

Northumbria Research Link

Citation: Strohmayer, Angelika, Meissner, Janis, Wilson, Alexander, Charlton, Sarah and McIntyre, Laura (2020) "We come together as one...and hope for solidarity to live on": On designing technologies for activism and the commemoration of lost lives. In: DIS2020: Designing Interactive Systems 2020: More than Human Centred Design. Association for Computing Machinery, Inc, New York, pp. 87-100. ISBN 9781450369749

Published by: Association for Computing Machinery, Inc

URL: <https://doi.org/10.1145/3357236.3395452> <<https://doi.org/10.1145/3357236.3395452>>

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/42951/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)



**Northumbria
University**
NEWCASTLE



UniversityLibrary

“We come together as one...and hope for solidarity to live on”: On Designing Technologies for Activism and the Commemoration of Lost Lives

Angelika Strohmayer
Northumbria University
Newcastle upon Tyne, UK
angelika.strohmayer@
northumbria.ac.uk

**Janis Lena Meissner,
Alexander Wilson**
Newcastle University
Newcastle upon Tyne, UK
{j.l.meissner2,
alexander.wilson}@ncl.ac.uk

**Sarah Charlton,
Laura McIntyre**
Changing Lives
North East, UK
{laura.mcintyre, sarah.charlton}
@changing-lives.org.uk

ABSTRACT

On International Day to End Violence Against Sex Workers (IDEVASW), sex worker rights advocates and support services commemorate lives lost due to violence. In this paper we describe and reflect on a Feminist Participatory Action Research project that supported the activities of IDEVASW over two years in North East England. Working alongside a charity that provides services to women who are sex workers or have experienced sexual exploitation, we co-organised the first local activist march on the day. As researchers and service providers, we present detailed reflections on the use of digital technologies during the public activist march, a private service for commemoration, and the development of a semi-public archive to collect experiences of the day. We develop two ways of framing the design of digital technologies for activism and the commemoration of lost lives: as catalysts for reflection and opportunities to layer experience.

Author Keywords

Sex work; activism; remembrance; archives; feminist participatory action research; justice-oriented HCI

CCS Concepts

• Human-centered computing~Human computer interaction

INTRODUCTION

“This day was created to call attention to hate crimes committed against sex workers all over the globe [...] International Day to End Violence Against Sex Workers has empowered workers from cities around the world to come together and organise against discrimination and remember victims of violence.” [28]

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.

DIS '20, July 6–10, 2020, Eindhoven, Netherlands

© 2020 Copyright is held by the owner/author(s). Publication rights licensed to ACM.

ACM ISBN 978-1-4503-6974-9/20/07...\$15.00

<https://doi.org/10.1145/3357236.3395452>

In this paper we present findings from a two-year Feminist Participatory Action Research (FPAR) project carried out with Changing Lives (CL), a charity in North East England which provides services to a diverse group of people who find themselves in complex life situations. In this paper, we collaborate on a specific project within CL that caters to sex workers, people who have experienced sexual exploitation, and those engaged in survival sex (where sexual services are exchanged for things necessary for survival, such as housing). CL openly embraces the complexity of experiences their service users have through the language they use to describe them and their person-centred approaches. Together we organised and attended the first march to raise awareness of the violence experienced by sex workers in North East England, co-organised the longstanding tradition of a commemorative service and developed The Red Umbrella Archive to collect and document peoples’ lived experiences of, and reflections on, International Day to End Violence Against Sex Workers (IDEVASW).

This paper sits alongside HCI’s discussions of justice-oriented interaction design [21] and design justice [17], which has become more nuanced and diverse in recent years as researchers have explored a growing number of frameworks and theories [5,11,69], as well as specific application areas [10,64,67]. Our work contributes to this developing discourse on the reduction of violence and stigma, and the promotion of human rights, particularly in relation to sex work. By focusing on real-world research applicable to peoples’ lived experiences, work such as this also plays an instrumental role in HCI’s ‘turn to practice’ [36].

Other researchers have focused on policy-related issues to support changes in both the lives of stakeholders and the rules that govern aspects of their lived realities [59]. This governance and policy work becomes particularly relevant in research contexts where participants and/or stakeholders operate in legally grey spaces, or are directly criminalised [62]. Some of these areas relate directly to the experiences of sex workers, as well as those who have experienced human trafficking or stigma more widely. HCI has explored these in different ways, for example, through the use and design of

technologies in service delivery [62,63], technology developments [53,67], or even engagements with law enforcement [19] and healthcare providers [70].

Situating our work alongside these developments, our contributions are twofold: (i) We contribute an example of how justice-oriented technologies can be creatively integrated into service delivery to contribute to existing services, provide new forms of interaction, and support the importance of people, creativity or care work. We do this through the development of an interactive, living archive we have titled The Red Umbrella Archive to commemorate an important day in the sex worker rights calendar. (ii) We contribute two ways of understanding the design of digital technologies aimed at supporting commemorative activities and activism with stigmatised communities, adding to ongoing debates of justice-oriented design. By discussing not only the archive itself, but also the ways in which it relates to the local commemorations of IDEVASW, we learn that technologies can become useful in such settings beyond their original intention and to bridge personal experience and communal political struggles. By placing the focus on communal, collaborative, as well as personal reflection and empowerment, we see a potential role for technologies in building collections of experiences that have multifaceted impacts on individuals, communities, and the development of future technologies.

We begin the paper with an overview of literature related to IDEVASW and how it relates to sex worker rights. We then go into detail on previous work relating to technologies, commemoration, and anti-stigma work. After this, we describe how we used a Feminist Participatory Action Research (FPAR) framework [27,49] and our findings in relation to public, private, and semi-public forms of commemoration of IDEVASW in North East England. To end, we develop two potentialities for future design.

BACKGROUND AND RELATED WORK

As the name indicates, International Day to End Violence Against Sex Workers is an international day of action to end violence perpetrated against sex workers, and to remember and commemorate those who have been victims of violence – particularly those who have had their lives cut short by violent crimes. CL supports people who are sex workers, but also those with complex lived realities and experiences of sexual exploitation and survival sex which further complicates issues around language, care, and their use of digital technologies. Here, we first focus on the history of IDEVASW to contextualise our fieldwork before broadening the discussion to technologies, commemoration, and anti-stigma work in HCI.

The day was introduced by Dr. Annie Sprinkle and colleagues at the Sex Workers Outreach Project USA (SWOP-USA) in 2003 as a response to the heinous acts of violence perpetrated by Gary Ridgeway. Also known as the Green River Killer, Ridgeway confessed to murdering ninety

women over twenty-seven years in the area surrounding Seattle in Washington, USA [60].

In an open letter, Sprinkle writes: *“When Ridgeway was finally caught, I felt a need to memorialize my whore sisters that had died so horribly and needlessly. I cared, and I knew other people cared too. So I got together with Robyn Few, Founder of the Sex Worker Outreach Project, and SWOP members Stacey Swimme and Michael Fowley, and we claimed Dec. 17th as the International Day to End violence Against Sex Workers”* [60]. In the same letter, Sprinkle outlines ten ways to participate in the commemorations, therein inviting *“people to do memorials, vigils, and their chosen kind of events in their countries and cities”* (ibid.).

Today, IDEVASW is a staple in the sex worker rights calendar alongside other events such as Sex Worker Pride on the 14th of September. Commemorations are performed locally, nationally and internationally but are also often documented through websites or Twitter. For example a UK-based national charity, National Ugly Mugs, tweet out the first name, death date, and age of sex workers who are in their UK Murder Database [18]. At a local level there are various styles of commemorations and actions organised by sex worker rights groups and third sector organisations across the country. These may include vigils, or other ways of commemorating those who died, but more direct and public actions may also be taken.

These public actions often take place at (or around) activist marches, sometimes referred to as Red Umbrella Marches. This kind of action started in 2001 as part of the 49th Venice Biennale of Art by the Slovenian artist Tadej Pregarč and collaborating sex workers. In their living installation titled *Prostitute Pavilion* and *CODE:RED* sex workers marched along socio-historically important geographies of Venice [33]. To draw attention to bad working conditions and human rights abuses perpetrated against sex workers, they used red umbrellas and megaphones. Since then various groups and organisations have used the symbol of the red umbrella to make visible their sex worker-friendly services or to show solidarity in sex workers’ struggles for the right to live free from violence. In 2005, the Red Umbrella was recognised as the international symbol for sex workers’ rights by the International Committee on the Rights of Sex Workers in Europe (ICRSE) [33].

