Tangible, Public, and Miniature Creative Exchanges: What HCI and Design Researchers Can Learn From the Free Little Art Gallery Movement

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Figure 1: Three of our participants' Free Little Art Galleries (FLAGs), which are small boxes for exchanging art and featuring art made by their community. The FLAGs have similarities including places to hang art and miniature patrons to look at the art. Images courtesy of Katrina Lyon, participant opted not to self-disclose, and Sarah Jerger.

ABSTRACT

HCI researchers are continually exploring new ways of engaging the public in participatory design and bringing creative making research activities to new audiences. In this paper, we interviewed individuals who independently began public and DIY installations for sharing miniature art among their neighbours. During the COVID-19 pandemic, participatory miniature art exchanges, commonly known as Free Little Art Galleries (FLAGs), organically spread in response to lockdowns and institutional constraints. In this qualitative study, we interviewed 20 FLAG 'curators' to understand the implications involved in setting up and maintaining these long-term deployments. From the analysis of these interviews, we provide 5 practical recommendations on supporting these types of deployments, and discuss how HCI researchers can expand upon these DIY participatory practices to bring creative ideation activities on the future of technology to broader audiences.

C&C '23, June 19–21, 2023, Virtual Event, USA

ACM ISBN 979-8-4007-0180-1/23/06.
https://doi.org/10.1145/3591196.3593433

CCS CONCEPTS

• **Human-centered computing → Human computer interaction (HCI)**.

KEYWORDS

free little art gallery, FLAG, tangible exchanges, participatory design, probes, sketching, art

ACM Reference Format:
Lee Jones, Alaa Nousir, Tom Everrett, and Sara Nabil. 2023. Tangible, Public, and Miniature Creative Exchanges: What HCI and Design Researchers Can Learn From the Free Little Art Gallery Movement. In *Creativity and Cognition (C&C '23), June 19–21, 2023, Virtual Event, USA.* ACM, New York, NY, USA, 16 pages. https://doi.org/10.1145/3591196.3593433

Figure 2: The inside of a FLAG with miniature artworks made by their community. Image courtesy of Amy Shaw.

1 INTRODUCTION

Human Computer Interaction (HCI) and design researchers are continuously looking for new ways of engaging communities in their research studies and expanding upon participatory methods. Increasingly, HCI researchers are including research participants at the beginning of research projects, during the "fuzzy front-end" of the design process, to collaborate and get input on what should be designed in the first place [91, 92, 94]. As a result, ideation and creative making activities have shifted from something that designers do, to something end-users do and that designers facilitate [93]. To support these creative ideation practices, design researchers use a variety of tools such as probes [114], tool kits [93], sketching activities [52, 104], and experience prototypes [17] to enable end-users to design and describe their own visions for future technologies. The maker movement further supports these aims by increasingly transforming HCI's focus from "consumers to creators" [63], where individuals both participate and create their own objects and technologies [61].

As part of the initiative to reach end-users and understand their context, research is increasingly leaving the controlled environment of the lab in favour of 'in-the-wild' studies that evaluate new technologies in the contexts where they will be used [21, 24]. In this paper, we aim to explore opportunities for bringing creative making and ideation activities in the same direction. We aim to bring these activities out of the lab and physically closer to the communities we want to engage by exploring the novel participatory structures of Free Little Art Galleries.

1.1 What are Free Little Art Galleries?

Free Little Art Galleries (FLAGs) are participatory art exchanges that popped up in neighbourhoods throughout the pandemic and created new ways of creating and engaging with arts and crafts (Figure 1 and Figure 2). One of the most notable FLAGs by artist and illustrator Stacy Milrany started in December of 2020, and received widespread news coverage [1, 34, 35, 40, 74, 118] for how it enabled individuals to engage in art creation, dissemination, and exchange during the pandemic. The FLAG was a small box posted on her lawn that resembled a Little Free Library, but inside it looked like a miniature art gallery set up for exchanging small art pieces with miniature easels, gallery benches, and patrons to look at the art [40, 74]. Using the Little Free Library concept of "take one, leave one", neighbours were encouraged to take and contribute miniature art pieces [40, 74]. Milrany's iteration of the miniature gallery concept quickly became a template that individuals could reproduce locally while customizing it to their own neighbourhoods [1, 47, 118]. As individuals created their own instances of FLAGs and the idea spread, FLAG directories were created so artists could mail their work in and visitors could locate them [67, 89].

The FLAG concept was widely featured in the media for how it empowered individuals to exchange artefacts in an accessible and safe way, but the concept could also help institutions and researchers understand how we can further engage our communities in participatory making activities through publicly available miniature exchanges outside of an institution's physical walls. Importantly, the FLAG format grew out of an organic need to create, share, and reflect during the pandemic, and in doing so demonstrates how the format could potentially be useful for expanding creative making activities in research. In this paper, we show how although FLAGs started out with individuals creating art exchanges on their own lawns (Figure 3), they have grown and been adapted by cultural institutions and organizations as well. For this project, we interviewed the creators of 20 FLAGs to better understand what is involved in running and maintaining this type of exchange. Of these 20 interviews, 8 were done with creators of FLAGs developed by, or supported by, community or cultural organizations.

Figure 3: A FLAG painted to match the surrounding garden. Image courtesy of Carolyn Lewis.

1.2 Contribution

Researchers and cultural institutions often struggle with engaging audiences outside of their physical space, and these relatively low-cost miniature exchange outposts could provide an opportunity for bringing the 'space' to new audiences and encouraging visitors to engage in participatory and creative ways. In this study, we wanted to understand the tasks involved in starting and maintaining this type of miniature exchange, and asked interview participants to reflect on their experience running these Do-It-Yourself (DIY) long-term deployments. Through the analysis of these interviews we contribute practical recommendations and guidelines that HCI researchers can use to create participatory exchanges of DIY tangible objects. In this paper, we unpack the unique characteristics of managing these tangible deployments.

This paper has two main contributions:

(1) ***Introducing HCI researchers to the Free Little Art Gallery format***: Our findings provide a summary of the aims, goals, benefits, opportunities and challenges of Free Little Art Galleries, and how these participatory installations function.
(2) ***Providing recommendations and next steps for HCI***: We provide recommendations for HCI researchers on how they can use the FLAG format to expand community participation in research projects.

2 RELATED WORK

The Free Little Art Gallery (FLAG) concept intersects and expands upon several participatory and community design practices in HCI. These include: 1) using arts and crafts activities to help participants express their ideas, 2) using miniatures for collaboration, and 3) using DIY tangible community exchanges for resource sharing. In this section, we discuss each of these categories of related literature.

