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TalkFutures: Supporting Qualitative Practices in Distributed Community Engagements

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ABSTRACT
Community engagements are qualitative processes that make use of participants local knowledge for democratic decision-making, but often exclude participants from data analysis and dissemination. This can mean that they are left feeling that their voice is not properly represented in the final output. This paper presents a digital community engagement process, Talk-Futures, that actively involves participants in the production, distributed analysis and summarization of qualitative data. The design of TalkFutures was explored through a five-week deployment with the International Federation of Red Cross and Red Crescent Societies (IFRC) as part of a consultation designed to inform future strategy. Our analysis of deployment metrics and post-deployment interviews outline how TalkFutures: (i) increased modes of participation across the qualitative workflow; (ii) reduced barriers to participation; and (iii) improved representation in the engagement processes.

Author Keywords
Community Engagement; Democracy; Qualitative Practices.

CCS Concepts
•**Human-centered computing** → **Collaborative and social computing systems and tools;**

INTRODUCTION
In recent years, human-computer interaction (HCI) research has shown increasing interest in ways to support new forms of participation in public consultations. Traditionally, consultations are used to elicit public opinion on decisions that will impact participants day-to-day lives [31]. While activities such as workshops with representative community groups are effective methods for opinion elicitation and building trust between

stakeholders [1, 15, 34], they impose challenges and limitations on the reach and scale of possible participation. Public or community engagements often occur over an extended period of time and are intrinsically complex: they can involve multiple stakeholders, bureaucracies with opaque decision-making processes, and complex power dynamics [17, 65]. These barriers can overwhelm many participants, leading to issues of under-representation [8, 65].

Community engagements are processes to involve participants in activities aimed to generate insights and information, usually for decision-making [35]. Examples include local governments engaging with their citizens [15, 50, 51], NGOs engaging their members (as in this paper and [6, 21, 24, 59]), or businesses engaging staff [7, 22, 56]. In all cases, such community engagements typically mirror qualitative research processes – e.g. ideation, data capture, data analysis and reporting findings. As with most qualitative research, participants are generally more involved in data generation and capture and less in the analysis and reporting stages [52, 64]. Technology offers exciting new opportunities to broaden engagement, but carries more demands for meaningful, structured participation [6, 53, 64], especially in geographically dispersed engagements as existing processes often fail to accommodate distributed participation beyond data capture [33, 48].

Governing institutions struggle to analyse the growing amounts of qualitative data amassed [8, 17, 22, 53]. This can result in outsourcing the analysis process, which creates "black box summaries" that lack transparency and that raise concerns of bias and reliability [52]. Mahyar et al. have proposed a "hybrid" approach that combines digital and offline engagements to broaden participation and increase the inclusiveness of voices shared through the process [52]. We extend this work, designing and deploying *TalkFutures* as such an approach that enables local participants to contribute to all stages of a global community engagement: (i) sourcing localised opinions from across distributed communities; (ii) analysing this data; and (iii) summarising and promoting insights back into the community. TalkFutures was designed in collaboration with the International Federation of Red Cross and Red Crescent Societies (IFRC) and deployed for five weeks in a global community engagement with their members.

Our findings contribute to emerging HCI literature on community engagement and qualitative research practices in three ways: (i) the establishing of three design goals for distributed community engagement processes, to increase modes of participation, reduce barriers, and encourage representation; (ii) an account of a real-world, exploratory deployment that puts these goals into practice; and (iii) a characterization of issues experienced by participants in relation to these design goals.

RELATED WORK

This section outlines how democracy underpins decision-making processes, then describes the challenges of traditional community engagement strategies and highlights the roles of technology in democratizing participation across all stages of the qualitative engagement process. We then review the crowd-sourcing to understand the additional challenges involved in designing *globally distributed community engagements*.

Participation in Democratic Decision Making

Policy making is an inherently interconnected, complex, and messy process that makes reaching a determinable solution extremely difficult [29, 27, 26]. Underpinning policy making is the process of democracy, which are structured to reach consensus depending on the type of democracy adopted, for example, deliberation is central to decision-making in one (deliberative) and elected officials make decisions in another (representative) [60, 23]. In turn, the type of democracy used determines people's agency and participation to contribute and enact change. However, the quality, effectiveness and value resulting from each model remains contested [28, 60]. There is a vast literature that explores digital methods to engage the public in democratic decision-making processes, such as digital juries [25, 14, 61], deliberation approaches [62], or e-democracy [13, 12, 29]. These engagement methods examine specific aspects of decision-making processes (e.g. improving deliberative practices [14]); yet, limited work has examined the end-to-end qualitative process of engagements. Nelimarkka's review of democracy research in HCI calls for research to support representative democracy and highlights that technology is not a panacea to participation, but rather one aspect of larger, complex policy making processes [60]. We respond by exploring how technology can support *procedural* participation of each qualitative stage in democratic decision-making processes in a representative democracy (the IFRC).

