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Co-design for social innovation and organisational change: Developing horizontal relationships in a social enterprise through walking

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Abstract

Although an emerging body of literature identifies co-design as a promising approach to addressing the most urgent social challenges, little research has been undertaken about how co-design can support social change within the communities and organisations with which they collaborate. This is important because behavioural and organisational change is usually associated with the emergence of social innovations. These pressing socio-cultural challenges require interdisciplinary expertise, and we argue that the practice of co-design is an approach that provides such expertise. Co-design by its nature is collaborative and can respond to the cultural demands of a society eager to participate. These demands require significant research to better understand how the practice of co-design can be a catalyst for social change and social innovation. In this paper, we explore what is meant by co-creation, social design, and co-design within the theoretical context of this study. We present a case study that focuses on a social enterprise committed to sustainability operating within the Highlands and Islands of Scotland. Here we examine the transformative process - associated with co-design - that the social enterprise and its members encountered. Participatory Action Research (PAR) was implemented as the research approach to this study informed by ethnographic and co-design methods. The analysis suggests that the co-design process empowered the social enterprise and its members, enabling them to co-develop responsive and empathetic attitudes among themselves. Co-design supported organisational changes by nurturing collaborative attitudes, expanding perspectives about social issues and releasing latent human abilities and assets.

Keywords: Design for social change, Social design, Co-design, Social innovation, Participatory design, Mutual learning, Co-creation, Participatory architecture, Community architecture.

Getting together in the era of participation

In the last half-century, there have been calls to consider new design methods (Sanders & Stappers, 2008). According to Cross (1972), traditional design by its nature excludes people from the creative process and so fails to address the complexity of current challenges. The 21st century is witnessing diverse challenges: human migration (Ahmed, 2017), environmental sustainability, climate change, cutbacks in public services, increasing social inequality, privatisation of education and healthcare (Silverman & Patterson, 2015), the current pandemic etc. All of these challenges impact our everyday lives, constraining our possibilities to choose based on our needs. Cross (2011, p. 15) observes: "…we are on a journey from an industrial world ruled by certainty, precision, and logic to a natural world characterized by unity, unpredictability, and complexity". In examining the impact of co-design, methodological frameworks must now be capable of capturing the dynamic processes of social change. The calls for change embrace democratic principles that are embedded in a myriad of practices and which aim to support the increasing demands on participation. Practices such as co-creation, social design and design activism, co-design and participatory design are intertwined (Bason, 2010). They share the idea that creativity resides in everyone and therefore any creative process should include participants covering the social spectrum – private, public and voluntary sectors, and involving all types of citizens. Jungk (1973) envisioned a motivational shift in design which would radically reshape the future of the discipline. This shift has arrived (Fuad-Luke, 2017); society now

requires designers back in the public sphere, with greater involvement in socio-political problems and civil society (Swann, 2002). These challenges require interdisciplinary expertise, and we argue that the practice of co-design is an approach that provides such expertise (Meroni, Selloni & Rossi, 2018).

In this paper, we examine how the practice of co-design in the voluntary sector, driven by social demands, can support the flourishing of 'boundary spaces' where the participants can re-negotiate their interpersonal bonds, and support organisational changes. Boundary space is a notion introduced by Gutiérrez et al. (1995), with the term 'third space', to describe situations where people who have different roles and perspectives encounter each other in power-balanced and horizontal terms, expanding the boundaries of both. It depicts a theoretical space of confluence where individuals approach from their different perspectives (Calvo, 2019a). We explore the notions of co-creation, social design, and community-based co-design to describe the theoretical context of this study. We follow this with a case study that focuses on a social enterprise in which we examine how a co-design project functioned as a catalyst for a transformative process of behavioural and organisational changes. Participatory Action Research (PAR) was implemented as the research approach to this study informed by ethnographic and co-design methods. Finally, we discuss the findings of the analysis in terms of: (i) moving from hierarchical to horizontal organisational relationships; (ii) sprouts of behavioural and organisational change; and (iii) interpersonal learning.

Literature review

In this section we investigate the theoretical conceptions about co-creation, the socialisation of design, and community-based co-design, leading us to narrow the scope of this study and reformulate the key focus of research – how co-design can become a catalyst for social innovation and organisational change.

Co-creation

Ideas of co-creation can be found in management disciplines (Prahalad & Ramaswamy, 2004) to explain the shift in business models from a centred to a customised view of products. Tseng and Piller (2003) illustrate enterprise models adopting mass customisation, rather than mass production. They identify a gap in understanding the impact of integrating users into value-creation processes in knowledge management. They describe the necessity for further research on methods of a customer-centred enterprise - a kinship of user-centred design - which has yielded benefits relating to consumer products such as value chain, customisable offer and knowledge-transfer (Fogliatto, Da Silveira & Borenstein, 2012). Sanders and Stappers (2008, p. 6) refer to co-creation as "any act of collective creativity", comprising a wide range of processes. Bason (2010, p. 144) defines co-creation as the process of "…placing people's wants, needs and situations at the centre of the creative process as a powerful way to generate the insights that allow us to create with people and not for them". These are the prime insights influencing the landscapes of design that are expanding its frontiers towards fields such as service design or organisational design. 'Design-with-people' merges a society eager to participate with the principle that everyone is creative - hence we all design (Manzini, 2015).