2.1 Thinking Through Making

In HCI, the field of computing is continually 'reaching out' as computing becomes embedded in ever-expanding areas of our lives [46]. As HCI expands into new domains, researchers in our field are growing our methods to leverage approaches from other fields, such as the arts and humanities. For example, methods such as design fiction, and speculative or critical design [8, 32, 65, 84], or looking for research contributions in everyday creativity [3, 4, 28, 29, 33, 68, 113]. In the early stages of design, one increasingly used method of gaining design research knowledge is cultural probes [42]. The types of cultural probes vary to a great extent, but overall they are activities that aim to help researchers understand communities while also guiding them towards unexpected insights or 'inspirational data' [42]. Probes are often tangible activities that leverage materiality to encourage reflection and 'probe' at what participants find personally meaningful [42, 114]. Common design approaches for probes are activities that are playful and open-ended, while also providing participants with a manageable task to complete [9, 114]. As a result, creative making activities are increasingly being conducted in HCI within this context as a way of creating conversations between researchers and communities and bringing out insights that would be difficult to uncover otherwise [9, 42].

HCI and design researchers often engage participants in creative making activities to help participants externalize and communicate their ideas, especially when exploring new or unfamiliar topics. One of the most common methods is sketching, which only requires a few familiar tools and does not require specialized training or expertise [25]. Sketching can serve several purposes throughout the design process. For example, sketching is a way of thinking through complex concepts [22, 25, 41, 104], and having participants sketch out phrases or terms can give researchers a better understanding of how they make sense of them [106]. Sketching helps us discuss ideas [76], and activities such as "sketching conversations" (where individuals draw and build upon each other's drawings in an iterative call-and-response manner) can help scaffold and facilitate conversations between individuals from different fields [60, 119–121]. By externalizing our thoughts, sketching also helps us remember and document our ideas so that they can be revisited and expanded upon later [22, 69, 105, 108]. For designing items or situations that do not yet exist, sketching and drawing can help with world-building, by imagining possible future scenarios and design fiction [104]. For this reason, researchers often use practices like rapid sketching to elicit future technology ideas during ideation activities [52, 103]. Sketching is also flexible in that it helps convey how items interact, move, or change over time [108], such as with storyboarding where visual sketches can be combined with text and annotation [15, 22, 109]. For novices who need added support, sketching can be further scaffolded with a library of icons, prompts or toolkits [93, 105].

Through other forms of thinking through making, researchers of tangible and physical artefacts are exploring a wide variety of materials and crafting techniques [48]. Designers often bring out craft supplies for participants to create experience prototypes of tangible devices for feedback and discussion [17]. For example, craft materials like construction paper, pipe cleaners, and clay can help transition participants from sketches to prototyping [11]. Building with physical materials encourages individuals to iterate on their idea while they are building it [11]. Designers can also develop pre-made toolkits, or constructive assemblies [64], that enable participants to quickly connect pieces together to craft prototypes such as toolkits for shape-changing interfaces [56] and textile and wearable interfaces [53, 86]. Hybrid crafts, which combine handcrafts with interactive materials or design processes, enable individuals to create interactive prototypes with a variety of materials, techniques and tools [6, 18, 38, 45, 51, 80, 122]. Hybrid crafts can be more accessible due to the ability to leverage more readily available materials and tools from home [54]. Making these types of tangible prototypes helps individuals better evaluate and think about how their ideas could exist in the real world and potential implications of their designs [17]. Leveraging the Free Little Art Gallery template with the wide variety of hands-on making techniques that participatory designers use could enable researchers to expand where this type of idea exchange happens and who can participate.

2.2 Miniatures and Scale Models in Design

In the same way that designers often use physical making to externalize ideas, miniatures and small-scale models can help with collaboration and to facilitate discussion. Small-scale models are used in many different design fields for physically thinking through,

communicating, and collaborating on design concepts [116]. Traditionally, small-scale models were used for communication and demonstration to present design concepts to team members and clients. Examples include the small-scale mannequins used in fashion design, architectural building models, model automobiles, interior design models, and maquettes used for exhibition and stage design. The benefit of creating small-scale models is that they require less time, effort, and material investment than 1-to-1 prototypes and are easier to manipulate and move around for iteration. Compared to techniques like sketching, small-scale models also give a more embodied and tangible understanding of how the object or objects will exist in space, in relation to each other, and in relation to natural forces such as gravity [11]. Compared to computer-aided design (CAD) models, physical models also elicit more feedback and comments from users [7]. The benefit of prototyping with tangible objects is that they leverage our physical skills, and are also increasingly easier to make with digital fabrication technologies [43, 116].

In HCI, small-scale models are used for engaging users in co-design activities, and are often created as toolkits where users can physically manipulate objects and try out different ideas in an iterative manner [93]. Examples include engaging users in the design of wearables [11, 97, 111], theatre scenography [49], public displays [57, 58, 77, 78], interior design [20, 26, 100, 101], and architecture [110]. Small-scale models can also become more embodied for users by, for example, placing 3D cameras within them and enabling visitors to experience a space through virtual reality [99]. Importantly, though many small-scale models in HCI are interactive, they can also be made with low-fidelity materials. Researchers often use miniatures to collaborate with teams within their own workspaces, either in their research labs, or within their client's space. The FLAG concept, in this case, gives us an opportunity to explore how this type of miniature participatory space could be implemented in public spaces to help broaden participation and bring participatory design to new audiences.

2.3 Sharing Tangible Items

Tangible exchanges and the sharing economy aims to match individuals who wish to share items with individuals who are searching for them. FLAGs innovate on previous sharing economy research in that they involve sharing what individuals create rather than goods and services [10, 30]. Research in HCI on maker-oriented sharing mostly resides within the study of maker cultures of digital fabrication, where design files can be uploaded and then downloaded and recreated elsewhere [43], as well as barriers and behaviours of this digital-to-physical sharing and remixing [2, 50, 82], with recent work on the sharing of tangible objects [55]. What is more common and widespread is the sharing of documentation, by individuals, of the making process in tutorials through platforms such as Instructables [19, 61], live streaming while making [39], and life logging craft processes through social media [5, 59, 70, 72, 85]. Researchers have explored creating traces of these practices, stories of the making process, and documentation within objects through platforms that connect tangible objects with added data [31, 36, 37], but otherwise crafting practices have not been embedded in the sharing of tangible things. Instead, hobby crafters are then increasingly able to commercialize craft practices (through traditional buying and selling) through platforms such Etsy, Ravelry, and Thingiverse, and using social media for marketing [61, 90, 98].

Though FLAGs differ from most sharing economy research, there are still behavioural patterns and insights that can be gained from the study of other platforms. For example, the FLAG concept remixes the trend of Little Free Libraries (LFL), which are small boxes, often placed on the edge of an individual's property, where neighbours can freely leave and take books. LFLs are common features in neighbourhoods especially throughout North America, and there are over 150,000 LFLs worldwide [79]. Yet there are still issues with matching those who are giving books with those who are looking for them. For example, researchers doing quantitative analysis on the distribution of LFL within specific cities in the U.S.A and Canada found that they were more likely to reflect current disparities rather than solve for them [95, 96]. For example, LFLs were more concentrated in areas with higher income [95], more university graduates, and areas that already had access to books (i.e. closer to public libraries) [96]. This is likely due to the reliance on individuals to build, install, and maintain them on their property, and highlights the role that community groups and organizations could play in sponsoring these installations in purposeful and thought-out locations.