Traditional Community Engagement Strategies

Community engagements have emerged as the successor to public consultations as they aspire to involve participants in more procedural aspects of democratic decision-making [17]. The potential for community engagement to empower through participation has been explored in many areas of HCI research, including issues surrounding neighbourhood planning [19, 30, 53] and the development of smart cities [33, 50, 56]. The contexts of community engagement are often complex: they can take place over extended periods of time, and frequently involve multiple stakeholders and bureaucratic processes, often resulting in participants being overwhelmed and under-represented [8, 20, 65]. Prior research of traditional community engagement methods (e.g. public workshops) has

highlighted the importance of face-to-face meetings for building trust and fostering relationships between public officials and citizens, leading to richer insights and more meaningful outcomes [1, 15, 34]. However, as these methods involve physical attendance, participation is impeded by time limitations, proximity, and the venue's size and cost, leading to only a small portion of the affected community attending [17, 31]. Consequently, attendees unevenly represent those affected by the final outcome [37]. Those who do attend might use this as an opportunity to release tension, grief, or frustration and others may dominate the discussion, leading to some participants not having an opportunity to voice their perspectives [11, 53].

Recent interview studies have shown how governing institutions configure community engagements and describe the challenges experienced [8, 17, 52]. For example, Corbett and Le Dantec held interviews with elected officials and city employees across 15 departments to characterise the breadth of community engagements practices [17]. Their findings highlight the importance of officials "raising awareness" of engagements to ensure community members are best represented. They also argue that informal, in-person meetings are critical to building relationships and establishing trust with community members, mirroring findings from prior research [8, 15, 34]. However, these papers are primarily concerned with the initial stages of community engagements, with limited research exploring the analysis or reporting stages of consultations and engagements [8, 17]. To address this, Mahyar et al. interviewed civic leaders in San Diego to examine their data analysis practices of community engagements [52]. The authors argued that, despite a desire to gather input from a broader spectrum of the community, public officials' current analytical approaches would not cope with greater quantities of data. When governing officials outsourced the analysis process to overcome this data deluge, this led to a "black box" analysis that potentially misrepresented community concerns due to a lack of procedural transparency. In response, Mahyar et al. argue there is a need for scalable analysis tools that enable participants to engage in these activities, thereby reducing some of the workload for decision-makers. This paper extend this work through investigating technology's use to increase participation for participants across all stages of a community engagement rather than an external, outsourced entity.

Digital Community Engagement Strategies

Qualitative methods are the preferred choice for rich capture of participant's experiences during community engagements [16, 49, 52]. Decision-makers increasingly advocate and use qualitative approaches with the aim of democratising participation across the engagement process [64]. HCI has simplified how decision-makers can collect community input by introducing bespoke technologies that augment or complement existing engagement methods, for example, through the use of situated physical devices [22, 32, 43, 67] or community voting technologies [46, 69]. While these approaches can generate broader participation, thereby overcoming some issues of representation faced in community engagements, the captured data often goes unused as the decision-makers lack the skills to effectively analyse this data [22], particularly as the quantity of data increased [52]. Citizen Social Science

(CSS) is an emerging approach that aims to support citizens co-examining societal issues through the application of qualitative methods, drawing from participants' experiences of their environments and social contexts that researchers do not have access to. For example, experience sampling methods have been used to reach community members who might not otherwise participate in community engagements [63]. This approach could assist decision-makers in overcoming the challenges they face in the inclusion of participants in the analysis process. However, while CSS has been used to enhance data collection and sharing through paper-based methods [63] and the reuse of existing mobile applications (i.e. WhatsApp [36]), the data analysis and reporting stages remain underexplored.

