MAKING SPACES

REI
imagine

1. Intro
2. Values
3. Spaces
4. Objects

SPRINGBOARD
#2 VALUES

Relimagining values and purpose of 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	Re/imagining makerspaces to support equity and social justice: introduction to the springboard series.
SPRINGBOARD #2: VALUES	Re/imagining the values and purpose of makerspaces.
SPRINGBOARD #3: SPACES	Re/imagining space and where making happens in makerspaces.
SPRINGBOARD #4: OBJECTS	Re/imagining 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 #2: VALUES
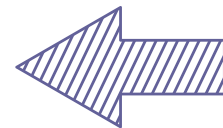
Re/imagining the values and purpose of makerspaces.

This Springboard summarises key evidence and ideas to help support makerspaces in reflecting on and rethinking their purpose and values in more socially just ways. 'Values' here refers to both the importance, worth or usefulness of a makerspace (e.g. why it exists) and its principles, standards and judgements (e.g. what drives its activities).

Two key tenets have been identified to guide practitioners in reflectively exploring these issues:

1. Re/frame your organisation's key purposes as being to support communities, facilitate social action, promote social and environmental sustainability and serve the collective good.

2. Embed a culture of shared values that centres around notions of care and sustainable wellbeing.

TENET 1: Re/frame your organisation's key purposes as being to support communities, facilitate social action, promote social and environmental sustainability and serve the collective good.

The original values of the maker movement were open and ambitious – envisioning that 'making' in whatever capacity should be accessible to all, and is best achieved in 'democratic' and communal settings [3]. Makerspaces were intended to bring together do-it-yourself independence and communal do-it-together solidarity, through respectful relationships in order to enable mutual aid and empowerment. Feminist crafter Faythe Levine notes that when people 'make' or 'craft', "they have the power to make their lives what they want them to be through simple personal choices [because making] anything with your hands is a quiet political ripple in a world dominated by mass production" [4]. In other words, making can enable and support social action through its potential for creative disruption.
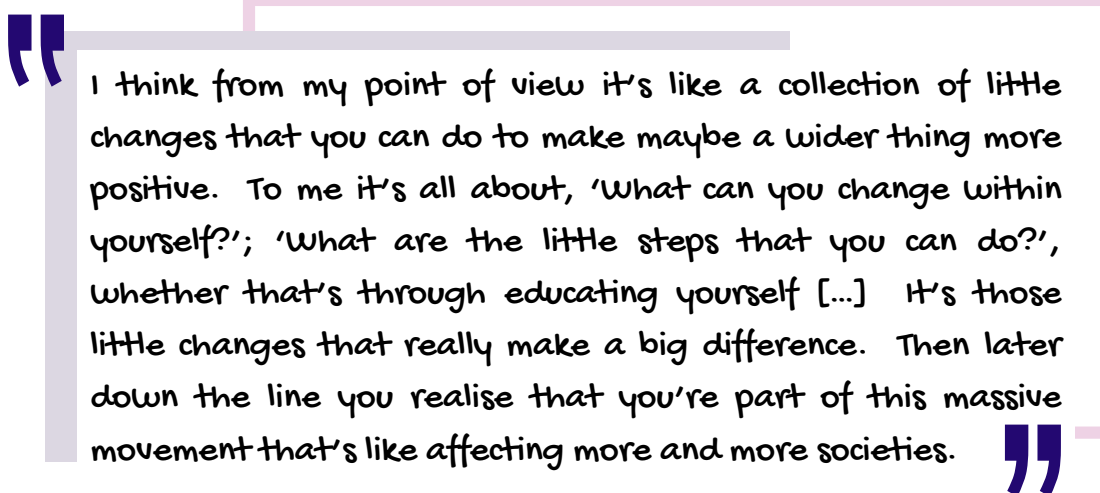
However, many 'mainstream' makerspaces see their values primarily in economic terms, through the development of STEM skills and fostering entrepreneurialism: As Shirin Vossoughi and colleagues explain, "the mainstream discourse of making is distinctly economic. Practices such as taking things apart, building new designs, and testing out solutions are valued in so far as they contribute to new technological and commercial innovations" [5]. These economic goals are often couched, either explicitly or implicitly, in individualistic, neoliberal terms, valuing "self-responsible, enterprising, flexible, and self-centred" forms of participation [6]. These underpinning ideas reflect White, middle-class, cis-male values and fail to recognise how participation in STEM (generally) and makerspaces (specifically) does not take place within a 'level playing field'. For instance, many marginalised young people are excluded from makerspaces due to the alignment of these settings with "adult, White, middle class" [7] values and because participation requires a level of leisure time and resource that they may not possess.