According to Bason (2010), co-creation brings two benefits: divergence and execution. Divergence appears when an increase in the number of ideas and inspirations brought about by diversity prompts more appropriate solutions. Divergence has a direct relationship to the introduction of different knowledge-based approaches, such as the application of ethnographic research and qualitative data-gathering where researchers become participant-observers. Hess and Adams (2007) add that divergence enables conversations with a fresh slant on the same issue, hence changing perspectives and inviting new solutions. Execution refers to human agency and anchors the participants throughout the whole creative process to ensure success (Bason, 2010; Halse et al., 2010). Further, Gillinson, Horne and Baeck (2010) disclose their

'radical efficiency model' after analysing more than one hundred case studies from different contexts which follow co-creation processes with a focus on reshaping public services. In the report, they chronicle ten successful social innovations. The radical efficiency model offers an opportunity for profound transformations in designing and delivering public services through centralised-strategies towards supporting local action and change. Like Nygaard and Bergo's (1975) local knowledge-production strategy at the dawn of participatory design, Gillinson et al. (2010) recommend that governments devolve power to local communities who have the responsiveness and empathy required to enable social innovation. They identify four steps to pursue this: (i) developing 'new insights' through divergence; (ii) 'new customers' – redefining the notion of users; (iii) 'new suppliers', that means paying attention to who does the job – this includes re-contextualising the role of users; and (iv) 'new resources' – releasing latent human abilities, forgotten assets, and strengthening institutional networks. The aim focuses on engendering new perspectives about social issues. This leads to innovative transformations of services – based on the people experiencing them.

Socialisation of design

Design research increasingly concentrates on exploring approaches that can foster social innovation, shifting from design driven by the market to design motivated by social demands, promoting meaningful social impact towards sustainability (Manzini & Meroni, 2014). Design methods have been applied in the public sphere (e.g. public services, community-based development, architectural transformations, etc.) aiming to achieve creative solutions that meet the needs and desires of people, going beyond conventional methods (Mulgan, 2014). Design is ubiquitous in contemporary life (Fuad-Luke, 2009). This is evident in the spread of rapid urban transformations (e.g. China's urban development) and manufacturing technologies, which mediate in human interactions – an upward trend in pandemic times. Papanek (1972) observes we all design all the time, as design embeds itself with human agency. From this perspective, people can adopt design roles (knowingly or unknowingly) in reshaping their everyday life – blurring the frontiers of design and raising tensions between the distribution of design competences, between professional designers versus non-professionals collaborating in a design process (Manzini, 2015). The socialisation of design is a conscious act "…geared to goals, objectives and aims within a broad societal context…" (Fuad-Luke 2017, p. 281), thereby "…in the intimate interweaving between aesthetics and the political… an interesting answer to the activist nature of design activism is to be found" (Markussen, 2013, p. 39). The research literature considers 'the political' (Mouffe, 2013) dimension of design as the condition of dissent that each individual may experience within a concrete designerly situation. The political dimension of design could be used to re-mould pervasive and conventional structures of power because such dimension embodies activist strategies for transforming community paradigms and values (Calvo & De Rosa, 2017).

Design, as social action, has the potential to raise awareness of sustainable ways of living and working together; it assists in renegotiating the relationships we establish within the socio-material culture of human situations – between what we do and how we feel about doing it (Markussen, 2013). Design aesthetics thus embeds emotional reconfigurations and the allocation of meaning into such socio-material culture. It involves incorporating people's needs within the designing process to foster alternative forms of inhabiting and reshaping identities, hence eliciting social and behavioural change (Calvo & De Rosa, 2017). It also requires methodologies able to study human agency and its interactions with the socio-materials of situations, and we argue that co-design is capable of intervening in people's perceptions and affecting their behaviour. Underpinning such a behaviour change is mutual learning which also supports the flourishing of networked communities and interpersonal bonding. Building trust, engaging with social conventions, norms of cooperation and partnership, networking and community engagement, as well as formal and informal organisations, play a key role in behavioural change, which can lead to organisational change and social

innovation (Ostrom & Ahn, 2009). That is why, increasingly, design research pursues evidencing about mutual trust and empathetic relationships established with their partners and stakeholders. Qualitative inquiry has been gaining relevance in social design as it provides the means to systematically document human interaction and participation. In this sense, ethnographic research - used in this study - provided a set of methods that enable the design-researchers to gather meaningful data.