Recent HCI research has explored the design of bespoke digital tools to democratise all stages of the qualitative process [6, 53, 64]. For example, Manuel et al. collaborated with two neighbourhood planning groups who used a mobile application to produce and curate videos that identified issues that affect their neighbourhood [53]. These then informed a debate between participants and local planning authorities (i.e. decision-makers) with the aim of improving neighbourhood planning policy. While this research enabled participants to feel more represented in the final output, the analysis and reporting stages required extensive facilitation by researchers to create material that could be presented to public officials, mirroring other research in participatory video [6]. Rainey et al. approached the democratisation of participation in qualitative processes through designing digital tools with non-expert researchers and organisations [64]. The authors worked with community groups to iteratively design Gabber, a digital platform designed to capture audio interviews. Community members used it to tag segments of their recorded audio as a part of the analysis process. These analysed segments could then be curated to produce individual narratives to present to stakeholders. While these examples support co-located participants in analysing and reporting community narratives, the requirements for structuring participation using such digital tools in geographically distributed contexts remain underexplored.

Crowdsourcing Distributed Engagement
Crowdsourcing is highly effective in organising large numbers of geographically-distributed people to contribute to the completion of micro tasks, which address a larger problem when combined [44]. Researchers have advocated using crowdsourcing methods to enhance community engagement methods to engage broader, more diverse demographics and reduce the time and expertise barriers of traditional methods [5, 33, 51]. For example, Gooch et al. developed a web-based platform to crowdsource local community members ideas around sustainability issues affecting them, such as exploring ways to reduce food packaging waste [33]. These ideas could then be submitted to a funding competition where the research team and external stakeholders would judge the application, and help realise their ideas. Through analysis of these proposed solutions, the authors show that this engagement approach helped surface hyper-local solutions that responded to the needs of the community, mirroring findings from other work on the importance of utilising local knowledge in community engagement processes [17, 67]. However, crowdsourcing applied to community engagements often positions participants as data collectors (e.g. reporting issues of local infrastructure [34, 50, 51, 55]), with limited work seeking to involve distributed participants in individual or collective sensemaking.

Recently, Lambton-Howard et al. applied crowdsourcing in a globally distributed community engagement, where participants undertook complex data capturing activities [48]. The authors collaborated with the International Federation of Red Cross and Red Crescent Societies (IFRC), who wanted to understand the challenges faced by its members and use the data to drive organisational change. In response, the authors designed an engagement process that leveraged the messaging application WhatsApp, which was already used ubiquitously across the organisation. They assigned participants distinct roles and divided them into teams (WhatsApp groups for each) to collaboratively produce rich media responses to the challenges set by the organisation. This approach reduced barriers to participation by designing for engagement from the lowest levels of the organisation (e.g. volunteers), and fostered communication across its branches that did not otherwise interact. While this work illustrated the potential of distributed participants collaborating and independently capturing rich qualitative data for a collective goal, it relied on an expert judging panel to undertake data analysis, and therefore excluded members from the analytical process.

TOWARDS DISTRIBUTED COMMUNITY ENGAGEMENTS
Traditional methods of community engagement are effective for sourcing opinions in-person [17, 52], but generally do not involve participants in data analysis or reporting stages [33, 48, 53, 64]. This is despite participants possessing the most knowledge of the data context and its contents [31, 67]. This creates tensions between participants and decision-makers (i.e. local governments and non-governmental organisations) [17, 65], discouraging participation, and resulting in underrepresentation and participants' perceived exclusion from final outputs [18, 20, 53]. While technologies have been designed to encourage involvement across all stages of a qualitative process, they require significant assistance by researchers to support data analysis [6, 43, 53, 64], which is unsuitable for distributed engagements where real-time assistance is not always possible. Technology that has been used for city-wide [33, 34, 50] and global community engagements [48] has shown promise for remote participation and capturing opinion, but like local community engagements, has so far failed to support participation in the analysis and reporting stages. Moreover, Mahyar et al. argue the need for scalable methods of qualitative data analysis to overcome the challenges faced by local governments seeking to engage a broader population of the community in these processes [52].

CONTEXT
As the largest humanitarian network, the IFRC comprises of 192 National Societies (NS) who jointly mobilise over 12 million active volunteers each year [40]. Due to the IFRC's federated structure, each NS operates as an independent organisation with its own governance and structure, typically comprising many layers of management between senior leadership and volunteers. In 2017, the IFRC's *innovation team* began a

three-year series of horizon scanning activities intended to inform the development of their ten-year organisational strategy, *Strategy 2030* [38]. The innovation team led workshops with members across all levels of its membership to understand the current local trends and challenges and synthesised this knowledge to inform strategy development. They previously led digital engagements to include the voices of members who might not attend these sessions in the strategy process [48]. As this produced large media datasets that the innovation team could not analyse, they wanted to explore new approaches to include members in data analysis and dissemination with the aim of producing a podcast from raw media. Our collaboration spanned six months, where three of the research team were embedded within the IFRC's offices working directly with the innovation team. Where prior research engagements with the IFRC have explored participatory video [6] and gameful design [48], we explore how technology supports distributed participation in the qualitative practices of community engagements. Through synthesising this literature and the challenges experienced in prior community engagements, we outline three key priorities underpinning our research:

