

MAKING SPACES



SPRINGBOARD

#4 OBJECTS

Relimagining objects and what gets made in makerspaces.

SETTING THE CONTEXT

Makerspaces are informal multipurpose sites designed for collaborative hands-on learning and creative production. These sites offer participants the opportunity to share materials, skills, interests and ideas in order to address a range of technological, personal and political goals. Makerspaces are a relatively new phenomena and the sector has rapidly expanded in recent years.

Little research has been conducted with makerspaces to date and one of the aims of the *Making Spaces* project is to address the current gap in knowledge regarding the roles, practices and possibilities of these contemporary spaces.

Makerspaces occupy an interesting position with regard to the ongoing and entrenched exclusion of many communities from Science, Technology, Engineering and Mathematics (STEM), holding the potential to either reinforce or challenge these injustices. In particular, our project is interested in the practice of making (as a fundamental human activity) and its potential for transformative justice for marginalised communities. Whilst focusing on makerspace settings, we also want to consider the ways in which makerspaces might develop further to support equitable and sustainable living through making – not just in, but also beyond, their institutional spaces.

Despite the maker movement's early commitment to values of democracy and accessibility, in practice makerspace participants in the global north still predominantly reflect a traditional STEM demographic that is White, cis-male, middle class, and able-bodied [1]. As a result, these spaces tend to champion knowledge, values and ideas that reflect the histories and interests of privileged communities. Barriers to access and retention are found in these spaces just as they are in the wider science, engineering and technology sectors.

Yet, makerspaces have the potential to build communities, to support both individual and collective agency, and to shape sustainable and equitable futures. Equally, they can help tackle the under-representation of marginalised groups in engineering, science and technology. They have the capacity to embrace and champion the expertise and interests of those who have historically been excluded and ignored by STEM and have the potential to re-orientate making – and ultimately the technologies made – towards more equitable ends [2].

Making Spaces is a collaborative research and development project being conducted with young people, practitioners and researchers. The project seeks to identify transformative practice and help support the sector to adopt more equitable and inclusive practice.

There are four publications in this short series:

SPRINGBOARD #1: INTRO

Relimagining makerspaces to support equity and social justice: introduction to the springboard series.

SPRINGBOARD #2: VALUES

Relimagining the values and purpose of makerspaces.

SPRINGBOARD #3: SPACES

Relimagining space and where making happens in makerspaces.

SPRINGBOARD #4: OBJECTS

Relimagining objects and what gets made in makerspaces.

Each *Springboard* summarises evidence and ideas from research conducted for the *Making Spaces* project and the wider literature.

SPRINGBOARD #4: OBJECTS

Relimagining objects and what gets made in makerspaces.

The aim of this *Springboard* is to support and empower practitioners in rethinking how objects are made within makerspaces by questioning and challenging the dominant cultural and technological perspectives that typically govern how making happens and who benefits from such practices. Key ideas and evidence are summarised to help practitioners reimagine the process of making in more socially just and inclusive ways. Drawing from the stories of makerspace practitioners, community organisers and activists, this *Springboard* sets out some productive approaches to making (namely the repurposing, remixing and re-appropriation of technology) that can help support the agency and empowerment of young people from minoritised communities.

Two key tenets have been identified to guide practitioners in relimagining what and how objects and technologies are made in makerspaces:

1.

Critically re-think the values that underpin making.

Often, the making that happens in makerspaces is driven by the interests, methods and conceptual approaches of the privileged, which exclude and marginalise other communities' interests and approaches.

2.

Value and support equitable and inclusive approaches to making.

Makerspaces can support social justice by valuing the knowledge, methodologies and types of making that are practised by minoritised and under-resourced communities.

TENET 1:

Critically re-think the values that underpin making.

Making is not a neutral activity – it is driven by ideas, interests and world views. What gets made – and how – can be understood as a politicised activity with social and environmental consequences. Often traditional making reflects the interests, identities and histories of dominant groups in society, whereas commercial making usually prioritises profit and progress over social and transformative justice. Today there is increasing awareness of how histories of colonialism and oppression have shaped what and how making happens, and how the approaches and expertise of those deemed 'less' powerful have been ignored, disparaged or appropriated/stolen. That is to say, technology is closely linked to supremacy and control [3].