3 METHODOLOGY: QUALITATIVE STUDY WITH 'CURATORS'

Free Little Art Galleries spread organically in that they were created by individuals or organizations who saw the concept and wanted to create one in their own community. We conducted a virtual interview study with 'curators' of Free Little Art Galleries (FLAGs) to understand their experience with these in-the-wild, long-term deployments of miniature art exchanges.

3.1 Research Questions

This research project had two main questions:

- **RQ1**: What is involved in creating and maintaining these types of participatory deployments?
- **RQ2**: What have 'curators' of Free Little Art Galleries learned from the process? What would they recommend for individuals who want to use the format?

3.2 Participants

To better understand the concept of Free Little Art Galleries and what is involved in the process of creating and maintaining one, we interviewed 20 'curators' of Free Little Art Galleries (P1-P20) (Table 1). We recruited our curators through email and included individuals who set up and maintain a miniature and publicly available gallery. Nineteen of our participants had miniature galleries that were started during the pandemic, and one started their gallery beforehand. Eight of our participants worked with or were part of an art or community organization that supported the FLAG. These participants at times had a variety of FLAGs to maintain (varying from 1-6 FLAGs). All of our participants had experience with running their miniature galleries as an exchange, but one participant transferred over to a display-only model due to low engagement.

Table 1: Participant Demographics of FLAGs (Free Little Art Galleries)

Participant	Location	Owner	# of FLAGs
P1	Florida, USA	Independent	1
P2	Florida, USA	Independent	1
P3	Illinois, USA	Organization	1
P4	Michigan, USA	Independent	1
P5	Illinois, USA	Independent	1
P6	New York, USA	Independent	1
P7	Missouri USA	Independent	1
P8	Oklahoma, USA	Organization	1
P9	Ontario, CA	Organization	6
P10	Vermont, USA	Independent	1
P11	Illinois, USA	Organization	1
P12	Maine, USA	Organization	1
P13	Auckland, NZ	Independent	1
P14	Michigan, USA	Organization	3
P15	Michigan, USA	Organization	1
P16	Oregon, USA	Independent	1
P17	Washington, USA	Independent	1
P18	New York, USA	Organization	2
P19	Virginia, USA	Independent	1
P20	Louisiana, USA	Independent	1

3.3 Procedure

We emailed individuals who expressed interest in our study a Qualtrics [88] online consent form. We conducted semi-structured interviews through video calls (Zoom) [23] where we asked participants a set of questions with the main topics including: motivations for starting the gallery, definitions of a Free Little Art Gallery, curatorial boundaries around the collection, expected community interactions, maintenance of the gallery, and feedback they have received from the community. These interviews lasted from 30 minutes to a maximum of 1 hour. A second, and optional, portion of the study was a Qualtrics survey where participants could submit photos of their Free Little Art Gallery. This survey included the option to self-disclose for image credit or to remain anonymous. We obtained clearance from our institution's research ethics board.

3.4 Analysis

Our data collection included over 15 hours of video recordings and corresponding Zoom transcripts [23]. We then manually reviewed and edited the auto-generated Zoom transcripts using a verbatim transcription approach. For analysis, we used Braun et al.'s [13, 14] reflexive and inductive thematic analysis that aims to generate analysis by leveraging the research teams' interpretive lens of the collected data (i.e. around our interview transcripts on the creation and maintenance of Free Little Art Galleries) instead of in relation to previous theoretical frameworks. This approach emphasizes the interpretive role of the researchers, where transcripts go through several iterative rounds of coding rather than relying on a codebook [14]. We chose a reflexive approach to analyze the data as HCI and design researchers with a focus on the lessons we could learn from Free Little Art Galleries for participatory tangible study deployments.

The analysis process involved reading through the transcripts several times to become familiar with the data. Then the first two authors did an initial note-taking and coding with codes that mirrored the language and concepts our participants discussed. This involved the first and second authors analyzing the first interview transcript together and iterating to come to consensus, and then dividing the remaining transcripts. At the end we returned to discuss our findings and to further iterate on the codes. Our coding process was done in MAXQDA which enables easy organization, iteration, grouping, and sharing of codes, sub-themes, and themes [44]. These themes and sub-themes were then reviewed by the entire research team to create a thematic map using the creative coding feature in MAXQDA. This thematic map was then used to develop the final themes. In our findings, we describe the themes and sub-themes, and use quotes from our interviews to illustrate them.

4 FINDINGS

Our participants discussed their role creating and maintaining their miniature art galleries with a focus on four themes: 1) They elaborated on how the galleries made art creation accessible with recommendations on how to further foster this accessibility; 2) They highlighted how the miniature art galleries were a locally reproducible concept, and fostered both tangible and hyper-local neighbourhood communities as well as online communities; 3) They shared the visual cues that they used to instruct visitors on how to use the space; and 4) They discussed their role as facilitators and maintainers, and having to let go of control over the gallery. Herein, we present the details of each of these themes.

4.1 Theme 1: Increasing the Accessibility of Art Acquiring, Creation, and Presentation

Our participants discussed the FLAGs as making art more accessible. They enabled individuals to engage with art in a tangible way during the pandemic, and encouraged art creation and presentation for individuals of all ages and with all skill levels. Over half of our participants also provided suggestions for making the height of the structure accessible, and for providing access to art supplies.

4.1.1 Working within the constraints of the pandemic. All but one of our participants started their art gallery during the pandemic (N=19), and they discussed how the format was well suited to the constraints imposed by this period of lockdowns, social distancing, and teleworking. They discussed how their communities started working from home or doing distance learning, and as a result, were staying within their local neighbourhood. As P19 summarized: "*It seemed like everything just became really about where we live in our neighborhoods and we stayed home and I guess [our] world just got smaller.*" Our participants noticed that their neighbours were going on more local walks: "*a lot more people were walking around the neighborhood to get out of their house for a little while*" (P17). The miniature galleries gave walkers something new to look forward to each time. Many participants described the difficulties their communities experienced during the pandemic, especially during lockdowns, and with the galleries they wanted to create a bit of "*communal joy*" (P5).

The galleries emulated other DIY exchanges that had become a common method of sharing resources. Our participants noticed how people began exchanging items outside to support each other at a safe distance. P3 felt this "*especially during the height of the pandemic. [It had become] sort of common for people to share outside their homes*". The galleries became a way of giving back. Participants used the miniature galleries as a creative outlet and also to provide a creative outlet to others, "*to bring joy to people and help create community in this time when we were so isolated from each other*" (P10).