One way of re/imagining the values of making is to celebrate a wider spectrum of ways and purposes of creating – focussing less on the building of commercially-valued products and instead using making to support individuals and communities to take action towards socially just and environmentally sustainable futures. For instance, Day Greenberg, Angela Calabrese Barton and Louise Archer [8] discuss how a group of young Black makers from a STEM club in a Midwestern US city challenged dominant ideas of maker-entrepreneurialism through their repositioning of themselves as justice-orientated community makers. Over the course of a year, the twelve young people entered their community-orientated designs into a local entrepreneurial competition. Their innovative, STEM-rich but low cost creations sought to improve the lives and well-being of poor people of colour in their communities.
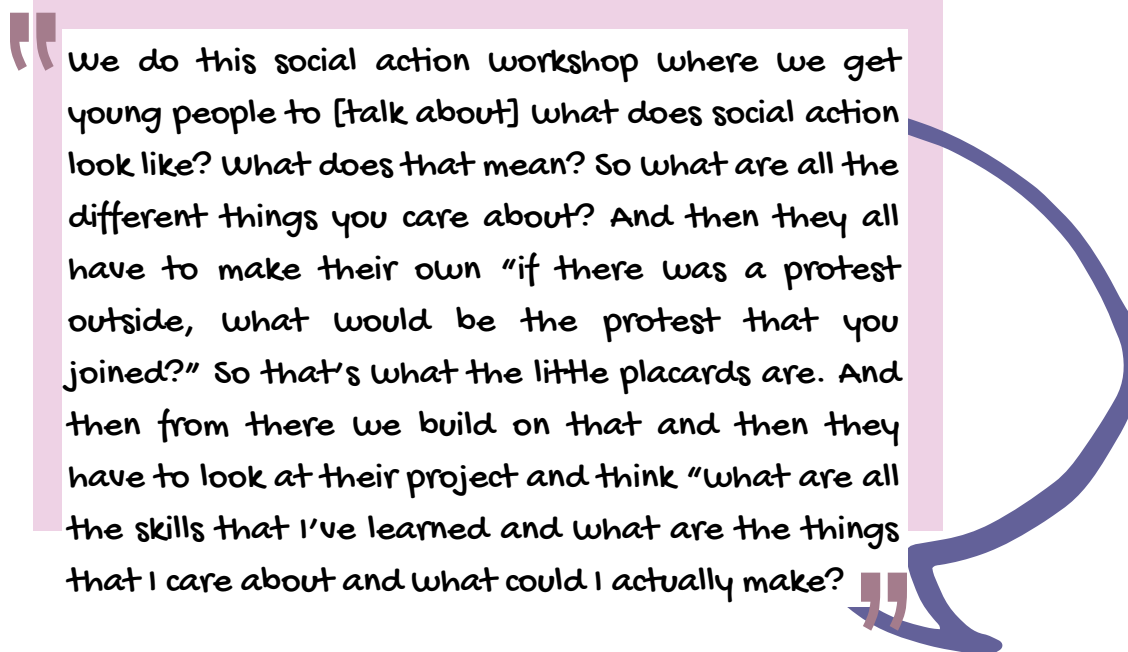
Their innovations threw the White, middle-class, neoliberal values of the competition into sharp relief, highlighting the different value systems at play – both in terms of what was valued as the purpose of making and the judges' normative assumptions about who makers are, and what they look like. The young people's experiences, at times both painful and triumphant, "call for a re-imagination and new recognition of what counts as expertise in both making and entrepreneurialism".

Similarly in the UK, Knowle West Media Centre's makerspace The Factory does not focus on making led by financial incentive. Rather it encourages and empowers young people, through trust-building and open discussion, to make objects that are driven by their own values, thereby supporting their agency, confidence and desire for sustainable change. As project manager Nacho explains when describing his "transformative justice" approach to making:

> I think from my point of view it's like a collection of little changes that you can do to make maybe a wider thing more positive. To me it's all about, 'What can you change within yourself?'; 'What are the little steps that you can do?', whether that's through educating yourself [...] It's those little changes that really make a big difference. Then later down the line you realise that you're part of this massive movement that's like affecting more and more societies.