The Use of Digital Technologies

Digital technologies play a significant role in documenting different events, vigils, and forms of commemoration of IDEVASW nationally and internationally. When looking towards the use of digital technologies in local services however, their more private nature makes it challenging to understand what kinds of technologies are being used. In a previous publication [61], the first author outlines some of the ways in which digital technologies were used at a local red umbrella march in North East England. It describes how technologies were used to communicate among the marchers, as well as how non-digital technologies (such as

red umbrellas or leaflets) were used to raise awareness of the needs of sex workers. They point towards the relationship between public and private forms of commemoration, calling for more nuanced discussion of the use of digital technologies in relation to sex work, service delivery, and IDEVASW.

Technologies, Commemoration, and Anti-Stigma Work

Sex workers experience stigma in their working and private lives. Functioning as an integral element of whorephobia (hatred of sex work and those perceived of being sex workers), the socially constructed phenomenon of ‘stigma’ cannot be attributed to individuals [32] and is often instead associated with the history of oppressive patriarchal societies. Among others, it can manifest in the use of derogatory language, coercive control, exploitation, or violence. Looking towards CL service users, the stigma associated with their involvement in the sex industry can be exacerbated by other needs and oppressions (for example homelessness, addiction, offending, or having children in care), which leads to multi-layered discrimination and stigma, and feelings of shame and isolation. Looking beyond our specific setting, whorephobia and stigmatisation also intersect with and correlate to experiences of transphobia, racism, ableism, and all other forms of discrimination.

Those who are affected by stigma are part of a network of agents in the stigma-reduction process [32]. Heijnders and Van Der Meij [32] conducted a literature review of stigma-reduction strategies in HIV/AIDS, mental illness, leprosy, TB and epilepsy, and identified five levels of intervention: intrapersonal, interpersonal, organisational and institutional, community level, and governmental and structural. Stigma associated with the sex industry is well documented, not least in literatures written by sex workers (eg. [39]). Academic researchers have also explored stigma as experienced by street-based sex workers [38], student populations [51], or sex workers with other various intersecting identities [37,74]. More recently, a long-term project has explored experiences of sex workers that work primarily online finding that they also experience detrimental impacts in their lives due to stigma [55]. While Sanders et al. do not write in or about HCI research, this work in the social sciences has helped us identify problematic HCI research, such as when scholars have used data scraping techniques to track and monitor sex workers’ online advertisements under the guise of protection and anti-trafficking campaigns. We do not have the space here to go into a detailed critique of this work, but want to re-iterate the importance of engaging with research written by and with sex workers and to understand the historical and political discourses in which we write.

Alleviating Stigma

Looking towards ways of alleviating this kind of discrimination, we engage with projects that aim to reduce or proactively work against stigma. In HCI, researchers have worked with sex work support services to reflect on the ways the development of services for charities in the UK [63],

India [52], and Canada [62] could help reduce stigma. While literature surrounding the use of digital technologies on IDEVASW specifically is limited, HCI has explored various other spaces of commemoration, activism and anti-stigma work in various contexts. For example, researchers have explored issues of stigma related to people living with HIV [58], HIV disclosure on same sex dating apps [71], weight loss bloggers [48], the role of participatory design to address stigma experienced by adolescents with Type 1 Diabetes [42], or the ways in which perceived visibility, legal risk, and social stigma affect online discussions of illicit drug use [9]. Others looked towards the restorative properties of online spaces in relation to socioeconomic stigma [50], or more specifically at the kinds of design choices that can be made to develop a mobile application for victims of human trafficking, where a particular focus was given to the stigma these people were experiencing [67].

Workshops have addressed topics related to stigma, such as ‘Hacking Women’s Health’ aiming to “*encourage, inspire and strengthen*” researchers working on issues related to women’s health [8], to explore the ways in which toolkits could be used for empowerment [34], or to specifically explore different aspects of sexuality research in HCI, including labour and violence [35]. Further to this, Ahmed et al. highlight some of the ACM’s own practices related to stigma in their analysis of the ways in which underlying institutional structures may hinder the publication of content – referring specifically to examples related to sex, stigma, and politics – and particularly address issues faced by researchers doing work on sex, pleasure, and diversity friendly software, women’s health, and a researcher working with sex workers in HCI [1].

Researchers have also made use of different maps and mapping tools to explore issues related to inequalities and to alleviate stigma. For example, they have been used by anti-street harassment activists to document experiences, advocate for policy change, and in some cases were even used in individual legal cases [13,20,29]. In these examples mapped crowdsourced information became useful in multidimensional ways for those publishing, reading and using the information. FeedFinder is another map-based application that brings together multidimensional interpretations and uses. It was designed for public health service delivery and grassroots activism to reduce stigma around and promote breastfeeding among mothers [7]. Since its initial use of documenting experiences, Simpson et al. [57] and Concannon et al. [15] have explored the potential of using such crowdsourced resources for other purposes. This project has been successful in not only designing a useful tool to reduce stigma and promote community engagement, but the documentation and archiving of experiences can be used to inspire further activism and ultimately influence policy change. It is exactly this process of archiving and its relationship to anti-stigma work that we expand on below.

Digital Archives and Anti-Stigma Work

There are several theoretical approaches to archival practice that relate directly to anti-stigma work. Looking more broadly at literature from Digital Humanities or Community Informatics and other disciplines that engage with archival practice, researchers work at the intersection of archives and the promotion of social justice. There are a multitude of theoretical framings for these archival practices. For example, in community archives the communities about whom the archive is developed play a central role in its development, and in activist archives the practice of archiving or tagging artefacts in the archive may be seen as activism in itself (see, for example, [30,31,56]). Each of these approaches aims to highlight different aspects of justice issues, and are made up of extensive and nuanced bodies of work related to theoretical, methodological, as well as practical explorations which we do not detail herein.

Our work sits alongside this kind of justice-oriented work, which aims to promote the development of archives that are explicitly political and antiviolent [3,25], and that place important aspects of community, activism, and justice at their core [30,31,56]. Allard and Ferris have written about social justice and community mobilisation through participatory approaches to archiving in their Digital Archives and Marginalized Communities Project [3]. Looking more specifically at one of the archives within this project, the Sex Work Database, we can see how they centre politics: *“we make no claims to objectivity; we argue instead for the necessity of complicating dominant cultural representations of sex workers; for more effective alliances with and support for the efforts of those who struggle to establish sex workers as persons worthy of dignity and respect; and the elimination of whore stigma and colonial racism that underlie the symbolic and literal marginalization of and violence against sex workers”* [25]. They make clear that anti-stigma work is integral to the development of their archive, not only in their participatory approach to collecting and storing materials [3], but also how these materials are tagged and catalogued [25].

Commemorating and remembering the deceased

IDEVASW, however, not only relates to stigma experienced to sex workers. Another tenet of the day is the remembrance of deceased sex workers, particularly those who fell victim to violence. While this paper does not directly relate to bereavement, there are elements of HCI literatures related to remembrance that become useful in our analysis of the use of technologies on the day. For example, Massimi and Baecker found that technologies frequently play a role in how bereaved members of a family remember their deceased relatives [41]. Relatedly, Odom et al. provide in-depth descriptions of the complication of relationships through digital and physical objects between the deceased and living [47]. However, there is little work that explicitly explores the ways in which digital technologies are used in non-familial settings; and even less about how they relate to stigmatised communities. One example that bridges this gap however, is

Durrant et al.'s [22] use of archives and archival practice to remember and commemorate the Rwandan genocide. Their project they focussed on the importance of ‘human values’ such as the currency of witnessing, trusted relationships and the guardianship of the archives themselves. Bringing this together with the ways in which Allard and Ferris conceptualise activism in their Sex Work Database [25], we learn that it is not only the process of collection, curation, and maintenance of an archive which are important, but that the underlying justice-oriented ethos of these processes and the work and activism that surrounds the archives are integral to the work itself.