Critically rethinking means reflecting on the ways that power and inequality are embedded within technology. For instance, Carman – a community organiser and activist working with the Latin American community in London to tackle digital exclusion – outlines how technologies can be exclusionary:

“ [Society] creates these very sophisticated solutions, you know, [like] the app that is going to solve this and that. [People] have to download it and it may be full of colour full of video, and it's just beautiful. But that sometimes might be very much exclusionary, because [a community member's] cell phone might not have the capacity, the memory, the good internet and the good connection. So, sometimes the more simple solutions might be the ones that work, you know, sending voice audio on a WhatsApp message or creating a little GIF to send around. ”

Such exclusion spreads beyond the digital. Take the everyday example of the sloped seating found at bus stops and rail stations in the UK, designed to be uncomfortable for all but brief sitting so as to deter loitering or use by homeless people. This approach disproportionately impacts lower socio economic groups, who are more likely to use public transport and to work in physically demanding jobs. Indeed, in his exploration on the ethics of 'unpleasant designs', Chris Liu correlates this seating design with that of medieval torture devices such as the 'wooden horse', asking "what's truly the difference between these things?" [4]. Ruha Benjamin calls this process – in which technology/making is driven by the interests of the privileged – *discriminatory design* [5]. Whilst she raises this predominantly in the context of racism, the concept can be equally applied to all forms of oppression.

Discriminatory design compares sharply with the social justice-orientated making conducted by two Black young women at the GET City makerspace in Michigan, USA. The young makers invented and created a free, environmentally-friendly radiant halogen and conductive heating system for public bus shelters to make waiting for the bus a more comfortable experience. They designed a heated seat cushion for “tired and sore” passengers’ “old, tired legs”, drawing from their own experience as twin daughters of a city bus driver and as daily bus users themselves. They also investigated localised social and economic injustices around mobility to inform their designs. [6]



Fig 1: Bus stop at Euston station. Euston has one of the biggest homeless populations in London.

Fig 2. Keke (one of the youth makers) displays the heated bus stop shelter -and- bench prototype.



In the UK, a similar example of young people seeking to use their making to address societal injustice comes from the The Factory makerspace, in Bristol. One young person designed and prototyped a bed backpack for homeless people so the user does not have to sleep on the floor. Daenerys, the lead practitioner facilitating the programme, explains:

“What he really cared about was in Bristol there are so many homeless people, and [in] the world, but he was very much focused on his own community. He thought that the problem was that when they did sleep on the cardboard it was on the floor, so if you see in the first photo there’s the little gaps, you could take those out and turn them into raisers off the floor, so you would raise the bed off the floor, so this was his prototype about how you’d fold it up and it would be a backpack. [Figure 3 below].”

The young designer placed emphasis not only on the practicality of the design, but also on the aesthetics of the backpack, showing a level of empathy and respect for the individuals using the product, that stands in sharp contrast to prevalent dehumanising attitudes towards homeless people.



Fig 3: Prototypes of the homeless person's 'bed backpack' designed by a young person at KWMC: The Factory. These images show how the bed folds up.

These examples highlight the importance of rethinking the values and interests that underpin making. They showcase the power of young people's creativity to make things that help challenge societal inequalities and improve wellbeing. Makerspaces that are powered by liberatory, creative values and approaches (rather than commercial interests) are able to respect and celebrate the insights and experiences of young people from minoritised and under-resourced communities, supporting them to imagine and build socially just technologies and futures.

TENET 2: value and support equitable and inclusive approaches to making.

Often, the knowledge and traditions of marginalised communities, alongside the methodologies and types of making that they practice, have been ignored, appropriated or disparaged by the mainstream. Makerspaces can help address these injustices by valuing diverse approaches to making and supporting makers from marginalised communities to reclaim, re-appropriate and remix technologies in order to address issues that are relevant and important to them.