Many public institutions like art galleries and museums were closed to the public during this period, and the miniature art galleries became "*an opportunity to participate in art in a safe place*" (P16). For art organizations, their FLAG became a way of engaging their community in a way that did not involve screens and did not increase their community's "Zoom-fatigue". P14 described how they "*were looking for new ways to engage the community in a hands-off way that wasn't Zoom. There's only so many Zoom artist talks you can attend*". Creating a gallery that was outside, "*since we couldn't allow people to come into the gallery physically*" (P9), enabled arts organizations to continue arts programming. P12 summarized the limitations of the pandemic: "*We couldn't have them gather under a roof and do art workshops or projects, so instead it was a good outdoor activity that people could walk to or drive to*".

4.1.2 Art is for everyone. Beyond pandemic constraints, most of our participants (85%) also highlighted how the miniature art galleries, and corresponding miniature art, made art accessible in a way not currently available through traditional galleries. P1 expressed that "*it's not expensive, it's not something that is in a museum that you cannot touch. You can go, you can touch, you can feel it*". The miniature art galleries did not replace traditional art galleries, but provided another way of interacting with art.

One way the FLAGs changed gallery conventions was through the removal of gatekeepers. P3 explained: "*No one is saying what is art and what should be perceived as trade-able and shareable*". The art galleries combined the art of all different types of creators: "*the elementary school kid, and the professional artist, and the amateur artist – everyone gets a spot in that box*" (P5). For art organizations, the miniature art gallery provided a way of engaging a broader audience, "*we got a whole different audience engaged in art making. It was people that we had not engaged with before and that was really cool to see*" (P14). Our participants often highlighted feedback they received that the art gallery had encouraged individuals to return to making art and overcome hesitations, "*maybe you want to draw but you're like, 'I'm just not good at it', but seeing other people do it and having this place where the stakes are so low, it really just inspired a lot of people*" (P17). Many of our participants held values that anyone could be an artist even if that was not their professional occupation. For example, P10 said: "*I've always been a big believer in making art really accessible [...] making sure that people can get in touch with their own creativity and know that they are an artist and a creative person*".

Over half of our participants (N=11) highlighted that they were motivated to create the gallery to encourage art creation from all ages, and particularly youth and "*seeing kids have their creativity nurtured*" (P11). For example, P5 enjoyed seeing "*younger artists feeling proud of their work and feeling like there's a place for them to be seen*". The miniature art galleries provided a platform for youth to share their work: "*Kids, I've noticed, really love to see their art shared*" (P10). When our participants saw youth visiting the gallery it also brought up height accessibility issues of the gallery structure. Our participants (N=5) noticed kids "*jumping up and down trying to see in*" (P16) or parents "*lifting their kids up*" (P11). As a result, these participants recommended that galleries be built "*a little bit lower*" (P5) to improve accessibility.

4.1.3 Access to art supplies. Miniature art in itself requires less materials and supplies to create, but over half of our participants (N=12) said that providing art supplies was an important part of making the gallery accessible for individuals who might not have art supplies readily available at home. Miniature supplies did not need to be expensive, for example P14 included "*art supplies we just pick up at the dollar store or sales at [craft stores]*". Art supplies can also become part of the exchange, and a few of our participants created an area of their gallery just for their neighbours to drop off and exchange extra supplies. Providing supplies also means that individuals can make art right away, and this was especially important for locations individuals did not visit regularly. P15 recommended "*having a bit of materials nearby because you [i.e. visitors] might be inspired, but what are the chances you are going to go home and come back?*"

4.2 Theme 2: Meeting Their Local and Online Communities

Though the miniature art galleries are physically installed in neighbourhoods, our participants discussed the ways FLAGs integrate local but also digital communities. For example, many first learned about the concept online, reproduced it locally to meet neighbours, and also engaged online communities of FLAGs, with some enabling artists to mail in art from abroad.

4.2.1 Providing a blueprint. Most of our participants (N=13) learned about the concept of Free Little Art Galleries (FLAGs) through online news coverage of Stacy Milrany's miniature art gallery created in Seattle, Washington, during the pandemic. Six others learned about the concept through friends who had seen the original article or through social media postings of other iterations. After seeing the FLAG or an iteration on it, they then envisioned one within their own community. For example P7 said: "*I knew that was going to be a way to like bring the city together or bring our neighbours together*". They discussed how the FLAG was locally reproducible, "*a concept that can be transported*" (P18). In reproducing the concept locally each curator "*adapted it in their own way*" (P14) based on how their community interacted with it. P19 elaborated: "*I think each one is going to be unique because it's going to be in a different place, different culture, different people*".

4.2.2 Meeting their community. For most of our participants (N=17) success for the miniature gallery was measured in the exchange of pieces and seeing people interact with the art. For example, P4 noted: "*I really feel like it was successful in the sense that there was an actual exchange going on*". Participants felt that people creating miniature art specifically for the gallery, and exchanging them for pieces they enjoyed, demonstrated that the project was successful. Likewise,

P18 said: "*If the little gallery is engaging with the community I think that's successful*".

On top of seeing the exchange of art, some participants (N=8) also valued the gallery as a catalyst for meeting their neighbours. For instance, P10 expressed that: "*It's been so fun to get to know a lot of people who live frankly like right in my neighbourhood and I had never met before. That's been really, really fun for me to get to know my community members*". In this sense, these miniature art galleries served as a means to reach out to local residents through their arts and crafts practices, and to better understand the types of creative hobbies and activities local communities enjoy.

For individuals wanting to start their own, our participants (N=9) recommended reaching out and creating community partnerships with arts organizations (Figure 4). P11 explained this stating: "*I think the advice I would give is it's great to have somebody like [an arts organization] who already has all of the connections and the avenues and the audience and that platform for people who love art*". For arts organizations, they also recommended connecting with partner institutions like museums and libraries to create a network of miniature art galleries and to reach new audiences. As one community organizer (P18) summarizes: "*We didn't want it to just be the box on the wall with art on it, we wanted it to be the jumping off point to a lot more outreach that we could do to bring joy to people*".

To increase engagement our participants (N=11) suggested adding special events to the gallery where they would let artists in their community have a solo show. For example, one art organization created "*a new series of some artists takeovers so we're going to let people take over the gallery for a week or two with the understanding that it'll be just their work in it*" (P14). Some art galleries dedicated a special section of the gallery to solo shows. For instance, P19 said: "*I've had three special exhibitions. I put a piece of plexiglass on the top layer so that part of the gallery is just for viewing and then the lower portion has things that people can take*".

Figure 4: Two FLAGs made by participants from arts and community organizations. Images courtesy of Johanna Sweet and Savannah Whitehead.

4.2.3 Community locations. Almost half of our participants (N=9) provided recommendations on what made a location a good spot for a gallery based on their experience. The answer that continually came up was that the location needed not just a lot of walking traffic, but a specific type of returning walking traffic. The location had to be somewhere that people frequently returned to or repeatedly passed by. Good locations included spots on daily commuter routes that have "*a lot of people that walk through*" (P19), or returning destinations such as libraries (P15) and post offices (P8, P12), rather than a one-off (but high-traffic) destination such as tourism locations. This ensured that individuals had the opportunity to see the gallery, go make art to contribute , and then return to the gallery to add their item to the collection. In contrast, high-traffic locations without returning visitors had a lot of art taken from the gallery, but less contributions to the gallery, and as a result were often left bare and needed their curator to restock them.