METHODOLOGY

This project followed the principles of Feminist Participatory Action Research (FPAR) [27,49]. This methodology aims to understand the world by ‘taking action’ through continually evolving cycles of planning, acting and reflecting, and acknowledging the researcher and co-researcher’s standpoints while doing so. FPAR goes beyond producing novel facets of knowledge and instead engages communities on different levels to co-design and co-conduct not only the development of technologies, but of the whole research project from conception to completion and dissemination. In our project, we see this approach as sitting alongside Asad and Williams’ work of design and research as a prefigurative politic [4] and prefigurative politic as passionate witnessing [72]; we see this project as an example of how we work towards creating the kinds of research collaborations we wish to see more of. Two FPAR cycles were carried out to experience, reflect on, and build novel commemorative activities surrounding IDEVASW.

Our project is a collaboration between various HCI researchers and people who use, volunteer at, and work for a local service within a national charity called Changing Lives (CL) in the UK. Management and support staff were heavily involved in the development of the project and took an active role in developing research practices, organising and facilitating activities, reflecting on the research process, as well as writing a project report [66] and this publication. This paper is co-authored by three academic researchers and two members of staff at CL: Angelika Strohmayer who led this project, Janis Meissner who supported the project and attended the commemoration in 2016, Alexander Wilson who developed the technology, Sarah Charlton who was a support worker, and Laura McIntyre, the Women’s Services Manager of CL. The paper covers findings from a two-year project, which is part of a longer and ongoing collaboration between the academic researchers and CL.

Changing Lives (CL)

CL services reach out and engage people who have varied experiences and different identities. They use a people-centred approach and wherever possible avoid labelling people who use their services as this may be a barrier to engagement. All of their services and projects are part of the *CL Theory of Change*, a three-stage journey: (i) *Being:*

process of reaching out to meet people where they are at; (ii) *Belonging*: provision of therapeutic group work programmes; and (iii) *Becoming*: the development of positive social networks and community integration opportunities to work towards a safe and flourishing future.

In North East England services have been developed where the selling of sex is often invisible. To provide services for this group of people, CL established several women's drop-in services where peers are invited through 'word of mouth' self-referrals. CL recognise that people of all genders provide sexual services in exchange for pay, but due to the limited funding of this sector in the UK, they are only able to provide regular and sustainable services to women. Many of these regular groups practice Dialectical Behaviour Therapy and are engaged with a variety of different projects, such as the recent development of a local history and heritage project in collaboration with other researchers. Furthermore, some service users have been trained in basic research methods in previous projects to better understand the reality of life for a group of women whose voices are otherwise unheard [12]. CL have commemorated IDEVASW in a private service and food reception for service users to reflect on the past year and respectfully remember the lost lives of those who had experienced violence or abuse since 2011, bringing together people from all three stages of the CL journey (being, belonging, becoming). In 2016, the charity also organised the first Red Umbrella March in the city.

The production of The Red Umbrella Archive that was developed in collaboration with staff and service users can be used as a case study for service delivery to promote the inclusion of digital technologies to the five other services CL run to support sex workers nationally. The idea was that the archive will develop a stronger voice for sex workers in the North East and create a space for local learning, while also helping people understand the nature of the sex industry by directly listening to the voices of sex workers.

Data and Analysis

Within the FPAR framework and considering the reflexivity [49,54] and emotion work [6] involved in carrying out this kind of research in sensitive settings [43] we used multiple methods. Four of the five authors took part in the march in 2016 and three authors also took part in 2017. The first authors' participation shifted between the two years, as they had begun to build relationships with some of the service users through their other engagements with CL and also commemorated their own loss on the day.

For our participation in the march, we used 'ethno-mimesis', a method developed and employed by O'Neill to reflect on issues related to oppression, stigma and power [45,46]. In this method, experiences of walking with others on the march, conversations we had with others, and the experience and learning that comes from these actions and interactions are integral to constructing understanding.

We participated in the commemorative activities and had informal conversations with others taking part. As is integral to FPAR, we forefronted the collection of multiple experiences and advocated for polyvocality throughout our research cycles. A tangible manifestation of this can be seen in the different ways in which we documented our experiences of the march, commemorative service, and building of the archive: we recorded our experiences as an audio-recorded conversation in 2016 and as written field-notes in 2017. Photos were taken on both years by the researchers and the charity staff throughout the day and were shared among the group as resources to be used for research, dissemination, and future anti-stigma campaigns or events. Together, the field notes, experiential understanding based on the ethno-mimesis [45,46], and photos were made sense of and analysed by constructing multiple accounts of the day. For example, we developed a project report [66], an in-depth analysis of the use of digital and non-digital technologies, and produced an archival website. This diversity in accounts allowed us to reflect more deeply about the changes in the commemorative activities between 2016 and 2017 and to disseminate our work to different audiences such as people who use services, practitioners, or academics.

To build the archive, we developed a crafting activity that would allow people who use and facilitate services to engage in a variety of ways. In this archive attendees of the commemoration were invited to decorate a small wooden umbrella and to record a brief audio message verbalising their experiences. The design of this activity, as well as the materials we would provide for people to decorate the umbrellas were discussed between the researchers and staff in both years. Learning was taken from ongoing service delivery and the kinds of activities that are carried out in drop-in and structured sessions provided by CL.

Research Ethics

A collaborative ethics application to Newcastle University's ethics board was written by the first and fifth authors, and the charity's safeguarding and research guidelines were followed. Given the nature of this research, as well as Balaam et al.'s implications related to emotion work in experience centred design [6], we found it important to reflect on and be candid in our reporting of the emotional nature of the research, as well as the personal impact attending the march and commemorative service has had on attending authors. IDEVASW is a highly emotional day, and the local commemoration of this was very personal to those who took part. Staff have close relationships to the people they support and will have known the women who were being remembered on the day. The researchers also felt the emotions of the day and were present in the moments 'with' rather than 'like' the service users [10], which became particularly apparent in 2017.

COMMEMORATING IDEVASW IN THE NORTH EAST

The Red Umbrella Archive was part of a larger collaboration between the charity and the first and second author. In this

paper we focus on the archive and experiences of developing, facilitating and taking part in its production. To do this, we present findings based on personal reflexive field-notes written about the first authors' experiences of attending the commemoration of IDEVASW in 2016 and 2017, as well as photos taken by multiple authors. To better understand the ways in which the archive relates to different practices of commemoration on IDEVASW in North East England we also provide information on the events that allowed for the archive to be produced in the first place. Below we provide a chronological overview of IDEVASW in North East England: a red umbrella march, a service of remembrance and crafting the Red Umbrella Archive.

Public Commemoration: A Red Umbrella March

The commemorative activities for IDEVASW in North East England started with a red umbrella march. This was a public activity led by people who use services which brought together different stakeholders working to support and protect sex workers. The march was led by sex workers, but was also attended by CL staff, staff from other organisations who work with CL, public health staff, volunteers from all of these organisations. Even some police officers participated, which is particularly noteworthy as the relationship between sex worker rights activists, victims of trafficking or sexual violence, and law enforcement officers has historically been strained – especially in countries where sex work is (partially) criminalised, or where laws are in place to make the industry more invisible (as is the case in the UK – see [63] for an overview). While some researchers have opted to work closely with law enforcement in this research space [62], others explicitly contextualise sex work as a way of 'operating in criminality' and state "*sex workers have reported being arrested or surveilled when attempting to report violence, rather than receiving support*" [62]. Locally, law enforcement officers are attempting to better support this community, making us cautiously optimistic about their attendance at the march for this specific project. CL work on this, for example, by providing some officers with training on how to best support people who have diverse experiences of the sex industry, exploitation and law enforcement. Local police also attempt to develop relationships with staff, volunteers, and service users of statutory and third sector organisations such as CL at least in part as a way of turning the training into practice.