Another powerful example of how makerspaces can productively support young people towards community-orientated social action comes from Daenerys, a practitioner from the *Maker City* programme in Bristol:
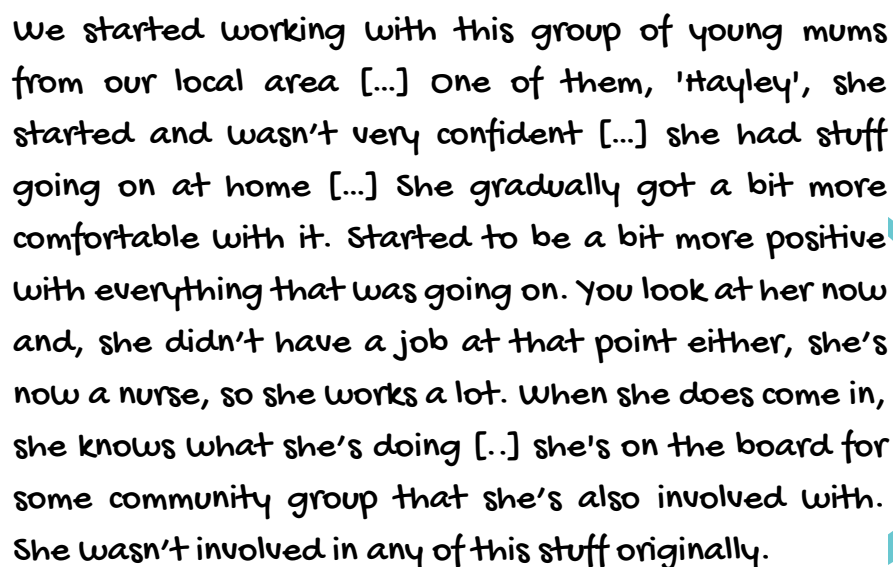
> We do this social action workshop where we get young people to [talk about] what does social action look like? What does that mean? So what are all the different things you care about? And then they all have to make their own "if there was a protest outside, what would be the protest that you joined?" So that's what the little placards are. And then from there we build on that and then they have to look at their project and think "what are all the skills that I've learned and what are the things that I care about and what could I actually make?

Figure 1: Social action board made by the Maker City young people.

The Maker City programme aims to support young people's agency towards sustainable lives, centred around what their young participants care about, politically and personally. Through activities such as the social action board, practitioners help young people to imagine and articulate the world they want to live in and how they want their futures to look – as well as providing young people with the skills to 'make' this world, and the confidence to express their feelings in a safe environment. In this way, the programme contrasts with makerspaces that espouse individualistic and commercial values and practices.

TENET 2: Embed a culture of shared values that centres around notions of care and sustainable wellbeing.

Equitable makerspaces organise themselves around values of care and what can be termed ***buen vivir***, or sustainable wellbeing [9]. Such spaces recognise that making can support and provide ways for young people to express whoever and whatever they want to be – personally, socially, politically and professionally [10]. As outlined below, key to enacting these values is a recognition of the importance of (i) building trusting relationships, (ii) healing, (iii) respecting community knowledges, needs and experiences and (iv) engaging in reparation and accountability.

The practitioners we spoke with all emphasised how 'making' goes beyond the creation of materials, objects and technology. The building and nurturing of **trusting relationships** is vital. Not only can relationships support making, but making can also create and sustain individual and collective relationships. These, in turn, can help support young people's agency and empowerment towards meaningful futures on their own terms. Equitable practice means valuing non-hierarchal relations with young people through sharing, listening and respecting their identities, views, knowledges and experiences.

Building a young person's confidence and agency depends upon trusting relationships – which take time to develop and may require **healing**. That is, practitioners need to recognise that those who use and contribute to a space may have suffered from trauma and require care. This point is echoed in *Springboard #3*, which stresses that makerspaces must be safe for those that use them. In particular, sustainable wellbeing is supported through patience and care, with an understanding that whilst trust is powerful, it does take time to build.

An example of how makerspaces work to build supportive relationships over time can be seen through facilitator and digital fabrications technician Janis, who draws on her experience of creating a programme with and for local young mothers, a demographic that are often neglected and stigmatised in society [11]. In particular Janis describes how building relationships that centre around "meeting young people where they're at" provides a space for them to develop and grow.

