative river. It one of those sites in which the holographic quality of image and language finds its greatest density, and so also where its inherent glitches tear at us with the greatest insistence. In the Hub, with the Salad Bar to one side and an invocation to *take our membership to greater heights* on the other, we are pierced by loud pop music wrenching itself to shards through ceiling mounted speakers. There are no shadows anywhere. On the walls images of sweaty bodies literally shattered into vectors, and on screens hyper-speed footage of a man doing bicep curls.

But one of the local staff is studying this screen with a wrinkled brow. And there's something, something else about this video. The man completes thirty curls in fifteen seconds and the video cuts to him on a leg-working mechanism, like a metronome, sticking to the same rapid, but not frenetic pace. Something kind of unattractive, mechanic about it. This video is the first artwork I encounter at Howe Bridge. Its survival, as weird, among the blizzard of weird that is Howe Bridge, is exemplary of the subtle shifts of register that Re-Dock bring to their **GYM JAMS** event.

Among the questions I ask myself while passing through the corridors, lingering on balconies and occasionally refusing to take part in the range of activities, is: is digital art, and in particular, this socially engaged form of digital art, a way of dealing with an abstract menace? I'm thinking most particularly of menace as a threat, a threat that our understanding of what is acceptable, normal, is beyond our control. We experience menace in a digital form so frequently, that it can be difficult to disentangle it from digitality per-se. Perhaps the shifts that engineer encounters with what is really at hand – a sped up video adding no particular attractiveness to the act of bicep curling, but rather revealing it in its manifest absurdity – allow for us to discern somehow what it is that's disturbing about the weird, alienating systems, slogans and technics of our time?

Because Re-Dock's work is nothing if not technical and systematic. They arrange tables at which children must register to play games where you wear a giant red button on your back. They stop you from skating on the skate park, and ask that you play like robots to a

metronomic blip. Posters advertise a *High Octane Clash* between sport and culture, but I think actually, there is something in the hesitant, withheld nature of the Re-Dock action in Howe Bridge that allows for it to perform a disarming, enabling of *normal life*, that is so alien to the facility at large.

There is a giant white helium balloon that leans up against the wall, floating occasionally around the edge of the skate park, with two sciency looking blokes looking up at it. A group of children standing at the bottom of a ramp look at them steadily, perhaps feeling somehow naked without helmets and kneepads. Two announcers exhort people to take part, *Do Not Be Afraid*, they shout, of *Robot Rugby*. The artists themselves wear silver hats. Nervous, vulnerable in a way that only someone unprotected by procedure, but committed to it, can be.

Meantime over there, children dangle from self retracting wires, climbing up cartoon facades of jungle or house, before jumping and falling in slow motion to the ground. One adult and five automatic ropes. A safety puppet master, or organ grinder on some brilliant, terrifying visual tune. The sheer unbelievable jouissance of this activity, where one can fall without landing, and jump between platforms raised 20 foot high in the air, only now, placed beside an art intervention's regulatory impulse, seems strange – like, somehow we have gone physically, as well as politically too far into freedom. Leisure as fissure.

In another room a dance begins, children have learned a site specific dance routine for the soft play area, led by one of the Re-Dock creative partners. Their gyrations, genuflections and flaying limbs produce a flocking similarity, rather than strictly adhering to the music's throb; the netting, posts and slopes of the soft play don't quite shape the pre-composed moves. But still, there is something revealed in this encounter with the materials of the facility – as though the children are pointing at the rhythms of the music, the absurdly loud, round bright, massive climbing apparatus, sweeping their hands over it and making it tangible again. Pop music particularly is ever present, and so an organised dance in a public area like this draws attention to our implicit entanglements with it by accentuating and heightening them as movement.