On the march, digital and non-digital technologies were used in an attempt to raise awareness of the violence experienced by sex workers. The first author addresses the march in more detail elsewhere [61], so we will give only a brief overview here. For example, some of the marchers carried red umbrellas, holding them above their heads, as we walked through the local main shopping street. We used these umbrellas to garner attention from passers-by. To start conversations with those who stopped to look at or approach us we had small flyers in 2016. These flyers contained a brief description of IDEVASW and the type of services CL provide. It also contained contact information for the charity,

as well as a small white pin with a red umbrella. Sadly, we were not able to find funding for these pins in 2017, but we were still able to raise awareness and start conversations with people who were on the street at the same time as we were. Smartphones were also used in the build-up to and in the march itself to take photos and communicate in the group.

Private Commemoration: A Service of Remembrance

After the march, service users and some trusted volunteers were invited to take part in a private commemorative service of remembrance. Similar to the march, throughout this service various digital and non-digital technologies were used to support and facilitate the commemoration. A local church with whom the charity has a longstanding relationship hosted the event. The pastor said a few words at the beginning; making clear that everyone was welcome in the space and that this was not a religious commemoration. In our reflections we described it as a 'smart church' due to the multimedia suite it contained. For example, it included a microphone at the pulpit, an electronically controlled screen and projector, as well as a multimedia sound system that was connected to both a laptop and smartphone. In a way, music played through this system structured the service – often a change in volume or the ending of a song indicated that an activity was over.

Alongside various speeches, poetry and letter readings, and performance of songs, there were four other activities: (i) crafting tree ornaments; (ii) lighting candles; (iii) remembrance of names; and (iv) remembrance of the year. We do not have space to go into detail of each of these here, so will provide a short reflective vignette by the first author based on an activity where participants at the service crafted paper ornaments to hang on a Christmas tree at the front of the church. In 2016 this was in the shape of an angel, and in 2017 of a star.

In 2017, I joined in with this activity, as I was able to be with and relate to some of the service users as I had lost a childhood friend to domestic violence that year. After a long time of contemplating whether I wanted to write her name to hang it on the tree, I wrote her name down on the star, but did not stand up. I noticed the woman sitting next to me struggling to write on her star as she was holding her baby at the same time. I offered to help her out, taking her baby on my lap for a minute as she wrote. She then gave me the two stars she had written on, and asked whether I would be able to hang these on the tree for her. I stood up and slowly walked towards the front of the church, thinking about my friend with tears in my eyes. As I reached the tree, I looked for places where I could hang the three stars, placing the two the woman gave me close to one another.

Semi-Public Commemoration: Crafting the Archive

In this section, we reflect on the process involved in crafting the umbrellas and recording the audio messages to create the physical artefacts and audio data necessary to later develop the digital version of the archive. In 2016, this took place immediately before and after the commemorative service,

while in 2017 it took place during the reception after the commemorative service.

Using JigsAudio to Build the Red Umbrella Archive

To encourage people on the march to contribute to the archive we aimed to use a digital technology that could aid in capturing the complex and varied responses to the march. Researchers presented the idea of adapting an existing open source technology named ‘JigsAudio’ which was discussed with and agreed upon with staff. JigsAudio was originally designed to support people in sharing their experiences and aspirations towards where they live in response to open questions [73]. The device and method combined a tangible hardware device with drawing and talking, which encourages people to reflect on their prior experiences.

To use JigsAudio, marchers were encouraged to share their thoughts and feelings of as well as experiences towards IDEVASW through decorating a wooden umbrella with craft materials (these were chosen by the first author, based on their previous experience of working in similar contexts and included permanent markers, ribbons, glitter, lipstick, etc.). After their crafting, participants could use the device to make an audio recording describing their depiction. The device uses a Raspberry Pi, microphone, battery, and an RFID (radio-frequency identification) reader within a customised enclosure. It reads an embedded RFID tag which links the audio recording to the umbrella. The wooden umbrellas were displayed in a pop-up exhibition after the march. Later, the drawing and audio were shared on an interactive archival website that allowed people to view the umbrellas and listen to the audio. Initially this website remained private, but was presented back to people involved with CL at the commemorative activities in 2017 and was handed over to the organisation shortly after.

JigsAudio was chosen for three reasons. First, JigsAudio encourages people to be expressive – rather than writing prose it allows people to express complicated thoughts and experiences through different creative media and talking. Previous work has demonstrated that providing the means for different ways of expression can support people in communicating nuanced, often complicated, discussions we hoped the archive would contain [73]. Second, the design of JigsAudio (having only one button and a single use) reduced the need for people having to use a ‘traditional’ graphical user interface computer. This ease of use, combined with its novelty, aimed to engage people who would normally be deterred by the use of conventional computers. Third, it was hoped that by allowing multiple people to take part in the activity it would give a feeling of togetherness, and people seeing others contributing to the archive would encourage others to do the same.

The components and interactions that make up the Red Umbrella Archive contain four elements: (1) the crafting of new pieces to be added to the archive; (2) the exploring of existing entries of the archive by interacting with physical artefacts; (3) the digital exploration of the archive via the

private, locally hosted website; and (4) the reading of the report and tangible documentation of this particular use-case of JigsAudio. This combination of layers and materialities allowed participants to engage in personal reflection while simultaneously supporting communal commemoration. In a way, the archive is a communal and continual work in progress, but it also contains elements of an activist archive due to its anti-stigma ethos and anti-violence approach.

Crafting the Red Umbrellas

The crafting activity resulted in most people working by themselves, sitting on steps or standing next to tables, quietly working. Some however interacted with one another, asking others for help to hold pieces of ribbon or string. In 2017, the timing and space available for this activity allowed for more interaction among people and also meant that people were able to bring cups of tea to the table where they sat, crafted, laughed and reflected.

We also made some changes to the ways in which we recorded messages between the first and second FPAR cycles. In the first year, we asked people to step into a curtained off space as we thought people would value privacy whilst recording their messages. Incidentally, physically moving beyond a barrier seemed to lead to people becoming quieter, more thoughtful, and ready to record their messages. At the same time, however, it was also an obstacle to recording messages and participants did not want the level of privacy we originally planned for. So, in 2017, we removed this barrier and simply asked each individual where they would like to go to record their message. Often, we moved to a quiet space where we could sit together.

Both crafting the umbrellas and recording the messages were private activities – people sat quietly working on their pieces. At times however, people would show their pieces to their case workers and/or other members of staff as well as the researchers. Often comments were made about the piece and in some instances the first and fourth authors asked questions about why certain materials were chosen or what their ideas for the next steps in the piece would be. When recording the audio messages however, the distinction between public and private commemoration became muddier. For example, they knew that the messages may be listened to by others and that the charity would have access to them.

Below, we provide two vignettes written by the first author as examples of the ways in which the crafting of the archive lies between public and private commemoration. In the first vignette, titled ‘Archiving Voicelessness’ we learn about a woman who makes a clear message about the need for solidarity with sex workers – a call to action for anyone who may be listening to her voice or interacting with her umbrella. In the second vignette, titled ‘Archiving Three Generations’ we provide information on two women and a toddler (a grandmother, mother and daughter) who interacted with the archive both years. In this vignette, we show that even though the production of the archive was meant to be

public, participants used the craft activity as an opportunity to create their own stories of coming together.

Archiving Voicelessness

In 2017, I sat next to a woman at the craft table just chatting while she was working on an umbrella. We talked about different topics including what this day means to her as well as some of her experiences of service delivery, but mostly we talked about cake. While she was making the finishing touches to her umbrella, I asked her whether she wanted to record a message. At first she said she wasn't sure what to say, but after showing her a number of questions to prompt her thoughts (Figure 1) she started to talk more about her own perceptions.

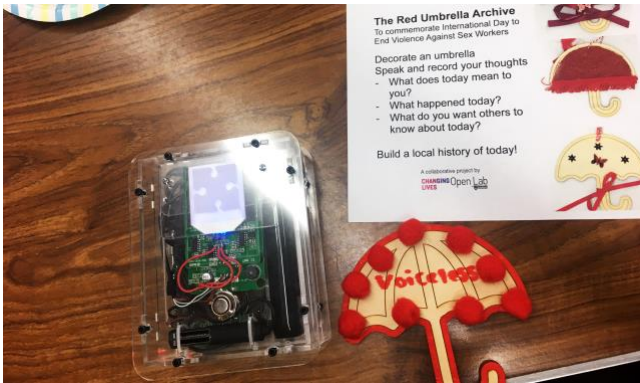


Figure 1: An umbrella decorated by one of the women with the word 'voiceless' written on it next to the JigsAudio device and questions provided to support reflection in 2017.