Community-based co-design

Co-design as a design strategy increasingly resonates in community engagement and the voluntary sector. Due to the democratic and open-ended nature of the design process, co-design aims to confront societal issues in the public sphere (Fuad-Luke, 2009). User-centred design, on the other hand, seems unable to address those challenges as it objectifies people in the design process and serves consumer products. Gay and Hembrooke (2004, p. xvii) illuminate a "…shift from user-centered design to context-based design... from a focus on human-computer interaction to a focus on human interaction that is mediated by technology in context". This shift emerged in the 1980s and 1990s in the field of interaction design (see Kaptelinin and Nardi, 2006; Spinuzzi, 2005; Zahedi, 2011) when its definition expands: from being focused on the computer, moving towards designing the sociocultural (hybrid) spaces of human interaction (Winograd, 1996). As Kaptelinin and Nardi (2006, p. 10) state, our society is increasingly designed, "furnished with technologies at every turn". These statements recognise the relevance of the social environment in configuring human interactions ('designerly' situations); and emphasise the intentionality (emotions, motivations and subjectivities) behind any design outcome. Bannon (1991) advocates for a change in the systems design process, from meeting ergonomic specifications (human factors) to foregrounding greater involvement of the people acting with technology (to human actors) on the whole design spectrum. Consonant with the insight that the ultimate input is on the users (people) to define their functionality, technology is then understood as an important part of human activity with a mediating role in their development. In user-centred design, social scientists were brought to mediate between designers and users (Simonsen & Robertson, 2013). Over time, as Sanders (2002) describes, both disciplines mutually learnt that the most productive designs come from a direct exchange of experiences when the stakeholders come together (Gay & Hambrooke, 2004; Zahedi, 2011). Both disciplines found strong allies in their combination (Brandt et al., 2013; Sanders, 2002). With a focus on participatory experiences, co-design emerges as pledging to address "…the most pressing societal challenges…" (Meroni et al., 2018, p. 17). Sanders (2002) uses the term post-design, a distinctive attitude to people, who, given appropriate tools to configure a hybrid language (Ehn, 2017), become creative contributors to the design process.

Selloni (2017) illustrates co-design as a form of community engagement to strengthen communities, and as a prior step to co-production. Co-design is also associated with social innovation as it can create a 'third space' (Muller, 2009) where the multiplicity of expertise and perspectives (divergence) can be disclosed and assembled (Manzini, 2015). Cruickshank et al. (2012) define innovation as a systemic process requiring collective and creative activities to be performed by interdisciplinary expertise that emphasises knowledge-exchange amongst participants and disciplines (Cruickshank, 2010). Collier and Williams (2013) propose 'reflective practice' to solidify such knowledge, out of what we learn and experience in the community.

The notion of co-design refers to the act of collective creativity applied throughout the whole design process (Sanders & Stappers, 2008). This paradigm shift also involves a shift in the role of designers, who move from designer-to-designer to designer-to-public, and more recently, to public-to-public roles. Here, designers need to acquire/emphasise social skills to facilitate 'public designerly engagements' (Lindström & Ståhl, 2016). In public-to-public relationships, those 'non-trained-in-design' still contribute to the designing (Lee & Ho, 2012), thereby democratising (and socialising) the design process. In designerly engagements,

designers intervene in public spheres, in a designer-public relationship, where people are perceived as experts, and designers adopt roles of support (Ehn, 2008). With grassroots and bottom-up social innovations, communities take the lead and designers serve as triggers for local action (execution), their role is to activate and facilitate civic-collective creativity (Lee & Ho, 2012), alongside designing the socio-materials of designerly engagements for 'the co-articulation of issues' (Lindström & Ståhl, 2016).

Methodology and case study

This section presents the methodological approach and the methods deployed in a case study conducted with rural communities in the Highlands and Islands of Scotland and associated with a three-year UK-AHRC funded design research project, called Leapfrog. Focused on transforming public engagement, Leapfrog explored the role of co-design in strengthening communities and involving them in the designing of engagement tools to invigorate public-community engagement.

This study adopted a participatory action research (PAR) approach to develop the methodology because it foregrounds participants and their context as the core of the investigation (Whyte, 1991). It also embeds social change as part of the research agenda – aiming to produce a positive social impact on communities (Walter, 2009). PAR stems from Lewin (1946), a social psychologist focused on shifting away from the scientific tradition and establishing democratic principles in research, to reshape research itself (Chevalier & Buckles, 2013). PAR is an applied research approach oriented to address social issues. It is open to innovations or contributions that may arise from its interaction with other disciplines. PAR is usually represented by a spiral of stages where each stage informs the next one, once the research-community partnership identifies a focal social issue: (i) initial planning; (ii) action; (iii) observation; (iv) reflection-informed planning (see Walter, 1993, p. 3).

PAR was implemented in this study as the meta-process of a methodological framework developed by the research team with four phases: (i) preparation for co-design; (ii) co-design situations; (iii) follow-up; and (iv) systematising learning. These phases structured the 'Tools for Renewal' research project, a case study where ethnographic and co-design methods were deployed to gather data about how co-design can support interpersonal and organisational changes in social enterprises.