This interplay of the jouissant, unrestrained, activity and media of contemporary sport environments (the giant-sized sculptural forms of the soft play, the danger-free engagement with the high octane on the climbing walls) with the always partial, hesitantly controlling function of Re-Dock's interventions is where the conceptual energy of this day is generated. I become fascinated by the opportunities for apparent limitlessness, and the way that they're set-off by the implicit, willed insufficiency of systems-based art. As well as saying something about leisure centres, which I suppose I have laboured enough, it seems to say something about art itself, too – in particular the art of the *digital sublime*, the freedoms and fluidities offered by datafied art, the explosion of what is visualizable, the intricacies, scales, volumes, hyper-real finishes allowed by

affordable digital technology, which is itself tempered here, by its interaction with the whims and unpredictabilities of bodies, personalities and materials.

Later, these children and their parents are invited to a film screening in a dance studio upstairs. The film is *Breakin'*, a 1980's classic involving dance battles on street corners and basketball courts of LA, and a romantic storyline involving a Jazz dancer who adopts a hybrid street-jazz style. The film has overtly gay characters, and a significant number of the cast are black. This is meaningless, of course. It isn't a statement of queer culture, racial subversion of the heteronormative white audience. But as with all of the interventions in the space, it generates its interest and effect from a kind of discomfort, misplacement. The room feels a lot like a childrens' birthday party. The kids mostly don't listen or watch. The adults talk all the way through, many people leave before the end. But this film wouldn't be played at a childrens' birthday party, especially not in 2016. And people wouldn't leave before the end of *Frozen*. There is something playful, but not exuberant about the placement of the film in this context – sure its is appropriate, for a dance studio – but it's also too sexual, grown up, *too normal* to demand attention.

In saturated environments, nuanced culture is the anti-noise. What were first conceived as experiential and affective cultural materials are deployed now to remedy a perceived mass-malaise – we don't care enough about THIS, or THAT, whether a product, a local service, or a way of life. We cannot be careful, because our care is continually being depleted by this environment. In return, Re-Dock's form of socially engaged critical art practice arrives in an almost unrecognisable, supplicant form. It relies on the generosity,

willingness of people to go along with it, and that is what it receives. The muted, kind of warmly baffled response of the families that make up the audience feels like something unique, peculiar and almost nostalgic – but with a timely potential, as though preparing the ground for a new kind of techno-cultural relation.

Nathan was the broadsheet sports reporter

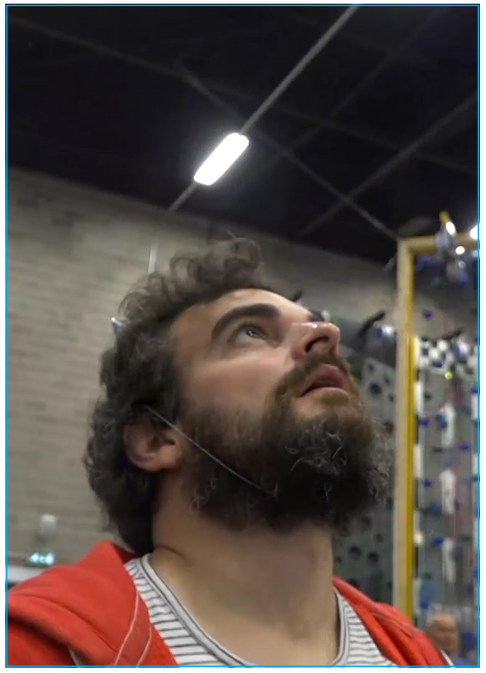
UNKNOWN UNKNOWNS. OR HOW I LEARNED TO STOP WORRYING AND LOVE THE BALLOON!!

Chris Jackson and Jonathan Spencer

Prologue

The autonomous flying machine roams overhead. Lights flash and strobe, a voice laden with electronic distortion booms across the playzone. The crowds of excited children respond, the orb above, at once documenting and instructing – a perfect convergence of art, science and communal exercise.

This was the vision we had all signed up for, and the funding had just come through. As graphic designers we were offered the opportunity to move beyond a rigid brief into something more fluid, and we jumped at the chance. Our initial impression of the project was that of ambition. As it turned out, this was both its strength and its weakness. I don't think any of us fully appreciated the scale of what we were proposing and the many technical and conceptual challenges that would have to be overcome to realise the project as intended. What would follow was an incredibly useful journey of discovery and collaboration.