The concept of cultural appropriation can be defined as “the taking – from a culture that is not one’s own – of intellectual property, cultural expression or artefacts, history and ways of knowing” [7]. A commonplace example is the way that indigenous herbal cures, passed down through the generations, have been taken by the biotechnological industry, generating profits that rarely reach the indigenous herbalist [8]. In this way, cultural appropriation harms and disenfranchises those from whom the ‘thing’ has been stolen. It can result in communities losing touch with their own histories. In contrast, reclaiming culture can be powerful, as exemplified by anthropologist Joy Hendry's work with indigenous people. Hendry cites an Ainu woman who says:

“

We discovered that there are other people in the world who had been largely erased from their countries' memories. We are in touch with each other now, and we are all learning to feel pride in our ancestry again [9].

”

Whereas the process of reclaiming can be empowering for minoritised communities, it can be experienced as embarrassing or disconcerting by some privileged individuals and groups. This is because the process of reclaiming may challenge dominant assumptions and world views, often leading to (conscious or unconscious) resistance among the privileged [10]. Examples of this form of resistance can be seen in some of the negative responses by privileged sections of society to young people's activism in response to the climate crisis and civil rights movements, such as Black Lives Matter and Trans Lives Matter. Hence it is useful for makerspaces to be aware that attempts to support socially just forms of making may be resisted, disparaged or hindered by some privileged and conservative sections of society.

Writing from the perspective of race, Rayvon Fouché [11] explains how technology has historically been used to politically, socially and intellectually silence Black people, representing them only as passive consumers, rather than empowered creators, of technology. Fouché highlights how Black artists have disrupted White, male knowledge systems and invented new ones that can empower communities and resist oppression. Creating new modes of technology that are grounded in their communities has enabled Black artists to represent their lived and felt experiences of existing in a White world.

Drawing on these ideas, educator Nettrice Gaskins [12] has co-created a ‘making framework’ that combines cultural art, science and technology to support young people from marginalised communities. Gaskin highlights the importance of providing spaces that enable community members to engage in:

➔ **Re-appropriation:** the process by which minoritised communities reclaim images, ideas, objects, practices and artefacts from the dominant culture.

➔ **Improvisation:** the spontaneous and inventive use of materials and ideas.

➔ **Conceptual remixing:** making-do with whatever is at hand, combining different, often seemingly disparate, images, objects, knowledge, ideas, artefacts and materials [13].

Young designers and makers are not only creating technology to resist 'discriminatory design', but also producing tools for direct action. For instance, Polish artist and designer Ewa Nowark's face jewellery, US-based *CV Dazzle* make-up and the silk scarves from international collective Hyphen Labs [14] all incorporate technology to combat the use of surveillance cameras. Hyphen Labs have also produced gold earrings containing video cameras to record police altercations and brutality.

These ideas and approaches have also been taken up by the Institute of Making (IoM), who collaborated with partners the London Legacy Development Corp and the Yoke Collective, to organise an online workshop for young people on 'The Art and Science of Face Filters'.

Fig 4: An example of successful CV dazzle by @martymoment .

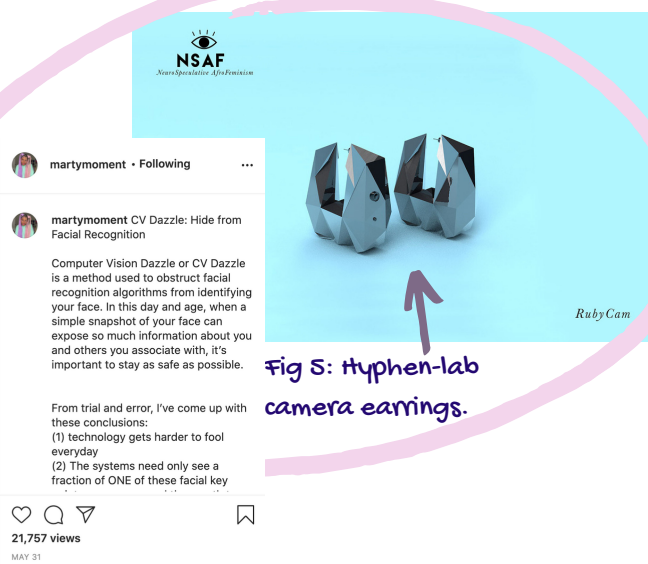
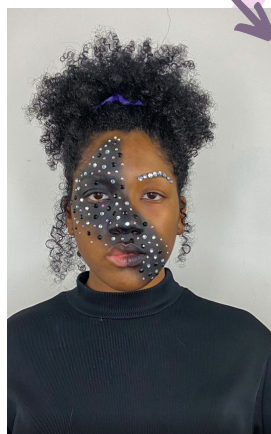