After a few minutes, she grabbed a pen and some paper from the table and began to write. After writing a short text, she re-read it, and then told me she was now ready. Together, we placed her umbrella on the JigsAudio recording device and pressed the button to start the recording. Some seconds later, she changed her mind and instead of reading her text, started to recite a poem about what the red umbrella means to her:

*Seventeenth of December Twenty seventeen
An umbrella with the colour red is seen
No matter the race or the class
We come together as one
To stop violence against sex workers
And hope for solidarity to live on*

Due to JigsAudio's infrastructure, this short but heartfelt poem is linked with the artifact seen in Figure 1. In this example, the physical artifact and audio recording relate to and interact with one another: the woman wrote 'voiceless' onto the physical object, but then artistically shared her voice and thoughts to contradict her own statement.

Archiving Three Generations

In 2017, we presented the umbrellas and messages that were collected the previous year in a small exhibition during the food and drinks reception after the commemorative service. After people had sat down with their cups of tea and food, some also started to sit down at the table with the craft materials. At the same time, some started to explore the red

umbrellas and associated digital archive of stories. Among the people coming towards the umbrellas were two women and a small child. I remembered the women from the 2016 event where both adults had made an umbrella separately, but wanted to hang the pieces next to each others'. The younger of the two women had also dedicated her umbrella to her daughter.

I said hello to the three of them and found out that they were all part of the same family: a grandmother, mother, and daughter. They sat down at the table with the craft supplies. After talking to them about the umbrellas, and making clear they were the ones they contributed to the previous year, the mother stood up to have a look. She ruffled through the exhibited pieces and then pointed out the ones that they had made. After they had looked at the umbrellas, they asked if they could create another one this year: of course I agreed, pointing towards the craft supplies on the table. At this point, I also pointed out the laptop at which they could look at and listen to the archive. Initially, they were apprehensive about listening through the messages, but then mustered the courage to have a look. They smiled and energetically talked to one another when they heard their own voices. The mother crafted another umbrella with the help of her own daughter, and hung it up alongside the other finished pieces, telling me that her daughter had made this one. There were now three umbrellas in the archive, crafted by three generations of women.

Summarising Local Commemorations of IDEVASW

In this section, we provided descriptions of and vignettes related to the ways in which IDEVASW was commemorated in North East England in 2016 and 2017. We presented the ways in which digital and non-digital technologies were used throughout the public Red Umbrella March, the private commemorative service for CL service users, volunteers, and staff, as well as the semi-public commemoration that was made possible through the introduction and development of the Red Umbrella Archive. In the next section, we relate this data to wider literatures in justice-oriented HCI.

DISCUSSION: TECHNOLOGIES IN ACTION

With this paper we contribute to ongoing debates regarding justice-oriented design and HCI and provide another facet of what this kind of design can look like. Previous research has explored, for example, service delivery [65,67], or the role of algorithms [2] among many other aspects of justice work. HCI researchers have also looked at violence and responses to this specifically in contexts of domestic violence [14], sex work [53,62,63], human trafficking [67], gentrification [16,44], or policing [19,68]. With this paper, however, we add nuance to these debates by providing three different ways in which we can look at and understand the role of technologies in the remembrance and commemoration of victims of violence.

We learn from our analysis of digital and non-digital technologies at the hyper-local commemoration of IDEVASW that these technologies already cater to different

layers of commemoration, activism, or remembrance – addressing different levels of stigma reduction [32]. Hence, any future technologies should also take into account these personal, public and semi-public commemorative actions and spaces. By foregrounding emotion work [6] and the multiplicity of experience (e.g. in the ways in which we understand the diversity of CL service users, or the kinds of commemorative activities that are provided), we are able to design technologies that become meaningful in various ways, where a single technology (digital or not) can function in different ways. This is perhaps not an entirely new proposition (see eg. [23]), but in the current climate of platform development and attempts to generalize user-groups, we feel this is an important point to re-emphasise. Following this, we call for more nuance in designing tech for personal reflection and communal commemoration to support the laying of groundwork for existing anti-stigma campaigns at multiple levels (following, for example, [32]’s model), and to see this work as part of the development of a prefigurative politic [4].

The Red Umbrella Archive is an example of such a technology. We crafted it to create a reflexive and introspective bridge between the collective activism on the march and the multi-media remembrance activities – connecting emotional experiences of loss and commemoration with political struggles, solidarity, and anti-violence work. In doing this, we also bridged multiple levels of stigma-reduction as described by [32]: technologies served different functions for individuals (intra- and interpersonal) and the charity (organisational), for the different events throughout this day (community), as well as the meaning of the day as a whole (structural). Correspondingly, the Red Umbrella Archive is not only a hybrid of various theoretical archival practices (activist [24,25,31], community and living [56]), but it is also a hybrid of craft and technology, of digital and non-digital interactions. On top of this material hybridity of the archive, the digital and non-digital technologies that were used throughout the day to support, document, or facilitate commemoration and remembrance were useful in different ways. Below, we reflect on two ways in which HCI could frame the design of digital technologies for commemoration, activism, or other political marches: designing for catalysts and designing to layer experiences. These framings are intended to add nuance to existing debates on these topics and should be read alongside one another.

Technologies as Catalysts

Throughout the commemorative activities digital and non-digital technologies were used as catalysts, or starting points, for action and reflection, or perhaps more pragmatically, to move on to different activities in the commemorative service. For example, the JigsAudio tool we used to create The Red Umbrella Archive functioned as a catalyst in a different way. Even though interactions with the archive were different in the two years, in both cases it functioned as starting points for reflection. In 2016 participants were able

to add new archive entries at the time between the march and the service, which meant that JigsAudio provided an opportunity for people to slow down and reflect on the march. It provided them with the opportunity of crafting their understanding of the march to prepare for the quieter and more reflective service that was to come. Similar to Mori et al.’s discussions [43], the archive provided people with the opportunity of discussing emotional topics in a supportive environment of peers. Looking towards justice-promotion and collective engagement, aspects often attributed to community archives [56], it also provided people with the opportunity to reflect individually while at the same time thinking about their communal (in the case of the above example titled ‘archiving three generations’ family-related) experiences of the day.

In 2017, participants were able to add new entries and browse those from the previous year after the service. This provided a different kind of catalyst for reflection: now participants were reflecting not only on the march, but also on the commemorative service. In some cases, as can be seen in the above example titled ‘Archiving Voicelessness’ it provided the potential to reflect on the meaning of IDEVASW as a whole. In this way, the JigsAudio technology functioned as a way of bringing together personal experiences of those who took part in the day with the wider historical, cultural, and communal aspects of IDEVASW – similar to [22]’s analysis of the importance of human values in their archival project in Rwanda.

The Red Umbrella Archive was an activity that catalysed co-created personal reflection to support what Ferris and Allard described as their argument “*for the necessity of complicating dominant cultural representations of sex workers*” [25]. Seeing the ways in which digital technologies were already being used as catalysts at this commemorative day, we would encourage other HCI researchers designing technologies for commemoration to see them not only as ways of staying connected with those who have been deceased [40,41,47], or even as a way of documenting and remembering [25], but also as a catalyst of reflection, remembrance, or action for those who are commemorating; to see technologies as more than conduits of interaction, and instead see them as catalysts for personal and communal action and interaction towards building better worlds.

Technologies to Layer Experience

Throughout the day, technologies were used to provide additional layers of experience and reflection for attendants. For example, a slideshow underplayed with music was used throughout the service to elicit particular responses from the audience. A shift was felt in the room at the time where the names of those who died in the previous year were shown individually on the screen. Providing the audience with the space to read the names by themselves allowed us all to reflect individually, but also allowed us to take part in the collective grieving process through small actions such as looking or smiling at each other, or holding hands.