Case study: Tools for renewal

'Tools for Renewal' consisted of a six-month co-design project with the Newbold Trust, a social enterprise based Forres, N-E of Scotland. Its mission is to consider sustainable ways of living together in the region. The trust had initiated a transformation - shifting away from an organic and unstructured community to a social enterprise. This internal shift involved the renewal of both its physical assets and its identity as a social enterprise. The Newbold community felt isolated from community life in Forres and the region. They wanted to open up the doors of their property to include local communities in the physical transformation and decision-making of their future spatial uses. The participants' reasons to participate in the project were largely related to commitment to sustainable causes, seeking to nurture their personal inner life and curiosity.

The flourishing of social connections was the ultimate motive of Newbold community's decision to embrace the project. The research aim was to identify ways to establish long-term community engagement by systematically inviting local communities to participate in the renewal of their facilities, as well as in the re-shaping of their identity. After a series of co-design situations, 'walking' (Careri, 2002; Ehrström, 2016) emerged as the principal method by which to engage such communities, and a postcard tool was co-designed to gather the insights of the participants who engaged in the facilitated walks.

Preparation for co-design

This first step comprised three stages: (i) initiation and planning; (ii) historical research; and (iii) interviews. During the initiation and planning stage, conversations were held with the community and public partners – collectively defining the problématique; establishing a bidirectional dialogue for identifying the challenge and focus; co-designing a research plan and timeline, and inviting participants to sign the informed consent agreement and gain ethical approval from the institutions involved. Semi-structured interviews and visits were then conducted to build rapport and trust, but also to begin understanding the personal context and motivations of participants. During the visits, we walked around the Newbold property (Figure 1), a Victorian house and approximately seven acres of grounds. Focused on seeing at first hand the spatial assets for renewal, design-researchers gathered accounts of the context of research while adopting a participant-observer role. Touring around the Newbold grounds, the research team and the Newbold community began building mutual understanding.

Figure 1. Route and map of the facilitated walk.

Co-design situations

This phase was the most intense and immersive engagement with participatory activities. It comprised several methods: catalysis workshop, co-design workshops, prototyping tests, semi-structured interviews, reflective group sessions, participant-observation, and tool delivery events.

Catalysis workshop

Designed to enhance the construction of group dynamics, the catalysis workshop brought participants together to share their personal experiences about the Newbold services and spatial assets. Twelve participants came from the Newbold Trust, the Findhorn Foundation and the Forres local community. After introducing the project, the facilitated walk began. Here the design-researchers adopted participant-observer roles. They mingled with the small group of people that moved naturally from one spot to another (see Figure 1, and steps 1-9). We all walked in small groups, feeling comfortable, observing our surroundings and letting ourselves be embraced by the environment. Two members of Newbold provided an improvised narrative connecting the physical spaces with the past, present and future desires of Newbold. Eventually, the participants started imagining possible changes and alterations that could be made as they walked through those spaces; they wrote or drew on the tools that were designed for data-gathering and analysis. People continued to organically form small groups. The act of walking closer together functioned as a way to initiate a conversation and the thread of the conversation became the way to connect the group until we reached the next spot (Figure 2). Walking was a means to break down the hierarchies of power between the members of the Newbold community. In the next activity, a group reflective session, Participant 1 said:

> *"…I felt freedom when people were walking; we were not in this situation, staring at each other. Here it is more difficult to express myself. When we were walking, we were talking at the same time freely."*

Figure 2. Facilitated walk at Newbold Trust.

The catalysis workshop created horizontal group dynamics. The group reached the point where participants started building other types of relationships. Working together, in this case, did not mean collaborating. Each staff member in charge of each department tended to work independently and autonomously. In their work with the Newbold community, the research team also observed a certain degree of intra-personal friction. There was an ideological split between two groups: those who pushed to turn Newbold into a sustainable and self-sufficient business and others who resisted the change and longed for the return of a bohemian lifestyle.

Co-design workshop 1

During this workshop the participants went through four main phases: 1) a reflective session on previous engagements, 2) deepening understanding and reaching a collective agreement, 3) idea-generation and prototyping activities, and 4) presenting concepts/prototypes and selecting proposals. The first co-design workshop aimed to reflect collectively upon the previous walking experience, and, as a collective, to co-design ideas where walking could be adapted as the Newbold Trust method for engaging local communities in the long-term. There were ten participants.

The day began with lunch and an opportunity to analyse the data collected during the catalysis workshop. Using string hanging from side to side across the room, the participants began organising the insights according to their collective criteria, shaping a timeline of interventions based on the values of the group (Figure 3). This helped them to consider what type of exchange they were looking for in engagement and the methods they might need to use to gather, interpret and act on information accumulated during the exchange. This activity sought to break with the hierarchical dynamics that the participants unconsciously brought to the workshop, an influence that would allow members to behave freely without wondering if they should agree with the ideas of a superior. This enabled participants to collectively identify different approaches to their strategic plan.