Our participants (N=13) also described the art gallery as a destination where people would return to the gallery to check in on new artworks. P20 highlights how visiting the FLAG became a habitual part of daily walks for individuals in their community: "*I've had people comment that since the pandemic, this has been like the shining light. Now we have something to look forward to every day on our walk*". Beyond local neighbourhoods, people were also coming from outside of their community to visit the galleries, and with the slow re-opening of community activities some art galleries had been added to maps for bike tours and art crawls. Some participants noticed "treasure hunt" interactions after artists posted on social media that they had left items in the gallery. P20 noticed "*people driving around screeching their cars when they see the little hints that [...] this is where [the artist dropped off the art]*". To further support these behaviours, several participants (N=4) said it would be nice to have a directory of miniature galleries so that they are easier to find.

4.2.4 Social media and expanding the exchange beyond local contexts. Our participants learned about the FLAG concept online, but many (N=17) also used social media to share their own experience, to connect with other miniature art galleries, and to promote the work of artists who contributed. Our participants used Instagram to encourage individuals to visit the art gallery and to "*create some momentum*" by posting updates. Followers who saw something they liked online would then be encouraged to visit in person. For example, P15 would "*snap a picture and post it and then that special piece was gone within half an hour*". Instagram also helped the gallery reach folks outside of their local neighbourhood. P16 elaborated: "*I started an Instagram account for it because I wanted to be able to share with people outside of our community*". This enabled galleries to broaden their reach to individuals who could not access the physical space. P8 also mentioned that "*having the Instagram and stuff makes it super accessible for even people that are still not comfortable [accessing public spaces]*". Over half of our participants (N=13) had mail-in options where artists could send their miniature artworks as packages in the mail to then be included in the gallery. P19 highlighted: "*I just think it's so exciting to get something in the mail that I can share with the community from across the country*".

Our participants also used social media to promote the work of individuals who contributed to the exchange and to "*promote the arts"* (P11). Similarly, P7 expressed: "*Something that's very important to me is that the community knows who the artist is so they can support them*". Our participants would post "*who [the artwork is] from, if it's signed, and tag those people if they have an Instagram account"* (P17). A few of our participants also directly provided instructions for artists to provide their contact information. P19 had "*a little*

laminated instruction sheet that just recommends that people add their contact information or venmo information in case somebody wants to make a donation to their art making".

Instagram was also a way for miniature art galleries to learn from one another and "*connect with other people doing Free Little Art Galleries*" (P16). Participants followed other FLAGs to "*look and see what's going on in different states and around the world*" (P11). This gave them other galleries to share insights with, and to see how other galleries iterated on the concept.

When asked about feedback they had received about the gallery, our participants discussed how most direct feedback came through Instagram messages, comments, or social media posts. This was due to the often asynchronous nature of participation, as well as physical distancing during the pandemic. Participants received feedback on their galleries by "*seeing people interact with it. When we see that our Instagram is tagged on a story [with feedback such as] 'I just got this awesome piece of artwork' or 'putting in this piece of artwork'*". (P9). Social media also gave our participants the opportunity to ask questions of their community such as, "*Do you want to see more of something? What do you want to know about?*" (P10). Feedback from Instagram was positive, and helped our participants ideate on items to add (such as mail-in options and art supplies).

4.3 Theme 3: Visual Cues Inviting Participants to Engage and Exchange

Our participants used several visual cues to signal to visitors how the art exchange functions. This included explicit directions with signs and textual instructions, emulating the structure of other exchanges, designing the interior to look like a traditional art gallery, and making artwork to get the exchange started.

4.3.1 Influence of Little Free Libraries. Most of our participants (N=17) discussed the influence of Little Free Libraries and how familiarity with the format helped individuals to understand the physical box structure as a place for exchange. Many participants already had Little Free Libraries in their neighbourhood ("*So many Little Free Libraries*" (P2)). Little Free Libraries were common enough that "*most people know what a Little Free Library is*" (P15). As a result, our participants used the libraries to explain the concept of Free Little Art Galleries. For example, P16 explained that: "*A Free Little Art Gallery is very similar to a Little Free Library but instead of exchanging books it's an exchange of art and craft*".

Participants even ordered Little Free Library boxes and adapted them into galleries. P1 picked theirs from the Little Free Library website with the goal of getting "*one [where] I liked the size because it fits the artwork inside*". They could then customize the structure to better suit artwork instead of books; "*I painted it and put little rails in it so that it could be more like a gallery*" (P17). They "*removed the middle shelf*" (P20) so that there would be more room for art. The main difference being that the galleries are for "*display and the Little Free Libraries are designed for storage*" (P11).

Though Little Free Libraries can help to scaffold the idea that the box is an exchange, and provide a template for the structure, visitors at times mistook the galleries for libraries. For example, P11 mentioned that "*somebody put a book inside [...] I took it out. I think they confused it with the Little Free Library*".

Figure 5: Most FLAGs had supports for the art such as plinths, and textual elements such as signage to inform visitors on how to interact with the installation. Images courtesy of Mercedes Michalowski and Free Little Art Gallery NOLA.

4.3.2 Textual instructions. To further differentiate and explain the gallery, almost all our participants (N=19) had a sign with textual instructions describing the exchange on the physical structure (Figure 5). Common features included the name of the art gallery, which included words to denote the type of exchange it was, such as "*gallery*" (N=19), "*little*" or "*mini*" (N=19), "*art gallery*" (N=17), or "*Free Little Art Gallery*" (N=7). They often also included the location of the gallery (N=11) or organization (N=4) in the name of the gallery. Some participants also included explicit instructions on the sign describing "*instructions about what to do and what not to do*" (P16). This included describing the exchange ("*feel free to take a piece leave a piece, or both*" (P1)), and what elements were not part of the exchange ("*please leave the patrons and the easels*" (P17)). Several participants highlighted the importance of being very "*clear about what you want from [visitors]*" (P13), and some included parameters such as maximum size for artworks. Two of our participants highlighted that they created specific prompts such as "*a theme or an assignment*" (P17) to encourage continued participation, and to give visitors ideas to work with, and noticed an increase in exchange when they did so. Our participants also included instructions for tagging ("*we had the hashtag*" (P15)) and sharing their artwork online, and how to follow the gallery. Galleries either included web address URLs to their Instagram account or "*a QR code so if somebody wanted to scan that they could go see the Instagram account*" (P16).

4.3.3 The "white cube gallery" and creating a space to display art. Beyond signage, all our participants (N=20) tried to visually cue that the space was for art by taking steps to make it look like a gallery space. All of the galleries did at least one of the following activities, and most did multiple. One way to signal that the space was a gallery was through painting the walls white "*like a gallery white wall*" (P3). P18 described the ways that art galleries have a tradition of being "white cubes": "*People talk about art galleries being the white cube. [Free Little Art Galleries are] a white cube but it's on the street*". Some participants created or emulated wood floors to highlight that it was a miniature display space rather than storage bookshelf.