> We started working with this group of young mums from our local area [...] One of them, 'Hayley', she started and wasn't very confident [...] she had stuff going on at home [...] She gradually got a bit more comfortable with it. Started to be a bit more positive with everything that was going on. You look at her now and, she didn't have a job at that point either, she's now a nurse, so she works a lot. When she does come in, she knows what she's doing [..] she's on the board for some community group that she's also involved with. She wasn't involved in any of this stuff originally.

Through creating a space where facilitators recognise the trauma that individuals from marginalised groups have experienced prior to (or indeed during) engagement with a programme, and taking notice of how trusting relationships take patience, not romanticised ideals of 'positivity', empowers young people to realise their own potential on their own terms – without external pressure to perform, in an environment where they are respected and protected.

Values of care and *buen vivir* also require the recognition and respecting of **community knowledges, needs and experiences** and the developing of meaningful connections with communities who have been pushed to the margins of society. This approach recognises the plurality of experiences and agendas within the fight against oppression, respecting the needs and beliefs of each community and nurturing those who have been harmed.

Being driven by values of care requires makerspaces to be prepared to engage in reparation and accountability. The notion of accountability refers to how practitioners need to ensure that there is a congruence between words, emotions and actions within a space [12], that is, that good equity intentions are carried through in practice. Reparation refers to how spaces and practitioners may need to "put right" previous damage that participants may have experienced either in or beyond the makerspace. Reparation and accountability entail acknowledging the multiple forms of hurt that communities and individuals experience as a result of injustices, and taking responsibility for addressing needs and repairing harm as a result. This can also mean identifying ways in which a space might contribute to further damage, and taking action to challenge and transform the relations that contribute to and sustain inequalities.

An example of how ideas of accountability can be put into practice is provided by makerspace practitioner Nacho, whose 'male room' initiative is a free creative programme supporting men aged 18-30 to develop their skills as creative professionals and explore their identities as men:

> The creative industries are mainly White males at the top. It's recognising that we do have a privilege as males in that sense, it's recognising that, and how you use that, and how you be in that space - how you're affecting and recognising the effects that it has on other communities such as the LGBTQ communities, the female community, and everyone else that engages with that space. Recognising that and making a collective agreement on how we should behave in those spaces [...] there was a nice sort of feeling of holding people accountable for their actions and holding each other accountable as well. And holding themselves accountable for whatever path that they go on.
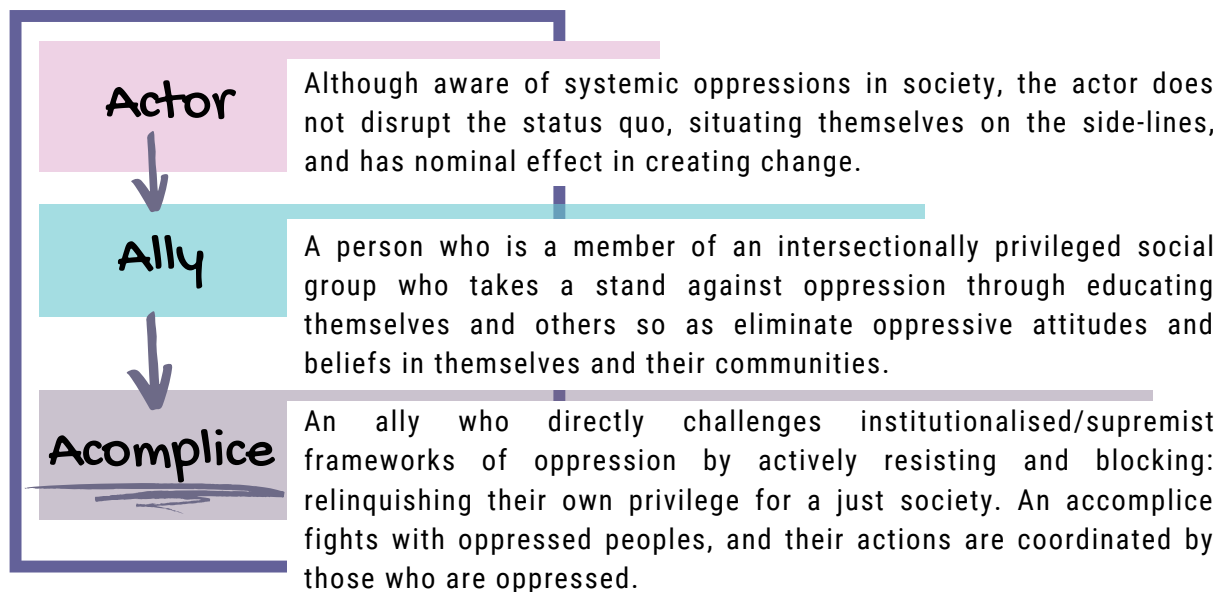
In this respect, makerspaces can not only foster skills, but also act as spaces where privileges and accountability can be recognised, such that participants in these spaces can take steps to move from being an **actor**, to an **ally**, to an **accomplice**. See figure 2, below, for definitions.