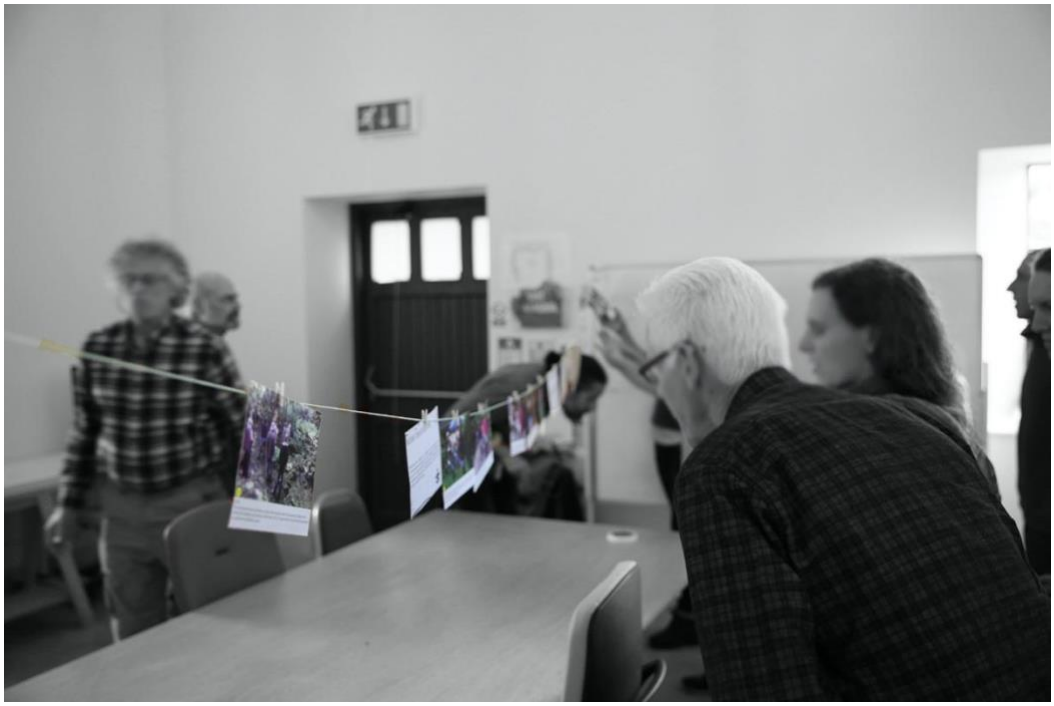

Figure 3. Hang-it-up collective activity (priority building).

The participants were then divided into groups comprising three people and sent on a 'discovery journey' around the Creative Campus, Glasgow School of Art, in Forres. The participants approached the activities with joy - going with the flow - and generally feeling comfortable. In turn, they gained the ability to put themselves in the place of their future walkers and built collaborative attitudes towards those they engaged within the co-design process. For instance, unconsciously, participants 3, 4 and 12 realised that they were not able to write their insights, so they used each other's backs as improvised support to write their thoughts, showing a collaborative attitude (Figure 4).

Figure 4. Discovering activity.

An interesting insight was the importance of somehow tailoring and planning the route of the walk into the purpose of the engagement. Participant 3 commented:

> *"The flow of the walk needs to be tied into how someone who does not know about this place may interact with it and how one feels. The reason why we are doing this is how to interact with the space. That would be also related within the experiences."*

This session allowed them to gain a better understanding of their participation in the project. P6 said: "Walking around the fields stimulated emotional responses. It is more about qualities. Looking at that as a way to imaging the development of Newbold". Participant 10 mentioned:

> *"Similar to when we were using the tool in Newbold, we were imaging how the space could be transformed within the narrative. How do we develop that thing and how do we tell the story right from the entry gate? It is really the narrative, the story that we want to tell people***."**

The narrative was a crucial component that needed to be addressed. The participants naturally began to imagine possibilities. The sharing of spatial and personal experiences shifted away towards co-producing ideas. The workshop produced three idea-prototypes and the group decided to focus on one.

Semi-structured interviews

The interviews foregrounded how co-design situations were providing new conditions for them to learn more about their team. Participant 2 said: "…in these two workshops I think I found the learning at watching us as a group, how the interactions happened, what formed the group dynamic and perspective". The process was helping them to redefine their interpersonal relationships, an adjustment of behaviour. Participant 1 said: "…because we are in a different environment, I am learning how they (staff) approach a problem, how they react when they have something new to build…".

Prototype-test

In-between co-design workshops, participant 5 facilitated a walk with a group of Erasmus students and collected the observations written on the prototype. He brought his insights into the experience to initiate the following co-design workshop.