For example, P19 made a wood floor using "*stained popsicle sticks and polyurethane*".

Most of our participants (N=15) discussed that light was more important for galleries compared to libraries since the goal was to showcase the artwork: "*It needs to have light, otherwise you can't see the art*" (P11). This was done through larger windows on the doors, as well as through adding lights inside the gallery. Thirteen participants installed or were planning on installing lights so that individuals could always see the artwork in the gallery.

More than half of our participants (N=13) included structures in the gallery to hold the artwork. This included wires, strings, or magnets so that the art could be affixed to the wall, or miniature wooden easels. They also created art plinths with wooden blocks to make a platform for sculptures. When they launched the gallery, eight participants made artworks to get the exchange started and to demonstrate what the exchange was about and to "*get the ball rolling"* (P12).

Half of our participants (N=10) included miniature patrons in the gallery looking at the art and miniature gallery benches. These items gave a scale to the gallery and highlighted that the works were for display rather than storage:"*It's fun to have the people in there looking at the art. It kind of gives it more of that feeling that it's a gallery. It's not just a depository for art but it's actually a set*" (P17). Depending on how the figures were placed in the gallery it created a "*narrative"* (P10) or "*dialogue"* (P8) that visitors could play with by rearranging how the figures were interacting with the art and what they were looking at. In representation, our participants who included miniature patrons highlighted that it was important to have a "*diversity of gallery visitors so that people can see themselves visiting the gallery*" (P5). This included race and age diversity, but also career diversity such as including figures who deliver mail, a mechanic, and a variety of career figures to highlight that individuals do not need to have a background in art in order to participate. Though half of our participants started off including patrons, most phased this out over time or simplified with less expensive replacements due to the figures going missing, or being confused as part of the exchange. For example, P20 "*gave up and [...] started going to the dollar store and just getting small little Smurfs or little characters that the kids would like*". P18, similarly, "*slowly [...] phased out of that because it was less sustainable and the art was more important than like having a fun character looking at the art*".

4.4 Theme 4: 'Curators' As Facilitators

The hardest part of the FLAG is set up, afterward our participants focus on maintenance. Our participants discussed how deploying the FLAG involved iteration and responding to their community.

4.4.1 Set up. Most of our participants (N=15) said that the hardest part of running a FLAG was the process of getting it built and installed. The first step was doing research on the location and any restrictions or bylaws they had to be aware of. P7 explained: "*Depending on where you are, the city, or the neighborhood, or the area [can have] very specific rules*". Arts organizations had to get permission to install them on city property, and even individuals who had them on their own property had to make sure to have an inspection done for "*any underground wires or gas lines*" (P12). Participants customized Little Free Library boxes, but for those who wanted a custom gallery, and who did not have woodworking skills, they had to go about "*finding somebody to build it*" (P14). P16 found this the "*hardest part[...] just getting the structure. Like having a background to make something like that. That would probably be the biggest barrier, but once it's up it kind of just has a life of its own*".

Participants had to make sure the structure could withstand the elements and discussed weatherproofing their gallery. Ten of our participants lived in areas that had dramatic seasonal changes or extreme weather. Depending on the area our participants lived in, they had to consider things like "*hurricanes*" (P1), "*heavy rain"* (P13), and "*snow*" (P16, P9). To deal with wind they had to make sure that they had a "*door with a latch"* (P11) so that the wind would not open it, and cementing the stand into the ground. P3 recommended that individuals who wanted to start a FLAG had "*to dig a hole and add cement because you have to make it really sturdy so it doesn't go flying over in the wind*". To protect the art from rain, participants had to take "*steps to really seal [the FLAG]"* (P7) with rubber around any windows and edges, as well as "*overhangs so water doesn't get inside*" (P14). To protect the FLAG from the sun, our participants used varnish to ensure the paint wouldn't peel off or fade. Adjustments that individuals made to the gallery after the launch often included elements to make it "*more resilient to the weather*" (P9).

4.4.2 Maintenance. Once set up, our participants said that the workload was based on how involved they wanted to be in the project. Their biggest concern was that the gallery could not be left empty. In order to avoid vandalism, over half of our participants (N=12) said that they had to restock the gallery to make sure there were always items inside, and this was the task that they had to be most aware of. They recommended to "*beef up your stock*" (P14) by taking some items out when there is a lot of art in the gallery to save them for later, or creating items yourself. A few of our participants created "*a buddy system*" (P2) or recruited a gallery sitter to watch over the gallery when they were out of town. This delegation helped to ensure that the gallery would not go empty while they were away. P17 explained that you had to treat it "*like a dog when you go out of town. You have to have someone to care for your dog and your gallery*". Participants who had less contributions to their gallery ended up having to put more effort into the project. P13 summarized the challenge: "*It's taking more of my time when there's no art. I have to put in something, and so I usually end up making things."*

To lessen the burden almost half of our participants (N=9) recommended that the gallery should be in a location where the owner can easily watch it and add more art as needed. This was easier when the gallery was was in a location that could be incorporated as part of their daily routine. Many of our participants appreciated having it outside their home. For example, P7 made a routine check when leaving for the day: "*It is right outside of my home so every time I leave the house I go check on it*". Alternatively, participants or arts organization staff could have it along their daily commute such as P6 who had theirs "*between where I live and where I work*".

4.4.3 The community takes care of it. Though some of our participants were initially hesitant about the idea of installing a FLAG on

their property, due to concerns about vandalism, none of our participants experienced vandalism of the structure. As P11 summarized: "*We've not had anybody damaging it or anything like that*". What our participants did experience, and what they also saw online as a common experience for other FLAGs, was that the easels and miniature patrons went missing. Even though participants would put up signs saying not to take the easels or patrons, they often disappeared. The biggest risk our participants discussed was this type of "clear out" where everything from the gallery was taken, including the items that were meant to be permanent features of the gallery. Overall, for the most part they discussed the ways their community took care of the gallery and felt positively about the installation – "*people have been super respectful*" (P14).

4.4.4 Rules and responding to the community. Many of our participants were called 'curators' in news articles on the FLAG concept, but described themselves in a more open way. When asked about how they saw their role as curator of the gallery, many of them said they did not curate the works, and most had no rules for the gallery. The few that did (N=7), described themselves more as moderators making sure that the art was appropriate for all ages and inclusive. For example, P12 said they would remove anything "*that was misogynistic, that was racist [. . .] if there was something that was harmful and hurtful, we would not allow it*". Other rules included not allowing promotional material except to identify the artist who created the work, and size constraints ("*the only requirement I guess is that it fits inside the box*" (P7)).