Looking at existing literature, FeedFinder was originally intended to promote breastfeeding [7], but later was used to explore the potential for policy change [57] and even the integration of privacy concerns “*into a critically reflexive feminist data analysis approach that captures and represents diverse experiences of place*” [15]. Similar to this, technologies that were originally intended for one thing (e.g. state peoples’ names on a slideshow) ultimately added to the layering of people’s experiences through the addition of communal meaning-making of personal experiences. On top of this, the tactility, materiality and symbolism of the wooden umbrellas that make up the physical artefacts of the archive allow for different kinds of interactions (e.g. the positioning of the pieces and meanings this creates for some individuals as described in the ‘Archiving Three Generations’ section).

Some of the activities that fostered very deep and personal reflection, were non-digital: for example, the activity to craft tree ornaments as described above (layered with quiet music) led to many participants (including the first author) reflecting on their own families and friendships. Other such activities, like the production of the Red Umbrella Archive which tried to foster similar reflections aimed at documenting the day as a whole, started off as a non-digital crafting activity and later turned into a hybrid artefact. Both these activities are personal at first (the writing of a name or speaking of a story both are very personal), but turned into semi-public acts of remembrance (the tree ornaments were left in the church for others to see and the archive may be used by CL in different ways). Participants used the crafting of the umbrellas as an opportunity to reflect on the march in 2016 and the service in 2017, but not all recorded an audio message to share a more personal meaning of what their artistic representation of their reflections meant. However, often the messages stood in solidarity with sex workers across CLs service delivery, or the provision of services more globally. This means JigsAudio was able to support reflections not only on the particular activity (the experiences of those engaged in this particular march to end violence against sex workers), but also the ways in which this specific act of remembrance is situated in relation to other days to end violence against sex workers, and the plight of the sex worker rights movement as a whole.

In a different way, the process of crafting red umbrellas and augmenting them with a reflexive audio-clip provided a novel layer to the commemorations of IDEVASW. For example, one of the participants was able to artistically share her voice despite having previously felt silenced or voiceless. Furthermore, the physicality of the artefacts embodies meaning – the process and outcome of the crafting that women developed to create the umbrellas meant women were able to disclose as much or as little about themselves, their experiences, or their commemoration through the artistic aspect of making the artefact as well as the audio recording that could be linked with it. Through this layering of craft, voice, and experience women were able to

participate in the development of an archive that could be used by CL to continue to develop client-centred services and to informally link with ongoing struggles to reduce violence experienced by this community. As such, it is not only the production of the archive that layered participants’ experiences of IDEVASW, but similar to the ways in which FeedFinder was able to develop the use of the app and its data [7,15,57], the creation and use of The Red Umbrella Archive provides the possibility of layering the experiences of those present on the day by promoting a different kind of personal and communal reflection. This reflection and its outcomes can in turn also be seen as and used for activism, as is often the case in community archives [56]. Following Freeman’s argument that those with a documented history are afforded more respect [26], the archive also provides an outlet to share the voices of those who are too often made marginal with those who have power to develop and deliver new service delivery.

Looking towards the ways Allard and Ferris conceptualised activism in their Sex Work Database [25] alongside our reflections on layering experiences, we learn that the process of collection, curation, and maintenance of an archive are important. We also learn however, that the underlying justice-oriented ethos of these processes as well as the work and activism that surrounds the archives are important – similar to how Asad describes the process of prefigurative politic as a method of design justice [4]. As such, technologies that are designed for international days of commemoration should be designed with a justice-oriented ethos at its core to layer not only the experience of those using the technologies, but also to layer the meaning of this interaction to reflect the duality of such days: (i) communal commemoration and (ii) activism and advocacy work.

CONCLUSIONS

In this paper, we have presented findings from our two-year engagement with a local sex work support service provider to commemorate IDEVASW. We contribute to ongoing justice-oriented HCI discourses by reflecting on the use of digital technologies, and our development of the Red Umbrella Archive. We develop two ways of framing the design of digital technologies at similar international days or commemorative activities that also incorporate elements of activism. By seeing technologies as catalysts and as opportunities to layer experiences and reflection, we hope to encourage HCI researchers and designers to continue to work towards holistic understandings of their research participants and partners, as well as contexts.

ACKNOWLEDGEMENTS

We remember sex workers who have lost their lives due to violence perpetrated against them and dedicate this paper to those working to reduce violence and the stigma which perpetuates it. Thank you Changing Lives for your ongoing support, and to those who participated in this project. This project was partially funded by the EPSRC Centre for Doctoral Training in Digital Civics (EP/L016176/1).

REFERENCES

- [1] Alex Ahmed, Teresa Almeida, Judeth Oden Choi, J Pincus, and K Ireland. 2018. What's at issue: Sex, stigma, and politics in ACM publishing. In *EA ACM SIGCHI CHI*.
- [2] Ali Alkhatib and Michael Bernstein. 2019. Street-level algorithms: A theory at the gaps between policy and decisions. *Proc. of Conference on Human Factors in Computing Systems -*.
<https://doi.org/10.1145/3290605.3300760>
- [3] Danielle Allard and Shawna Ferris. 2015. Antiviolence and marginalized communities: Knowledge creation, community mobilization, and social justice through a participatory archiving approach. *Library Trends* 64, 2: 360–383. <https://doi.org/10.1353/lib.2015.0043>
- [4] Mariam Asad. 2019. Prefigurative Design as a Method for Research Justice. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW: 1–18.
<https://doi.org/10.1145/3359302>
- [5] Mariam Asad and Christopher. A. Le Dantec. 2015. Illegitimate Civic Participation: Supporting Community Activists on the Ground. In *Illegitimate Civic Participation: Supporting Community Activists on the Ground*.
- [6] Madeline Balaam, Rob Comber, Rachel Clarke, Charles Windlin, Anna Ståhl, Kristina Höök, and Geraldine Fitzpatrick. 2019. Emotion Work in Experience-Centered Design. In *Proc. of the 2019 CHI Conference on Human Factors in Computing Systems - CHI '19*.
- [7] Madeline Balaam, Rob Comber, Ed Jenkins, Selina Sutton, and Andrew Garbett. 2015. FeedFinder: A Location-Mapping Mobile Application for Breastfeeding Women. In *Proc. of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*, 1709–1718.
<https://doi.org/10.1145/2702123.2702328>
- [8] Madeline Balaam, Lone Koefoed Hansen, Catherine D'Ignazio, Emma Simpson, Teresa Almeida, Stacey Kuznetsov, Mike Catt, and Marie L. J. Søndergaard. 2017. Hacking Women's Health. In *Proc. of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '17*, 476–483. <https://doi.org/10.1145/3027063.3027085>
- [9] Monica J. Barratt. 2011. Discussing illicit drugs in public internet forums: Visibility, stigma, and pseudonymity. In *C and T 2011 - 5th International Conference on Communities and Technologies, Conference Proceedings*, 159–168.
<https://doi.org/10.1145/2103354.2103376>
- [10] Cynthia L. Bennett and Daniela K. Rosner. 2019. The promise of empathy: Design, disability, and knowing the “other.” In *Proc. of Conference on Human Factors in Computing Systems*.
<https://doi.org/10.1145/3290605.3300528>
- [11] Michael Buckley, John Nordlinger, and Devika Subramanian. 2008. Socially relevant computing. In *SIGCSE*.
- [12] Changing Lives. 2016. “The Type of Girl That Would Do that” Peer led research into sex work in Durham and Darlington.
- [13] S K Chinmayi and Tania Deviah. 2018. *Women and the streets of Goa*.
- [14] Rachel Clarke, Peter Wright, Madeline Balaam, and John McCarthy. 2013. Digital portraits. In *Proc. of the SIGCHI Conference on Human Factors in Computing Systems - CHI '13*, 2517.
<https://doi.org/10.1145/2470654.2481348>
- [15] Shauna Julia Concannon, Madeline Balaam, Rob Comber, and Emma Simpson. 2018. Applying computational analysis to textual data from the wild: A feminist perspective. In *Proc. of Conference on Human Factors in Computing Systems*.
<https://doi.org/10.1145/3173574.3173800>
- [16] Eric Corbett and Yanni Loukissas. 2019. Engaging gentrification as a social justice issue in HCI. In *Proc. of Conference on Human Factors in Computing Systems - Proceedings*.
<https://doi.org/10.1145/3290605.3300510>
- [17] Sasha Costanza-Chock. 2018. Design Justice: Towards an Intersectional Feminist Framework for Design Theory and Practice.
- [18] Stewart Cunningham, Teela Sanders, Lucy Platt, Pippa Grenfell, and P. G. Maciotti. 2018. Sex Work and Occupational Homicide: Analysis of a U.K. Murder Database. *Homicide Studies* 22, 3: 321–338.
<https://doi.org/10.1177/1088767918754306>
- [19] Julia Deeb-Swihart, Alex Endert, and Amy Bruckman. 2019. Understanding law enforcement strategies and needs for combating human trafficking. In *Proc. of Conference on Human Factors in Computing Systems*.
<https://doi.org/10.1145/3290605.3300561>
- [20] Jill P. Dimond, Michaelanne Dye, Daphne Larose, and Amy S. Bruckman. 2013. Hollaback! In *Proc. of the 2013 conference on Computer supported cooperative work - CSCW '13*, 477.
<https://doi.org/10.1145/2441776.2441831>
- [21] Lynn Dombrowski, Ellie Harmon, and Sarah Fox. 2016. Social Justice-Oriented Interaction Design: Outlining Key Design Strategies and Commitments. *Proc. of the ACM Conference on Designing Interactive Systems: 656–671*.
<https://doi.org/10.1145/2901790.2901861>
- [22] Abigail C. Durrant, David S. Kirk, and Stuart Reeves. 2014. Human values in curating a human rights media archive. In *Proc. of the 32nd annual ACM conference*