Co-design workshop 2

Participant 5 outlined the use of walking as the method to offer the students an inclusive and comfortable atmosphere to spark informal conversations and so imagine through stimulating all the channels of learning. Participant 5 said:

> *"For me, it was a strong sense of engagement with the people. This was a tool (prototype) that helped me engage in more dialogue as we moved around with the people. The tool gave me a sort of structure to build the narrative."*

Researchers noticed no hierarchical relationships between the participants. Next, participants were split into small groups of two or three people and spent the rest of the workshop co-designing new iterations of the tool (prototype) to enhance it. After collective selection focusing on a new prototype of the tool, the group decided to test it again, in a series of facilitated walks during the Harvest Festival.

Participant-Observation

The Harvest Festival was the biggest community event Newbold organised and included sharing activities with other local communities. Two facilitated walks were planned on the agenda of the community event. On average, both walks had around twelve participants, most of the visitors/eco-tourists. Like the catalysis workshop, the walk sparked small groups who walked together, having conversations between themselves, asking questions and sharing their ideas about the spatial assets. They engaged with the narratives of the walk-in an informal atmosphere (Figure 5). In the end, the participants spent some time writing their reflections about their experience and gave the prototypes back. The research-community team reflected on the activity and concluded that the prototype worked well, although some adjustments needed to be addressed. The design team developed a third version, more flexible and adaptable, according to the needs and purposes of the walk.

Figure 5. Facilitated walk at the Harvest Festival.

Tool Delivery Event

The workshop began with a collective and reflective session. An insight emerged: the qualities of physical space and their rotation contributed to the emanation of interpersonal learning. Participant 7 said:

> ‘‘*When you go out of the house (*Newbold *House) and you have conversations like these with the same people but out of your usual environment, you understand maybe better or from a different way. This becomes a tool to know each other better, differently.”*

They all agreed that the project helped them to know each other better and hence start working as a team. Then they tested the final prototype and reported minor touches. By the end, all the participants had built their tools for renewal, which they took away with them. Finally, the research team thanked them for their commitment during the project. This would not have been possible without all of their hospitality, kindness and open-minded approach, and the project drew to an end.

Follow-up

The follow-up phase consisted of revisiting some of the participants once the case study was complete, using (i) participant-observation and conducting (ii) reflective interviews, observing the course and consequences of the co-design situations in perspective; perceiving a potential change in the agency. Participant 1 said: “…you have to solve problems every day and sometimes you do not have time to stop and think about how to do things. On this, we learnt that we needed to stop and think and talk and create these conversations.” According to him, the co-design workshops foregrounded the beginning of a unique moment that impacted the way he perceived the other participants, unfolding hidden personal competencies and skills. It activated his learning and this led to reshaping the group dynamic. For

participant 3, the co-design project provided a learning outcome: the need to collaborate towards a common goal. He stated: "…going through that process and learning how it is not about roles, it is about the different perspectives that helped us solve problems, create new tools". He understood the relevance of merging different perspectives as a synergy that renegotiated the relational patterns of working together and their feelings about this way of working.

The organisation had embedded the walks, held and facilitated regularly with wider communities. Yet the tool needed more preparation and planning. They were in an evolving and transformative process. Participant 6 expressed surprise about the process, however, he said: "…my only reservation is that it was too quick and I think we needed more time to expand on what we were doing…". He commented that they had embedded the *hang-it-up* activity in their meetings. He reflected, comparing both experiences and concluded: "…I might consider moving more, getting up and moving as a really important part of decision-making."

Findings

This section presents the findings of the analysis phase (systematising learning) where affinity diagramming was adopted, an ethnographic method consisting of arranging pieces of paper-based data on a physical space like a wall and follows a three-phase process (each one illuminating a higher level of abstraction): item, pattern and structural analysis (LeCompte & Schensul, 1999). The process went through three phases of affinity diagramming, re-arranging the items by affinity, bottom-up, and consolidating theoretical structures. Out of this process, three findings were identified:

Walking enabled changes: from hierarchical to horizontal organisational relationships

The use of facilitated walks (Ehrström, 2016; Kanstrup, Bertelsen, & Madsen, 2014) animated an engagement process amongst participants. Walking proved to be a useful method to read and imagine those physical spaces - revealing opportunities and dilemmas - through a process that reduced interpersonal conflict and foregrounded the third space (Gutiérrez, 2008; Muller & Druin, 2012; Muller 2009). In this, the disruptive aesthetic of design was a key dimension that opened a space between emotions and human agency, leading to consciousness-raising (Markussen, 2013; Fuad-Luke, 2017, 2009; DiSalvo, 2012; Rancière, 2010). The walk aimed to create the space for collective reflection about issues where social and physical dimensions converged. By discussing in small groups and letting the surroundings to embrace the conversations, the walk helped participants to see things differently. Participant 11 shared:

> ‘‘*The walk was a really good idea and the reasons I am giving are because we saw and spoke to each other about different perspectives. It also was fun to be with you and to understand your ideas both verbally and visually, and critically navigate throughout the space. It sparked loads of ideas. I liked it because it made me slow down, observe, and feel the spaces.”*

The activity generated an embracing atmosphere for the participants to reflect in situ and contribute to the focus of the project. The walk activated visual and kinaesthetic learning processes. It also broke down the hierarchies that sometimes can be found in traditional environmental conditions, such as round tables indoors. Careri (2002) states that walking is an art form which discloses an interpretation of ourselves within the environment, and aesthetic recognition through the experience of understanding (Rasmussen & Wright, 2001) - a production of collective meaning.