Embracing these values can help a makerspace to evolve beyond just being a place where materials are made into a transformative space that can help challenge injustices and open up STEM for those who have historically been marginalised and excluded.

Figure 2: How the making spaces team define Actor, Ally and Accomplice, taken from our Glossary for Re/imagining Social Change. For more definitions go to https://m4kingspaces.org/glossary/

Actor	Although aware of systemic oppressions in society, the actor does not disrupt the status quo, situating themselves on the side-lines, and has nominal effect in creating change.
Ally	A person who is a member of an intersectionally privileged social group who takes a stand against oppression through educating themselves and others so as eliminate oppressive attitudes and beliefs in themselves and their communities.
Acomplice	An ally who directly challenges institutionalised/supremist frameworks of oppression by actively resisting and blocking: relinquishing their own privilege for a just society. An accomplice fights with oppressed peoples, and their actions are coordinated by those who are oppressed.

➡ 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.
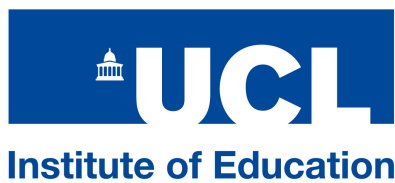
UCL Institute of Education

Lloyd's Register Foundation

REFERENCES

1. Davies, S. R. (2017). Hackerspaces: making the maker movement. John Wiley & Sons. p.9

2. Vossoughi, S., Hooper, P. K., & Escudé, M. (2016). Making through the lens of culture and power: Toward transformative visions for educational equity. Harvard Educational Review, 86(2), 206-232. Barajas-López, F., & Bang, M. (2018). Indigenous making and sharing: Claywork in an indigenous STEAM program. Equity & Excellence in Education, 51(1), 7-20.

3. Smith, A. (2017). Social innovation, democracy and makerspaces.

4. Levine, Faythe. (2014) "Craft: Embracing Empowerment and Equality." In Craftivism: The Art of Craft and Activism, edited by Betsy Greer, Arsenal Pulp Press, 2014, pp. 52–58. P.58.

5. Vossoughi, S., Hooper, P. K., & Escudé, M. (2016). Making through the lens of culture and power: Toward transformative visions for educational equity. Harvard Educational Review, 86(2), 206-232. P.208.

6. Brunila, K., & Siivonen, P. (2016). Preoccupied with the self: towards self-responsible, enterprising, flexible and self-centred subjectivity in education. Discourse: Studies in the Cultural Politics of Education, 37(1), 56-69.

7. Barton, A. C., Tan, E., & Greenberg, D. (2016). The makerspace movement: Sites of possibilities for equitable opportunities to engage underrepresented youth in STEM. Teachers College Record, 119(6), 11-44.

8. Greenberg, D., Calabrese Barton, A, Tan, E & Archer, L. (2020) Redefining entrepreneurialism in the maker movement: A critical youth approach, Journal of the Learning Sciences, 29:4-5, 471-510, DOI: 10.1080/10508406.2020.1749633

9. Gudynas, E. (2011). Buen Vivir: today's tomorrow. Development, 54(4), 441-447.

10. Spade, D. (2020). Mutual Aid: Building Solidarity during this Crisis (and the Next). Verso Books.

11. Ellis-Sloan, K. (2014). Teenage mothers, stigma and their 'presentations of self'. Sociological Research Online, 19(1), 16-28.

12. Dixon, E., & Piepzna-Samarasinha, L. L. (Eds.). (2020). Beyond Survival: Strategies and Stories from the Transformative Justice Movement. AK Press.