Their definitions of art were purposefully inclusive and most of our participants (N=17) were pleasantly surprised by the variety of art forms that appeared in the gallery. The galleries were often set up for paper and canvas works, but also received items like "*painted rocks*" (P10, P14)), "*poems*" (P8), "*ceramics*" (P7, P18), hand-made jewelry, "*cross-stitch"* (P2), "*stained glass*" (P20), "*mix CDs*" (P18), "*sugar sculptures*" (P16), and "*wooden spoons"* (P14). The galleries also gave individuals an opportunity to experiment, and our participants described the surprise of artists they knew contributing items that did not look like their professional work. The galleries were low stakes and could be "*an anonymous place for people to test the waters of what they want to share*" (P11).

Most of our participants (N=17) described how the gallery was for the community and that they had to let go of their expectations for the gallery. P19 described how they felt that their FLAG belonged to their community: "*I feel like it's very much a community space and it's not my place to say what's good or not good art*". Letting go of expectations came up most frequently in conversations on what was considered permanent and non-permanent items in the gallery, and in recommendations for individuals who wanted to replicate the concept. P12 noted that: "*The trickiest part is to let it be created and then let it have its own life and don't try to control it too tightly*". When patrons and easels went missing, participants were initially frustrated but then accepted that this was part of the process. P16 expressed that: "*It really, really upset me at first, but it's part of it and I don't want it to happen but it's also a part of it*". As a result, our participants recommended "*keeping it simple*" (P12) and to "*not invest in expensive items*" (P2). Our participants recommended listening to your community and iterating on how they respond. P13 explained their approach: "*I would say just do it. See what works and be prepared for it not to work out how you thought it would. Listen to your audience, watch how they behave, and then see how you can work with them*".

5 DESIGN RECOMMENDATIONS FOR FREE LITTLE ART GALLERIES

Based on our study, we provide several practical recommendations for participatory researchers, institutions, and individuals who would like to start their own community Free Little Art Gallery (FLAG) or engage users with tangible prototypes outside the lab.

(1) **Choose a location with returning traffic**: We recommend placing these installations in locations with returning traffic. For example, individuals or organizations could team up with their local library, school, community centre, or anywhere individuals visit and return to regularly (such as once a week or once a day). Participants with FLAGs in high-traffic locations (without returning traffic) such as tourism destinations had to restock and spend more time maintaining the FLAG so that it wasn't left bare.
(2) **Design for your climate and local bylaws**: Participants described how their FLAG structures had to be able to withstand the outdoor environments where they were installed. Before installing a permanent FLAG (with an in-ground post) it's also important to ensure that the area is free of any utility lines running underneath and that your neighbourhood does not have bylaws against installing items in your desired location.
(3) **Design for exchange**: Many of our participants started out with loose items that they considered permanent to the inside of the gallery (such as easels, plinths, and patrons), and discovered that individuals misinterpreted them as part of the exchange despite textual warnings. To design for this and better prepare themselves for these types of interactions, we recommend that caretakers do not invest or include items that they do not want to be exchanged. Another alternative is making these movable items a permanent part of the structure by drilling them in place.
(4) **Provide a redundancy of instruction**: Our participants used several visual methods to describe and instruct individuals on how to interact with the exchange. They did this through the title of the exchange, signage describing how to interact with it, visual cues within the gallery to highlight what the exchange is for (miniature art), and stocking the gallery to get the exchange started. FLAGs are a new concept, and our participants often used more than one type instruction method to help individuals comprehend it.
(5) **Recruit a team**: Our participants highlighted that their galleries needed a 'sitter' when they were away. For example, when our participants went on vacation they recruited neighbours or friends to watch the gallery and keep it stocked during their trip. We recommend that research groups and design teams work collaboratively to take care of their FLAG to ensure that it is kept stocked, but also to lessen the workload of maintaining a FLAG.

Figure 6: The FLAG format could be used for participatory explorations into a variety of HCI topics, such as participatory making activities around the future of smart homes.

6 HCI RESEARCH OPPORTUNITIES

The FLAG format affords an opportunity for HCI researchers to employ their participatory and creative research activities in new contexts; to bring some of the methods (such as tangible, experiential, and miniature prototyping) into public spaces; and to engage broader audiences. Beyond the practical recommendations for creating FLAG instances, which we summarize above, HCI researchers could use the format to create a variety of miniature spaces for ideation and feedback. For example, for collaborating with the public on the design of smart homes or community spaces (Figure 6). Here we discuss some of the opportunities and tensions that might arise when translating the format into a research tool.

6.1 Providing Prompts

FLAGs provide an opportunity to take the making and crafting activities, often used in lab-based participatory design, and bring them out into public spaces where people work and live. This has the benefit of permitting researchers to connect with individuals, in their own communities, in a convenient and engaging way. This format does, however, require careful planning on the part of the researcher to ensure that user engagement matches the desired research outcomes, particularly since the researcher won't be physically present when this engagement occurs. As highlighted by our participants, FLAG visitors need a wide variety of instructions (both textual and through the design of the space itself) to understand how they should interact with the materials or activities contained within it. Some of our FLAG participants used specific prompts, for example, to encourage individuals to draw a specific object or scene, or to draw based on a theme. They found that this increased engagement and that the prompt gave individuals something to work with. Similarly, researchers could use prompts to encourage individuals to sketch specific words or phrases [106], to sketch their feelings on a topic [60], or for world-building activities for envisioning future technologies [104]. The prompts could be used to request feedback from the public on prototypes or use cases for specific technologies. The prompts could also be reinforced through the physical structure of the space, such as by swapping a gallery space for a scaled model home to ideate on smart home interactions (Figure 6).

6.2 Providing a 'Toolkit'

As described previously, toolkits are an important tool for participatory designers. Since FLAGs are essentially open display cases with built-in storage, they are ideally suited to accommodating toolkits and making them readily available to potential users. There are, however, practical issues to keep in mind when deploying toolkits in this context. Our participants highlighted, for example, some of the tensions around providing supplies that many participatory designers have also experienced. A large portion of our participants (N=12) said that providing art supplies was an important part of making participation accessible to all. At the same time, they also discussed their surprise at the variety of unexpected art mediums and materials that individuals used to contribute to the project. In response, some participants decided to add new accessories, such as miniature plinths for sculptures, or hooks to hang items from the ceiling, in order to better accommodate these works. As researchers, it's also worth reflecting on how such unexpected contributions might be beneficial to the research, as well as how these contributions might be adequately planned or accommodated for. It's important also to consider how opportunities for participation might be productively expanded by resisting the urge to limit the ways that individuals can contribute and without being overly prescriptive about what supplies might be used. One way to support this would be to make a supply cupboard that is part of the exchange, where individuals can gift excess supplies alongside their artworks or provide suggestions for other materials the researchers can add. Our participants also noted that the art included in their displays helped them to learn more about their neighbours and the types of arts and crafts that they participated in, which suggests that a trial period might be beneficial for researchers hoping to best match their toolkit with the specific community in which the FLAG is located.