Modes of Participation: The IFRC have used novel digital approaches to explore the future challenges faced by NCs, but have struggled to increase participation beyond data capture without significant assistance from researchers [6, 48]. Thus, a priority was to increase participation in the analysis and reporting stages, whilst drawing from members' local knowledge to contextualise and enhance the output [31, 67].

Barriers to Participation: The IFRC previously used in-person methods (workshops) to engage NS members, which required significant resources and coordination, and took participants away from daily programme delivery. A key priority identified through our collaboration was to increase opportunities for all members to participate through lowering existing technical, geographical, and organisational barriers [11, 31].

Improving Representation: Key to Strategy 2030 was the inclusion of local views from members across all layers of the IFRC, and the sharing of these between branches to promote knowledge exchange. However, sharing insights between branches and reaching all members through a digital engagement has not been possible due to the organisation's federated structure, traditional hierarchy, and independent power of branches [48]. Priority was therefore also given to promote inclusive representation of members' opinions through sharing in-depth, qualitative insights from all layers of the IFRC.

Design Goals
Supporting participation in democratic decision-making processes underpins this research, e.g. distributed members contributing to a community engagement that informs organisational decisions. This research is situated within the broader context of democracy, and in particular, explores how technology can supplement the *procedural* aspects of digital participation in a representative democracy [28, 60]. Our focus on *procedural engagement* over efficacy (i.e. the ability of participants contributions to affect change) was driven by our research focus on understanding how technology can augment distributed participation in *qualitative practices*. Building on

this, we abstracted the key priorities of the IFRC into three design goals to guide the design of our (and future) distributed, digital engagement processes that aspire to enhance procedural engagement in democratic decision-making:

(DG1) Provide Alternative Modes of Participation: Support participants engaging in capturing, analysing, and reporting processes through structured activities [6, 52, 64].

(DG2) Reduce Barriers to Procedural Participation: Create opportunities for procedural participation by lowering technical, geographic and temporal barriers [15, 18, 34].

(DG3) Improving Procedural Representation: Design a digital space where participants feel valued for contributing their voice and observe it impacting the process [8, 48, 65].

TALKFUTURES DESIGN
TalkFutures was designed in response to existing challenges we outline through the above literature and informed by these design goals. TalkFutures is a sociotechnical process, designed to encourage active participation in all stages of distributed community engagements (DG1). It focuses on reducing barriers faced by stakeholders throughout engagement processes when participating and surfacing authentic opinions (DG2, DG3). As a part of the Strategy 2030 process, TalkFutures adapted an existing technology, Gabber, and was deployed across the IFRC. The following subsections outline the adaption of Gabber, and how its affordances informed the design of activities to structure participation in this deployment.

Adapting an Existing Digital Qualitative Workflow
Our research focus was to support distributed qualitative practices. The innovation team had a strong desire to capture the voices of IFRC members in hopes of creating and disseminating outcomes through a podcast. Consequently, we saw an opportunity to adapt Gabber through designing a unique process on top of it. Gabber is an open-source, digital platform designed to support engagement with the original captured audio data, with the aim of democratising participation in all stages of a qualitative research workflow [64]. Gabber was suited for this deployment as it was designed to support everyday people engaging in the complete qualitative workflow (i.e. data capture, sensemaking and reporting), which underpins distributed participation in the qualitative practices of this engagement. The use of the Gabber platform involves a three-stage workflow: (1) a mobile application structures audio capture by presenting a list of predefined topics when recording; (2) a website makes recordings available for analysis, where comments are used as the analytical process; and (3) viewing all commented clips of audio, and curating a media playlist to represent a research narrative.

TalkFuture's design extends each stage of Gabber by introducing activities to structure distributed participation (DG1). This required customising Gabber for use within the IFRC, which involved adding multilingual support for the organisation's four core languages (Arabic, English, French and Spanish), and recording demographics upon registration to measure participation (e.g. age, gender, role in the organisation). IFRC members have a shared trust in the organisation's brand, which

informed the decision to re-brand Gabber in the IFRC's image. To structure data capture, five topics were iteratively refined with the IFRC's innovation team to explore existing challenges and potential solutions to inform its strategic horizon for 2030: (1) *What trends in your country will most affect people in the next 10 years?* (2) *How will these trends impact the IFRC?* (3) *What practical steps should your branch take in response to these trends?* (4) *Given these changes, what would be your vision of the IFRC in 2030?* (5) *Ask your own question.* To reduce the complexity of the engagement activities, Gabber's playlist feature was not used.