Sprouts of behavioural and organisational change

During the follow-up, participant 6 reflected on adopting "…moving as an important part of decision-making…", denoting potential social change. About this, participant 2 said: "…I realised it is so important to have all that design planning before doing. I have just finished a permaculture design certificate. I think this project will help to inform that as well". Other evidence of change was to see that participants adopted walking and the hang-it-up activity in their community meetings. Participant 1 shared:

> "*…the process helped to open ourselves up and our relationship is a little different now. We are more comfortable. For instance, we used to have a non-flexible system. Every week we had like a business meeting, and we decided, during the process, we would have meetings when we needed them."*

The climate created during the workshops stimulated participants to behave differently and feel free to be themselves, acknowledging a change in their attitudes. Participant 6 said:

> "*…by the fact of us being a group, I felt like all the stuff of me having to perform or do something, just about me personally and my need to perform well, that just fell apart. That just did not happen, so I was comfortable and enjoyed it."*

Inter-personal learning

This finding draws on 'people skills', comprising skills and competencies such as learning to listen to people, building trust and respect for different perspectives, changing perceptions and expanding mutual understanding towards working together. For example, participant 5 said: "…it taught me a little bit to just be open to other ideas, be able to contribute but be open to other ideas because it is a group". They learnt how to collaborate better by making their attitude more open to listening to others. Participant 5 added: "…having the input of many people I realised is much more powerful, because everybody is involved, we can develop something which everybody is comfortable with…", raising awareness of collective ownership. Participant 4 shared: "…I am interested in seeing how we are coming together as a team, working together and not just running the place…". Participant 2: "…It helped me see that what I think is not always the most appropriate design, whereas with co-design most things are thought of and everyone feels ownership…". Participant 6: "…what I have learnt is the deeper level of trusting of the group process". On changing perceptions, he added: "…I have learnt about other people, a couple of people who were able to see clearly and that helped me to have a different view of them".

Discussions and conclusions

This study has investigated the arguments pointing to co-design as a suitable methodology to confront socio-cultural challenges (Meroni et al., 2018; Fuad-Luke, 2017, 2009; Ehn, 2017; Smith et al., 2016) that threaten and constrain our present and future qualities of life. Today we live in turbulent times. The ripples of the recent recession are still spreading, globally re-moulding the socio-cultural and political-economic spheres. Economic experts envision another significant recession, as a consequence of the pandemic, which will lead to the post-oil era (Ahmed, 2017). The IPCC (2018) reports the socio-cultural need to urgently reshape our lifestyles and consumerist modes. Internationally, we are witnessing movements arguing for egalitarian power-relationships (e.g. #blacklivesmatter) and social change that embrace sustainable ways of working and living together (e.g. #extinctionrebellion). The challenges at stake require networked communities and interdisciplinary expertise (Meroni et al., 2018) to produce synergies and social innovations capable of adjusting and re-equilibrating the relationship between nature and the built environment, seeking for sustainable ways of inhabiting this world (Manzini & Meroni, 2014). Our literature review has identified how design research approaches are increasingly present in the public sphere (Fuad-

Luke, 2009; Mulgan, 2014), and geared towards addressing complex social issues (Fuad-Luke, 2017; 2009). Some approaches (see Nygaard & Bergo, 1975; Gillinson et al., 2010) recommend governments to set up centralised strategies that empower and support local community-led initiatives, associating local knowledge-production, empathy, and horizontal relationships as key factors in the emergence of social innovations (Ostrom & Ahn, 2009). We argue that 'centralised strategies and local actions' require a greater understanding on how design can be a catalyst for supporting social change processes, and also the need for policies that create the legal framework of interaction, between local actions and centralised strategies.