6.3 Considerations for Citizen Science

In bringing research outside of the lab, the Free Little Art Gallery format might also support creative techno-ideation activities as citizen science initiatives, which Law et al. describe as *"a form of collaboration that engages nonprofessionals as contributors to scientific research, typically through the processes of gathering, transforming or analyzing data"* [62]. Citizen science initiatives are becoming increasingly important for the creation of large data sets [102]. For example, initiatives such as iNaturalist [112], where citizen scientists take photographs of local species to increase the accuracy of image recognition, or citizen science games [73] where citizen scientists perform gamified research activities such as sorting through

data to help with classification. These approaches crowdsource research activities by leveraging technologies that allow for virtual participation [87, 117].

The FLAG curators we interviewed, in acting as facilitators for these participatory exchanges, demonstrate an opportunity for scaling creative and tangible participatory practices. For example, researchers could provide prompts and creative kits to curators for ideating and evaluating research concepts in their own local communities. Especially in the realm of technology, where it is important to evaluate concepts within many different communities, moving research activities outside of the lab could increase outreach and inclusion.

At the same time, research ethics is being increasingly discussed within HCI and SIGCHI communities [27, 81]. Translating the FLAG format to a research context requires methods of obtaining research consent from participants and ensuring that they are aware that by participating in the exchange they are also participating in research [66]. Here we discuss some of the tensions that researchers should consider when using the FLAG template for research. We also recommend researchers discuss these with their own institutional ethics board [75].

6.3.1 Providing informed consent: Many research ethics boards require documented consent [83]. At times consent can be obtained through the 'actions of a participant' [83]. For example, if a FLAG has clear signage that research is taking place, then participation in the exchange can become an act of consent. This is the approach often taken with research that involves public data logging or data capture, where participants are informed that research is taking place within a specific area and then they can choose to participate or not. Researchers could also add QR codes or short links onto signage for more active forms of consent. For example, having a participant visit a webpage to virtually provide consent, or additionally the ability to upload a photo of their submitted piece to the exchange. This form of consent is preferable since it is active and documented. The added benefit within the exchange context is that it enables the researchers to capture items they might have missed (i.e. items that might have been exchanged before the researcher could check in on the gallery). In this case, researchers will also need to consider how they will deal with items that are contributed to the exchange by individuals who have not actively consented to participating in the study.

6.3.2 Participant anonymity vs. creative credit: Previous work has highlighted the tension between anonymous participation and enabling individuals to receive credit for their work [71]. In this study, we gave participants the option to self-disclose for photo credit. This is in line with previous research using Instagram where researchers must balance participant privacy with creative credit [16, 115]. Depending on the prompt or research goal, researchers might consider enabling participants to self-disclose to receive credit for their creative work, while also providing flexibility for participants to choose to remain anonymous.

6.3.3 Location and privacy: FLAGs are often placed within geographic neighbourhoods at the edge of an individual's lawn. For our study we removed or cropped out the background of images to remove a participant's home and other identifying details, but left those background details for arts and community organizations who housed the exchange in front of a community location (such as a library or art centre). Overall we recommend placing these types of exchanges in front of community locations when using this format for research to protect the privacy of participants.

Bowser et al. [12] have highlighted the importance of *"contextually-appropriate"* data collection and several strategies that citizen science researchers can use to protect privacy such as location fuzzing (i.e. tagging an area rather than a specific location) [107], restricting the amount of information collected [12], and restricting who can participate. FLAGs could also support flexibility in these areas by providing a central location for participation and a variety of ways (i.e. mediums) to participate and respond to prompts.

6.4 Creating Digital Traces of Tangible Making

Our participants discussed the many ways that their physical installations connected with online interactions. Many of our participants learned about the FLAG concept through online articles or Instagram. Most of our participating FLAGs had Instagram accounts that enabled individuals to learn and explore the concept before participating, document their own experiences with it, and enjoy the artworks that were part of the exchange even if they couldn't see it in person. Participating artists were also encouraged to include their social media handles and other information so that individuals who found the art could link back to the artist. The recent launch of FLAG directories also highlights this interest in finding them as destinations to visit or to mail in art. These many intersections between the tangible artworks and these informal digital traces highlight the value that digital links or augmented features could provide for getting to know and understand communities and neighbourhoods. One area currently left out of the FLAG digital traces is capturing the making process. There are so many methods of 'lifelogging' art and craft practices [5, 19, 39, 59, 61, 70, 72, 85] that could be better tied to the art items created in the exchange. For example, in a two-month deployment of the 'Roaming Objects' platform for capturing reviews and experiences with items rented at a tool library, individuals often uploaded their making process and what they made with the tool and this was appreciated by other participants [37]. Our participants (who were owners of the exchange) expressed that they enjoyed learning about the creative practices of their neighbours. Developing platforms or integrations that captured the making process and linked them to the exchanged item could expand this sharing to individuals who interact with the gallery as well. This could be as simple as adding a link, hashtag or number to the back of the artwork, and having a central location where these artworks and their process could be virtually 'browsed'.

Making is an important part of the process currently left out of FLAGs, which like traditional galleries displays the final result. This also happens with creative platforms for tangible exchange. For example, crafters on Etsy (which highlights the final result or crafted object for sale), often wish that their labour and crafting process could be better captured through the platform [90]. An opportunity for future work is to enable individuals to capture the making journey and share that alongside their tangible objects.

7 CONCLUSION

As design researchers, we often engage participants in creative making activities to inform our research. In this paper, we take inspiration from the tangible DIY innovation of Free Little Art Galleries (FLAGs), which are participatory miniature art exchanges for communities to share art. To better understand how we can broaden participation in research through these public installations, we interviewed 20 'curators' of these miniature art exchanges on their experiences and insights from running these long-term deployments. We found that participants were motivated to start Free Little Art Galleries to create pleasurable experiences within their communities and to get to know their local community members through their arts and craft practices (RQ1). They also discussed the tasks involved in creating and maintaining the galleries, and the techniques they used to foster the exchange (RQ2). In doing so they discussed how FLAGs made art creation and presentation accessible, how these tangible installations also had digital components, how they visually cued individual on how to interact with the installation, and reflections on their role as facilitators rather than curators.

Overall, our paper investigates the FLAG format as a method for bringing participatory making activities into public spaces and engaging broader audiences in HCI studies. Our aim is that researchers will be able to facilitate more participatory design, outside of the lab, at the "fuzzy front-end" of design so that individuals can have a say in the direction of future technologies. But doing research "in-the-wild" also brings new tensions around issues such as consent and study design. To address this, we provide practical design recommendations for individual designers, institutions, and research groups on how they can create and maintain these types of exchanges, and discuss how we can further expand upon these practices in a research context.

ACKNOWLEDGMENTS

We would like to thank our participants for generously contributing their time and expertise to this research, as well as our reviewers for their insights that helped improve this work. This project was funded by Canada's Social Studies and Humanities Research Council (SSHRC) through the New Frontiers Research Funds (NFRF) grant: Exploration stream #NFRFE-2020-1271.

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