Constructing the Canvas

One of our main goals in collaborating on the project was to experience, and learn from, the processes involved in running a successful arts practice. Re-Dock have an impressive back catalogue of projects and their history of engaging participatory events involving arts and technology is an area that overlaps with our own interests.

Initially the scope of our involvement was to help develop the personality of OLO through reactive lighting patterns, colours and motion that would respond to and visualise the voice audio. On its own this would be an interesting challenge. Working within restrictions often produces unexpected responses and

forces a creative approach. With our *page* being a strip of lights viewed from the ground below we would have to leverage our skills as visual communicators to create a distinct and recognisable personality for OLO.

We discussed possible ways of incorporating the lighting and decided that, rather than have the lighting hanging below OLO, where the mechanics would be visible, it would be more convincing to have the lights inside, where the balloon could diffuse the light and lend more coherence to the experience. Simple then. We would just suspend the lights inside the balloon. This was the point where things started to get a bit complicated, each solution was accompanied by two more challenges: a branching cascade of 'todo's. How does one suspend electronic things inside a balloon? How do you ensure it won't pop, dispensing a cornucopia of propellers, cameras and battery packs onto the participants below? How do you create something other than a snake of LEDs piled at the bottom of the balloon. How do you get power inside the balloon without the helium getting out? The more we progressed the more we realised how little we knew and we hadn't even started trying to get it flying yet!

As part of the project team, we had The Engineer (Patrick Fenner). This was one of the highlights of the project. To be able to collaborate with someone who came at a problem from a completely different angle and had a different, but complementary, set of skills was an incredibly rewarding experience. We noticed Patrick had some interesting technology from previous projects. Low resolution pixel art aesthetic screens with wireless communication? We had to have them! Wireless buttons that communicate with a central game unit which can then change the pixel screens? Put them in the trolley! It may have been a Wednesday but it felt like Black Friday!

With the deadline rapidly approaching, we set about it. Games were paper prototyped, harnesses and backpacks constructed and helium purchased. We had all the bits, the animations for the screens were ready, the game logic written, the propeller cowlings 3D

printed and some suitably futuristic music composed. Sure, we hadn't had a chance to actually test any of the parts together, but that, surely, would be a mere formality.

The Big Day

The thing about a canister of helium is that it's much heavier than you expect from something less dense than air. We hadn't had a chance to inflate the balloon with anything other than air and, although we had some calculations, we really had no conception of how the lift produced by a given volume of the gas would feel. We hadn't had time to weigh all the balloon's attachments and ballast accordingly. Later investigation revealed that this aeronautical engineering business is a precise and complex science - who knew?!

On reflection, with some time between us and the event, what we were trying to achieve in a range of fields new to us and in short order sounds vaguely preposterous. Apart from being graphic designers, we are also lecturers. We'd never delivered a workshop that had a strong technical component without running through it beforehand but here we were in a massive sports hall, with three hours to go before local community arrived, attempting to stitch this technological Frankenstein's monster together…

We didn't, in the end, manage to completely tie it all together. The balloon was held in place with some chord and walked around the arena, the lights worked somewhat intermittently and the control systems were not as effective at manoeuvring as we'd hoped. The buttons never communicated with the games module and the screens were left stacked in reception. And the thing of it is… it didn't matter that everything didn't come together as we'd have liked. The games were robust enough to work without the direction of OLO and much fun was had. The buttons could still be pressed and with some human assistance a winner declared, and the children loved the sight of a giant balloon being walked around the hall by a slightly bedraggled man.

Rising from the Ashes (use the helium)

In the few weeks after **GYM JAMS** we worked with Neil refining OLO. We devised a system for fixing the LED strips internally and making the power and drive systems detachable using magnets and felt. A ballast system was added and OLO made its maiden untethered flight at Liverpool Central Library.[51]

Perhaps the aims were too ambitious but the legacy of this project will last. Multiple new avenues of technological exploration and participation for future projects have been opened up and collaborative relationships forged.