The challenges society faces are amorphous in their structure and characterised by emergence, nonlinearity, uncertainty, adaptation and constant change (Silverman & Patterson, 2015). We argue that design features in all these challenges. What we have suggested in this study is that co-design, as a socialisation act, has the means to configure boundary spaces (Calvo, 2019a; Edwards, 2011; Gutiérrez et al., 1995; Gutiérrez 2008; Lally & Sclater, 2013). These spaces have the potential to merge the nascent demands of participation (Smith et al., 2017; DiSalvo, 2012; Jenkins, 2006) and the divergence of expertise required to co-articulate the issues, a driving-force that can confront societal challenges. The notion of boundary space is not new in co-design. Muller and Druin (2012) mention it under the term 'third space', a concept built upon Bhabha's (1994) argument that when two or more boundaries (two or more spaces) interact, a boundary space of overlap (a hybrid space) emerges. Bhabha (1994), describes this boundary space as a combination of features coming from all the boundaries interacting. Muller and Druin (2012, p1129) explain that, within this space, "enhanced knowledge exchange is possible". Lee (2008) names it the 'realm of collaboration' which describes a power-balanced space of convergence. Björgvinsson et al. (2012) refer to 'infrastructuring' as the means to create a space for assembling the multiplicity of expertise and divergence (also in Meroni et al., 2018; Smith et al., 2016) regarding the need for co-developing a common design language (Ehn, 2017). In this study, the notion of boundary space finds inspiration from Gutiérrez's (2008) theorisations of the third space, which emerges from differences in the engagement and participation, as well as from the multiple social scenarios that informal situations provide, which are based on egalitarian structures of power-relations. Therefore, the conversation flows under inclusive and comfortable social conventions. Gutiérrez (2008) aligns with Suchman's (2002) association of boundary crossing and mutual learning. The concept of boundary-crossing, developed in the 1990s, reflected the transition of individuals interacting between various practices (Suchman, 1994). Also considered in situated theories of learning (Lave & Wenger, 1991) and in Communities of Practice (Wenger, 1998), it was particularly advanced in educational sciences and psychology.

This study also argues that design-researchers and practitioners have the means to directly intervene in the social environment, through orchestrating and choreographing design activities, supported by techniques, engagement tools and design games (Brandt, Binder & Sanders, 2013). This subtle yet complex designerly act should consider the aesthetic and the 'political' (Mouffe, 2013) dimensions of design. It also requires design-researchers and practitioners to gain socio-emotional competencies to understand participants' ways of feeling and doing (Markussen, 2013) - understanding and stimulating group dynamics and reading the group mood to reorient the flow of engagements as required.

As Markussen (2013) points out, the aesthetic dimension of design is disruptive because it opens up a boundary space, a third space, between the social and performative actions of the participants and the production of 'new' emotions. The aesthetics of a design stimulates emotional responses which cause a disruption by raising awareness of people's activities and how they may feel about it. In this regard, the facilitated walks were orchestrated and choreographed design activities. They were prepared, planned, and geared (designerly) social acts that triggered behavioural change among the participants by reducing

interpersonal conflict and foregrounding third spaces. About this, Kierkegaard and Bretall (1947) observe the benefits of walking, an act that frees simultaneously the body and the mind, enabling thinking. Anderson (2004) builds upon Kierkegaard's reflection on walking, and upon Casey's (2001, p. 684) theorisation about the relationship between the self and place as a “constitutive coingredience”, to develop a walking method to harness 'the inherently socio-spatial character of human knowledge" (Andreson, 2004, p. 254). He emphasises the relaxing effect that the bodily rhythmic moves have on both body and mind, which encourages the use of imagination and unfolds hidden memories and experiences. Kanstrup et al. (2014) review several walking methods and their suitability for participatory and co-design approaches. They identify four key factors to take into account: (i) the relevance of preparing the socio-materials of the walk to spark designerly interactions; (ii) walking methods are time-efficient regarding the enriched data they unfold; (iii) adaptability of walking methods to absorb spontaneous detours of the planned routes and/or of the conversations; and (iv) the importance of “post-walk activities” (Anderson, 2004, p. 59). Walking is a natural human activity, and in this case study, it was re-purposed as a design method to place the participants in a social environment with which most of them were familiar. Yet the facilitated walks engendered boundary spaces, which disrupted participants' everyday thinking, reconfiguring their relationship with the physical and social attributes of Newbold surroundings. The walks enabled the participants to connect in ways they did not connect before. This notion of relational aesthetics aligns with the notion of aesthetics developed by Rancière (2010), a dialogic form of interacting (and learning) with the social environment, which "reorients perceptual space, thereby disrupting socio-culturally entrenched forms of belonging in and inhabiting the everyday world" (Markussen 2013, p. 44).

Giroux (2020) has recently argued that “Hope is the affective and intellectual precondition for individual and social struggle”. Emboldened with hope, educators can use theory to address pressing problems. To meet the challenges of social innovation and organisational change we are advocating the use of theorised co-design, drawing upon key theoretical concepts including, for example, boundary spaces. Giroux also points out that civic courage is required to transform critique into political practice. Co-design, in this sense, is, we think, a form of political practice and can be a catalyst for social change and social innovation. Giroux comments:

> *"Hope as the desire for a future that offers more than the present becomes most acute when one’s life can no longer be taken for granted. Only by holding on to both critique and hope in such contexts will resistance make concrete the possibility for transforming politics into an ethical space and a public act."*

We think that collective consciousness can be aroused through co-design activities, as evidenced in the case study presented in this paper. When combined with imagination, we contest that such consciousness has the potential to enable people to co-design new forms of community that, according to Giroux (2020), "affirm the value of the social, economic equality, the social contract, and democratic values and social relations."

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