Fig 5: Hyphen-lab camera earrings.

The workshop facilitated discussions about racial bias and surveillance and young people experimented with making a face filter for Instagram or Snapchat as a way of learning about facial recognition technologies. They were introduced to the ways in which biometric data is collected in both public and private spaces and created their own CV Dazzle looks, using everyday materials such as sticky tape and face paints. As Dana – a maker and researcher from the Institute of Making – explained:

“

We hoped that this session would be really engaging for the group, both as a fun and creative way to learn more about the technology behind our much-loved selfie camera effects, but also as a way of discussing the biases inherent in facial recognition technologies that are largely developed by white, male engineers. This session also allowed us to explore the ways that fashion, art and design can be used to question how our image is collected and used in public and private spaces, gently provoking discussions about identity, privacy and the social impact of new digital technologies. We had a great discussion with some of our participants – and particularly one young woman – who talked about the need for more female, BIPOC [see fig 9 for definition] engineers and developers in the development of these technologies in the future.

”

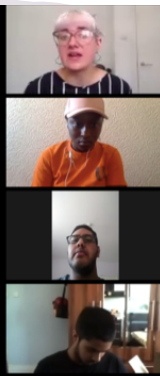


Fig 7: Young people being guided by members of Yoke collective on how to apply CV dazzle.

Fig 6: Young people learning about facial recognition technology.

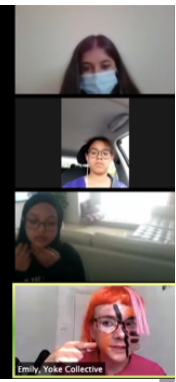


Fig 8: Young people and practitioners trying out CV dazzle.



Figure 9: Definition of BIPOC (Black, Indigenous, People of colour), taken from our Glossary for *Relimagining Social Change*. For more definitions go to <https://m4kingspaces.org/glossary/>

Black, Indigenous, People of Colour (BIPOC).	An acronym originated in the US, particularly within activist circles, as a more inclusive version of the terminology 'person of colour' that includes an acknowledgment to colonialism, and solidarity. As a rule, we should be mindful of acronyms, as they act as group bundlers, and this term is no exception.
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ABOUT OUR PROJECT

The Making Spaces project is a collaborative research and development project, funded by the Lloyd's Register Foundation. It brings together researchers from UCL Institute of Education and makerspace practitioner partners from Knowle West Media Centre, MadLab and the Institute of making.

The project has been conducted with young people engaged in direct and sustainable action in makerspaces, and draws on theoretical frameworks of resistance including: **Decolonial Theory, Critical Race Theory, Critical Whiteness Studies, Black Feminism, and Science and Technology Studies.**

We are supported by a fantastic advisory group: Shirin Vossoughi, Kim Foale, Nettrice Gaskins, Ana María Ramírez, Edna Tan, Ayşe Inan, Kat Braybrooke, Heather King, Anna Bird and Tim Slingsby.

Please feel free to contact the team below and follow the links to our website and social media for more information. Project research team: Louise Archer (director), Kylo Thomas (lead researcher), Jen DeWitt (researcher/ survey lead) and Esme Freedman (project admin and comms officer).

Contact us!



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