To misquote Paul Weller, *The more I see, the more I know. The more I know, the less I understand.* We come out of this project understanding less than when we began and, by this measure, it should be considered nothing less than a total success.

Chris and Jon were OLO's handlers.

51 https://www.youtube.com/watch?v=VK9c5UYCcgw

SCREENING FILMS

Sam Meech

I'm sitting on my sofa at home, watching a film I have downloaded via a torrent site, and attempting to write at the same time. It's not the best way to watch a film or to write an article, but it feels an appropriate way to write about how we watch film.

The film in question is a documentary about a country singer called Townes Van Zandt. It's a good film (as I remember) and it introduced me to a great artist. I last watched this film almost 10 years ago in a small cinema in Berlin. The experience changed my life and my perception of what cinema actually is.

Berlin is special in lots of ways, but I think it is unusually blessed in respect of its cinema culture and its micro-screening spaces. Picking up the local culture listings magazine reveals an abundance of tiny independent cinemas beyond the multiplex. 50+ venues across the city, all showing different films on 1 or 2 screens. On my first visit I found 3 within spitting distance of my hotel. I opted for the Eiszeit, which turned out to be in a dark courtyard, up some winding stairs to a small flat behind an ice-cream shop. 49 red velvet seats in a small curtained room, to watch an obscure documentary about an obscure country singer. I'd never realised that cinema could be so small, so hidden – it was about as far away from the Odeon as you could get.

I wondered what it would be like if we could have something similar at home – a network of Indie Kinos in every town. I'd like people to say they'd been to a small cinema down the road. I'd like people to create their own. I've spent the 9 years since trying to recreate that experience in different ways – buildings cinema spaces and hosting film screenings in places where we wouldn't expect to find them – libraries, artists studios, in a former miners wash-house in the middle of a run down estate, empty shop spaces on the high streets of satellite towns, and now even a gym in Wigan.

Cinema is not just about the film, but about the context. The act of screening a film in public opens our perception of film as a communal experience. It also makes us think about the space we are in, and how that in turn shapes our understanding of the film. It is a radical act to take cinema out of the multiplex or living room and put it almost anywhere

else. Film societies have quietly been doing it for decades – demonstrating that film culture can be organised by the community for the community – affordable, democratic, engaging, diverse.

Every screening is an experiment in sustainability that requires thick skin: a best guess at how programming intuition, local knowledge, technical invention and promotional innovation could combine to encourage people to come and watch a film. Sometimes it works and other times it doesn't, but it's never actually a failure – just another experiment. I once hosted a screening of *The Breakfast Club* in a library in St Helens to

which no one came. Zero. Myself and the library team had been unintentionally woven into the narrative of the film – social outcasts serving weekend detention in an empty library.

Can a cinema audience be created by stealth? Making a cinema in a space not designed for cinema creates an interruption in our perception of the function of that space and how we can behave. **GYM JAMS** presented an opportunity to carve out a cinema experience within a most unusual space, but it also presented a tricky curatorial gauntlet. What is the perfect film for a leisure centre in Wigan?

Initially I thought it might be *Pumping Iron* – the 1977 documentary about the Mr Universe body-building competition, featuring a young Arnold Schwarzenegger perfecting his superhuman physique whilst psyching out the other competitors. It's perfect for a gym – a cinematic mirror for an environment in which people work out in front of their own reflection. But gym-goers are not necessarily perfect for the cinema – they are busy people, carving out time in a busy day to focus on themselves, their health – they haven't come to sit down for 90 minutes. The gym space is also a noisy environment, and in the case of Howe Bridge Leisure Centre, there's barely room to swing a kettlebell, never mind set down seats and install a screen.

So I explored the dance studio – a large open space with a sprung floor, disco lighting and mirrors along the wall. Maybe we could fit a screening in after yoga and before the Zumba starts. I had a good feeling about the space – it was more social, atmospheric, and had a stage built in. A dance studio is not a million miles away from a cinema. It's an immersive environment with a shared focus point at the front in the form of an instructor. A space in which the activities are coordinated and communal, and yet everyone enjoys their own personal experience. It's cinema for the body.