- on Human factors in computing systems - CHI '14, 2685–2694. <https://doi.org/10.1145/2556288.2557196>
- [23] Pelle Ehn. 2008. Participation in design things. In *PDC '08: Proc. of the Tenth Anniversary Conference on Participatory Design 2008*, 92–101. <https://dl.acm.org/doi/abs/10.5555/1795234.1795248>
- [24] Kate Eichhorn. 2014. Beyond digitisation: a case study of three contemporary feminist collections. *Archives and Manuscripts* 42, 3: 227–237. <https://doi.org/10.1080/01576895.2014.958866>
- [25] Shawna Ferris and Danielle Allard. 2016. Tagging for activist ends and strategic ephemerality: creating the Sex Work Database as an activist digital archive. *Feminist Media Studies* 16, 2: 189–204. <https://doi.org/10.1080/14680777.2015.1118396>
- [26] June Freeman. 2007. The Crafts as Poor Relations. *Oral History* 18, 24–32. <https://doi.org/10.2307/40179161>
- [27] Bev Gatenby and Maria Humphries. 2000. Feminist participatory action research. *Women's Studies International Forum* 23, 1: 89–105. [https://doi.org/10.1016/S0277-5395\(99\)00095-3](https://doi.org/10.1016/S0277-5395(99)00095-3)
- [28] Global Network of Sex Work Projects. International Day to End Violence Against Sex Workers. Retrieved September 18, 2019 from <https://www.nswp.org/event/international-day-end-violence-against-sex-workers>
- [29] N. S. Grove. 2015. The cartographic ambiguities of HarassMap: Crowdmapping security and sexual violence in Egypt. *Security Dialogue* 46, 4: 345–364. <https://doi.org/10.1177/0967010615583039>
- [30] Tamy Guberek, Velia Muralles, and Hannah Alpert-Abrams. 2019. “Irreversible”: The role of digitization to repurpose state records of repression. *International Journal of Transitional Justice* 13, 1: 50–70. <https://doi.org/10.1093/ijtj/ijy035>
- [31] Verne Harris. 2002. The archival sliver: Power, memory, and archives in South Africa. *Archival Science* 2, 1–2: 63–86. <https://doi.org/10.1007/BF02435631>
- [32] Miriam Heijnders and Suzanne Van Der Meij. 2006. The fight against stigma: An overview of stigma-reduction strategies and interventions. *Psychology, Health & Medicine* 11, 3: 353–363. <https://doi.org/10.1080/13548500600595327>
- [33] International Committee on the Rights of Sex Workers in Europe (ICRSE). 2015. Under the Red Umbrella | Sex Work Europe. *Campaigns*. Retrieved September 27, 2017 from <http://www.sexworkeurope.org/campaigns/red-umbrella-campaigns>
- [34] P Jarusriboonchai, Janis Lena Meissner, Nicolai B Hansen, and Ben Shouten. 2018. Thinking outside the (tool) box: empowering people with toolkits. In *Proc. of Nordic Conference on Human-Computer Interaction*, 980–983.
- [35] Gopinaath Kannabiran, Alex A. Ahmed, Matt Wood, Madeline Balaam, Theresa J. Tanenbaum, Shaowen Bardzell, and Jeffrey Bardzell. 2018. Design for sexual wellbeing in HCI. In *Proc. of Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3170427.3170639>
- [36] Kari Kuutti and Liam J. Bannon. 2014. The turn to practice in HCI: towards a research agenda. In *Proc. of the 32nd annual ACM conference on Human factors in computing systems - CHI '14*, 3543–3552. <https://doi.org/10.1145/2556288.2557111>
- [37] Mary Laing, Del Campbell, Matthew Jones, and Angelika Strohmayer. 2018. Trans sex workers in the UK: Security, Services and Safety. In *Policing The Sex Industry: Protection, Paternalism and Politics*, Teela Sanders and Mary Laing (ed.). Routledge, 39–52.
- [38] Lisa Lazarus, Kathleen N. Deering, Rose Nabess, Kate Gibson, Mark W. Tyndall, and Kate Shannon. 2012. Occupational stigma as a primary barrier to health care for street-based sex workers in Canada. *Culture, Health & Sexuality* 14, 2: 139–150. <https://doi.org/10.1080/13691058.2011.628411>
- [39] Carol Leigh. 2010. Inventing Sex Work. In *Whores and other Feminists*, Jill Nagle (ed.). Routledge, New York, 225–231.
- [40] Michael Massimi. 2013. Exploring remembrance and social support behavior in an online bereavement support group. In *Proc. of the ACM Conference on Computer Supported Cooperative Work, CSCW*, 1169–1179. <https://doi.org/10.1145/2441776.2441908>
- [41] Michael Massimi and Ronald M. Baecker. 2010. A death in the family: Opportunities for designing technologies for the bereaved. In *Proc. of Conference on Human Factors in Computing Systems*, 1821–1830. <https://doi.org/10.1145/1753326.1753600>
- [42] Gillian M. McCarthy, Edgar R. Rodríguez Ramírez, and Brian J. Robinson. 2017. Participatory design to address stigma with Adolescents and young adults with type 1 diabetes. In *Proc. of the ACM Conference on Designing Interactive Systems*, 83–94. <https://doi.org/10.1145/3064663.3064740>
- [43] Joji Mori, Steve Howard, and Martin Gibbs. 2013. Designing in sensitive settings. In *Proc. of the 9th Australasian Conference on Interactive Entertainment Matters of Life and Death - IE '13*, 1–9. <https://doi.org/10.1145/2513002.2513003>
- [44] Jasper Tran O’Leary, Sara Zewde, Jennifer Mankoff, and Daniela K. Rosner. 2019. Who gets to future? Race, representation, and design methods in Africatown. In *Proc. of Conference on Human Factors*