Thinking about the studio space and the audience – many of whom would be young people taking part in the dance presentations elsewhere in the day – helped to shape my approach to the film choice: *Breakin'* (AKA Breakdance the Movie) is a rarely screened but much loved 1982 cult dance film, light on story but rich in brilliant dance sequences. We also left lots of space for people to get up and dance during the screening. People who love dancing like to move, and young people in a large space obey the laws of physics, dispersing across the floor and bouncing off every surface. The audience became an extension of the story onscreen, creating their own huddles, imitating moves from the film, mutating into new moves. Engaging with a film doesn't just mean sitting down in the dark.

Sam was the projectionist at GYM JAMS

NOT SO INSTANT REPLAY

Tim Brunsden

As the majority of my arts practice involves working with video in some form, I've used **GYM JAMS** as a framework to examine some of the ethical questions I've come across regarding documentation in terms of practical approach, respect and realism.

As with any project, it's essential to try and get a grasp of what's happening. In this case, there were lots of different creative activities in Howe Bridge, a large clinical space that required some navigating between planned events. There was an impressive running schedule, with each activity designed to encourage the users of the sports centre to think about the space differently, linking sports to ideas around creativity and art.

On a basic level, it was essential to record a little bit of everything to try and reflect a fair representation of the day. Initial planning meetings revealed that to cover everything effectively, we would need additional camera support so I brought in Wes Story, someone who I had worked with previously who I knew would be good at filming on the fly. I asked Wes to focus on getting some general interviews with key people as well obtaining some vox pops from participants and some of the organisers, so that things could be put into perspective. Having two cameras of course also gives a broader scope to cover the larger community events and games.

Generally, if you are employed by, or working with a team putting on a event, there is a sense of control and shared aim about what the footage will be used for - evaluation, publicity, or to meet funding requirements. You also want to capture a sense of excitement and fun. When you're explaining to potential interviewees what their contribution is for, they understand, but there is also a kind of knowing expectation that comes with that. People (particularly young people) are quite media savvy, so if you want to grab a quick soundbite, it's hard to avoid the usual suspects of *it keeps us off the street*' or *I've not done this before*. I find people are usually happy to say something on camera if they've had a good experience, less so if they haven't. A lot of this is down to an individual approach, timing and luck.

I think there is always a question of balance between creating a record of what happened and manipulating this to make something appear better or worse than it actually was. I've had experience of people asking me to *photoshop* in things to make something look like it worked better that it did. So, there's a questions about what do you do if you're documenting an event that doesn't go to plan? I would say that striking a fair balance and trying to capture the spirit of what happened is something to aim for both in filming and the edit afterwards.

With **GYM JAMS**, there was a lot of tech experiments planned into the project, some of which, for one reason or another, didn't materialise as expected on the day. This of

course was quite stressful for the people managing that side of things and they didn't have the time to be interviewed about it, nor were they in any frame of mind to do the ideas behind what was being aimed to achieve justice. But there was a backup plan, and the games went ahead in more of a low-fi form which everyone enjoyed playing in the unusual skate park space. This became the focus of the documentation, just seeing how people were interacting with the space and each other. This was really apparent in the skate park, but also in the cinema space that had been installed in one of the dance rooms. An area had been allocated for the audience to *break dance* as part of the screening of *Breakin'*, and they did.

We tried a couple of other ways to try to capture the day with some limited success. We achieved some aerial footage of the games by attaching a camera to OLO, but it proved difficult to control and the battery life of the camera was limited and it was difficult to access and charge the battery.

We also used the wifi on one of the cameras to provide a live video feed to the commenters Dan Farrimond & Dave Mee whose view of parts of the skate park was limited due to their overall position. We were relying on the camera's wifi connection to an iPad, but it proved patchy and slow, making it difficult for them to comment live. We could have solved a lot of these problems had the building itself had wifi, but even then, it may have proved unreliable.