- in Computing Systems*.
<https://doi.org/10.1145/3290605.3300791>
- [45] Maggie O’Neill. 2012. Ethno-Mimesis and Participatory Arts. In *Advances in Visual Methodology*, Sarah Pink (ed.). SAGE Publications, London, 153–172.
- [46] Maggie O’Neill and Phil Hubbard. 2010. Walking, sensing, belonging: ethno-mimesis as performative praxis. *Visual Studies* 25, 1: 46–58.
<https://doi.org/10.1080/14725861003606878>
- [47] William Odom, Richard Harper, Abigail Sellen, David Kirk, and Richard Banks. 2010. Passing on & putting to rest: Understanding bereavement in the context of interactive technologies. In *Proc. of Conference on Human Factors in Computing Systems*, 1831–1840.
<https://doi.org/10.1145/1753326.1753601>
- [48] Anne-Marie Oostveen. 2011. The internet as an empowering technology for stigmatized groups: a case study of weight loss bloggers. In *BCS-HCI ’11*, 114–119.
- [49] Colleen Reid, Allison Tom, and Wendy Frisby. 2006. Finding the “action” in feminist participatory action research. *Action Research* 4, 3: 315–332.
<https://doi.org/10.1177/1476750306066804>
- [50] Eugenia Ha Rim Rho, Oliver L. Haimson, Nazanin Andalibi, Melissa Mazmanian, and Gillian R. Hayes. 2017. Class confessions: Restorative properties in online experiences of socioeconomic stigma. In *Proc. of Conference on Human Factors in Computing Systems*, 3377–3389.
<https://doi.org/10.1145/3025453.3025921>
- [51] Tracey Sagar, Debbie Jones, Katrien Symons, and Jo Bowring. 2015. *The Student Sex Work Project: Research Summary*. Retrieved from <http://www.thestudentsexworkproject.co.uk/wp-content/uploads/2015/03/TSSWP-Research-Summary-English.pdf>
- [52] Nithya Sambasivan, Julie Weber, and Edward Cutrell. 2011. Designing a phone broadcasting system for urban sex workers in India. In *Proc. of the 2011 annual conference on Human factors in computing systems - CHI ’11*, 267.
<https://doi.org/10.1145/1978942.1978980>
- [53] Nithya Sambasivan, Julie Weber, and Edward Cutrell. 2011. Designing a phone broadcasting system for urban sex workers in India. In *Proc. of the 2011 annual conference on Human factors in computing systems - CHI ’11*, 267.
<https://doi.org/10.1145/1978942.1978980>
- [54] Helen Sampson, Michael Bloor, and Ben Fincham. 2008. A Price Worth Paying?: Considering the ‘Cost’ of Reflexive Research Methods and the Influence of Feminist Ways of ‘Doing’. *Sociology* 42, 5: 919–933.
<https://doi.org/10.1177/0038038508094570>
- [55] Teela Sanders, Jane Scoular, Rosie Campbell, Jane Pitcher, and Stewart Cunningham. 2018. *Internet Sex Work: Beyond the Gaze*. Palgrave MacMillan.
<https://doi.org/10.1007/978-3-319-65630-4>
- [56] Alycia Sellie, Jesse Goldstein, Molly Fair, and Jennifer Hoyer. 2015. Interference Archive: a free space for social movement culture. *Archival Science* 15, 4: 453–472. <https://doi.org/10.1007/s10502-015-9245-5>
- [57] Emma Simpson, Andrew Garbett, Rob Comber, and Madeline Balaam. 2016. Factors important for women who breastfeed in public: a content analysis of review data from FeedFinder. *BMJ open* 6, 10: e011762.
<https://doi.org/10.1136/bmjopen-2016-011762>
- [58] Aneesha Singh, Jo Gibbs, and Ann Blandford. 2019. Emotion and Experience in Negotiating HIV-Related Digital Resources: “It’s not just a runny nose!” In *Conference on Human Factors in Computing Systems - Proceedings*. <https://doi.org/10.1145/3290605.3300829>
- [59] Anne Spaa, Chris Elsdén, Abigail Durrant, and John Vines. 2019. Understanding the boundaries between policymaking and HCI. In *Proc. of Conference on Human Factors in Computing Systems*.
<https://doi.org/10.1145/3290605.3300314>
- [60] Annie M. Sprinkle. International Day To End Violence against Sex Workers | A public letter from Annie Sprinkle. *december17.org*. Retrieved September 27, 2017 from <http://www.december17.org/about/from-annie-sprinkle/>
- [61] Angelika Strohmayer. 2019. Using technologies to commemorate International Day to End Violence Against Sex Workers in the North East of England. *Journal of International Women’s Studies* 20, 4. Retrieved from <https://vc.bridgew.edu/jiws/vol20/iss4/5/>
- [62] Angelika Strohmayer, Jenn Clamen, and Mary Laing. 2019. Technologies for Social Justice: Lessons from Sex Workers on the Front Lines. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems - CHI ’19*.
- [63] Angelika Strohmayer, Mary Laing, and Rob Comber. 2017. Technologies and Social Justice Outcomes in Sex Work Charities: Fighting Stigma, Saving Lives. In *Proc. of the 2017 Conference on Human Factors in Computing Systems - CHI ’17*, 3352–3364.
<https://doi.org/10.1145/3025453.3025615>
- [64] Angelika Strohmayer, Matthew Marshall, Nitya Verma, Chris Bopp, Róisín McNaney, Amy Volda, David S. Kirk, and Nicola J. Bidwell. 2018. Untold Stories: Working with Third Sector Organisations. In *Extended Abstracts of the Conference on Human*

- Factors in Computing Systems - CHI '18*, 1–8.
<https://doi.org/10.1145/3170427.3170608>
- [65] Angelika Strohmayer and Janis Meissner. 2017. “We had tough times, but we’ve sort of sewn our way through it”: The Partnership Quilt. *XRDS: Crossroads, The ACM Magazine for Students*.
- [66] Angelika Strohmayer and Janis Lena Meissner. 2017. *The Red Umbrella March: Crafting a Living Activist Archive*. <https://doi.org/10.13140/RG.2.2.15889.74086>
- [67] Hannah Thinyane and Karthik S. Bhat. 2019. Apprise: Supporting the critical-agency of victims of human trafficking in Thailand. In *Proc. of Conference on Human Factors in Computing Systems*.
<https://doi.org/10.1145/3290605.3300385>
- [68] Nitya Verma and Lynn Dombrowski. 2018. Confronting social criticisms: Challenges when adopting data-driven policing strategies. In *Proc. of Conference on Human Factors in Computing Systems - Proceedings*. <https://doi.org/10.1145/3173574.3174043>
- [69] John Vines, Rachel Clarke, Peter Wright, John McCarthy, and Patrick Olivier. 2013. Configuring participation: On how we involve people in design. In *Proc. of the SIGCHI Conference on Human Factors in Computing Systems - CHI '13*, 429.
<https://doi.org/10.1145/2470654.2470716>
- [70] Kristin M Wall, William Kilembe, Mubiana Inambao, Yi No Chen, Mwaka Mchoongo, Linda Kimaru, Yuna Tiffany Hammond, Tyronza Sharkey, Kalonde Malama, T Roice Fulton, Alex Tran, Hanzunga Halumamba, Sarah Anderson, Nishant Kishore, Shawn Sarwar, Trisha Finnegan, David Mark, and Susan A Allen. 2015. Implementation of an electronic fingerprint-linked data collection system: a feasibility and acceptability study among Zambian female sex workers. *Globalization and Health* 11, 1: 27.
<https://doi.org/10.1186/s12992-015-0114-z>
- [71] Mark Warner, Juan F. Maestre, Jo Gibbs, Chia Fang Chung, and Ann Blandford. 2019. Signal Appropriation of Explicit HIV Status Disclosure Fields in Sex-Social Apps used by Gay and Bisexual Men. In *Proc. of Conference on Human Factors in Computing Systems - Proceedings*.
<https://doi.org/10.1145/3290605.3300922>
- [72] Rua M. Williams and LouAnne E. Boyd. 2019. Prefigurative Politics and Passionate Witnessing. In *The 21st International ACM SIGACCESS Conference on Computers and Accessibility - ASSETS '19*, 262–266. <https://doi.org/10.1145/3308561.3355617>
- [73] Alexander Wilson and Mark Tewdwr-Jones. 2019. Let’s draw and talk about urban change: Deploying digital technology to encourage citizen participation in urban planning. *Environment and Planning B: Urban Analytics and City Science*.
<https://doi.org/10.1177/2399808319831290>
- [74] Dana Zarhin and Nicole Fox. 2017. ‘Whore stigma’ as a transformative experience: altered cognitive expectations among Jewish-Israeli street-based sex workers. *Culture, Health & Sexuality*: 1–14.
<https://doi.org/10.1080/13691058.2017.1292367>