Overall, working in the sports centre space made me actively think differently about how to approach capturing the spirit of this unusual event. I could see also how this reflected in how people were behaving in a space that is usually reserved for bikes or skateboards and made them think differently about what can be done there. It challenged conceptions about art and sport and transformed the sports centre into a focus for shared creative activities with a community focus.

You can see Tim's video at vimeo.com/195502425

Tim was the cameraman at GYM JAMS

CONTRIBUTORS

Stef Bradley
Stef is a Liverpool based arts and cultural educator, comics & zine maker and b-movie enthusiast. Her zines, through observations, illustrations and poetry, typically explore and celebrate the extraordinary within the everyday – with the occasional horror reference thrown in too. She also puts on films with pals as part of Empty Spaces Cinema.

Rachel Clarke
Rachel is a visiting research fellow in the School of Design at Northumbria University, Newcastle upon Tyne and Assistant Editor of Interactions Magazine. Rachel's current research focuses on interdisciplinary approaches to understanding trust, reflective practice and designing alternative re-use and appropriation of low-fi DIY technologies within intercultural and marginalised communities.

Domestic Science – Glenn Boulter, Ross Dalziel, Hwa Young Jung
We explore playful notions of what domestic science in the 21st century could be – from internet security and identity, how to play minecraft, understand economic growth, historic water levels or monitor air quality for dangers of fracking. Our key approach is to not use science and technology as a subject for our practice but rather explore it as a culture.
http://domesticscience.org.uk

Gemma May Latham
Gemma is a participatory artist who embraces the use of accessible and non-intimidating materials in the development of innovative activities that combine both analogue and digital in the production of co-creative outcomes. She has been using Minecraft as a tool for public engagement.
http://www.gemmamaylatham.co.uk/

Chris Jackson and Jon Spencer
Chris and Jonathan are freelance graphic designers and Senior Lecturers on the Graphic Design & Illustration course at Liverpool John Moores University. They are interested in investigating and exploiting the confluence of publication design, print production, and digital technologies.
http://www. csjackson.co.uk
http://www. jonathanspencer.co.uk

Nathan Jones
Nathan Jones is a poet based in Liverpool, UK. He writes and collaborates frequently on intersections of poetry and new media. He is a PhD student at Royal Holloway University of London, and teaches art/writing at Liverpool School of Art and Design. He is co-founder of Torque Editions, a publisher exploring the frictions of mind, language and technology, and the new media performance agency Mercy.
http://alittlenathan.co.uk/

Laura Pullig
Laura is interested in high and low tech, e-textiles and analogue electronics. Her work explores how we can use technology to re-enchant people with nature. She uses sculpture and experimentation with simple analogue and digital electronic systems to visualises the interactions of living systems.
https://tactile-electronics.tumblr.com/

Re-Dock – Tim Brunsden, Hwa Young Jung, Sam Meech, Neil Winterburn
Re-Dock are an artist collective, established in 2008 and based in the Northwest of England, exploring participation, technology and everyday life. Our projects set up exchanges between ideas from the edges of art and culture, with knowledge and experience that people gain in other areas of life.
http://re-dock.org

Andrew Wilson
Andrew organises stuff. It almost always happens collaboratively – and often involves new software, or reusing that software in a new context. He's worked with physicists, biologists, hardware hackers, designers, writers, a bibliotherapist, architects, a Neighbourhood Police Team, a textile designer, publishers, Sustrans, The Guardian, Nesta, local councils, universities, and dozens of arts, community and voluntary groups.
http://www.studiofor.co

Christopher Wood
Christopher's research and practice centres on the ways in which sensory technologies construct space, texture and rhythm, both on an individual, phenomenological level and across networks. These concerns are rooted in the role microphones play in sound art and field recording, but have expanded to include other spatial technologies including GPS.
http://www.chriswood.art

SMALL
CINEMA
LIVERPOOL

Liverpool Small Cinema
Welcomes

Critical-Kits

Art, Technology & Distributed Participation

This Way!

RE-DOCK

LOTTERY FUNDED

Supported using public funding by
ARTS COUNCIL
ENGLAND

TAKE A PEEP
AT A SMALL CINEMA