Configuring Workflow Stages with Roles
Previous deployments of Gabber make no distinction in how participants can contribute to stages of engagements, in order to support flexible participation [7, 64]. The authors found that this discouraged engagement, and required intervention from researchers to guide the process. Prior research shows that giving participants roles can help to build identity and a sense of responsibility when engaging in an activity, and are a powerful approach to scope contributions by making clear what is required from participating [42, 48, 66]. Responding to this, and informed by prior HCI research with the IFRC [6, 48] and its branches [3], we extended each of Gabber's stages through the design of unique roles and engagement activities to guide participation: (i) distributed capture of local opinion (with associated role of the *'innovation correspondent'*); (ii) data sensemaking (with associated role of the *'research assistant'*); and (iii) summarising and promoting opinions (with associated role of the *'communications assistant'*). An overview of each role is detailed in Figure 1, and the aim and design rationale of each is presented in the following section.

Distributed Capture of Local Opinion
This stage supports distributed participants in capturing authentic opinions from across all levels of the IFRC (DG3). A semi-structured process guides data capture to create a consistent data format across locations to structure data analysis. This aims to reduce existing barriers within organisations where traditional methods used to gauge opinion have low representation, or where explicit approval from senior figures is required to take part and share their opinion (DG2). This contrasts crowdsourcing activities that seldom utilise participants' local knowledge [45, 47].

Innovation Correspondent's role involved sourcing and conducting interviews with IFRC members or external experts to capture their views on the five topics outlined above (DG1). Who and how participants selected interviewees was decided by participants. Interviews are automatically uploaded for others to view and analyse. Participants received a certificate of participation upon recording at least three interviews.

Data Sensemaking
This stage supports participants in analysing perspectives from outside their locale, aiding knowledge exchange between otherwise siloed communities (DG1). This contrasts the IFRC's existing practices, where specialised research units commission data capture from local branches and analyse this data from a centralised location, with no input from participants.

Research Assistant's role involved creating at least three comments on interviews to identify insights, and writing a blog post on the IFRC's strategy website to synthesis and share insights [38]. To contribute to their professional development, participants received a letter of recommendation from the IFRC's head of innovation upon completion. Data capture and analysis were separated to simplify participation, and reduce the time required to engage with each role (DG1).

Summarising and Promoting Opinions
This stage supports participants summarising contributions from the other two stages, and producing a design output to promote ideas across communities, e.g. a poster. This aimed to make participants feel included in the final outputs and expand the engagement's reach (DG3). In contrast to traditional consultations, this stage uses content that is accessible to all participants to encourage engagement across communities.

Communications Assistant's role involved creating material from interviews, blog posts and comments to summarise contributions from all participants for promotion across the community. Participants were given creative control in how they present their summary and would receive a letter of recommendation for producing one communication piece.

Research Approach
Our research encompassed two phases detailed in the following sections: (i) a real-world deployment of TalkFutures in the IFRC; and (ii) post-deployment interviews to explore participants' perceptions of how their data would enact change in the IFRC.

PHASE ONE: TALKFUTURES DEPLOYMENT
This section describes the design, configuration, and outcomes of a five-week deployment of the TalkFutures process.

Study Design
Participant Recruitment
TalkFutures was deployed within the IFRC between November 12th and December 14th, 2018. The National Societies that had previously shown interest in taking part in digital engagements (Kenya, Mexico, Australia and Tunisia, as well as the IFRC's regional office in the Americas) were contacted one month before the deployment, requesting that they advertise it across their network. Each National Society relays information independently, making it difficult to determine precisely how many participants were reached through the recruitment strategy.

In total, 467 participants from 81 National Societies registered to take part (338 English, 79 Spanish, 27 French, 23 Arabic). Participants had a mean age of 31.3 (SD=10.9), with 292 identifying as male, 168 as female, and 7 preferring not to say. In prior engagements by the IFRC, participants frequently registered interest and did not engage further, leading to high dropouts. With the skills required for roles in TalkFutures, we anticipated additional dropout. Consequently, a recruitment strategy was designed that involved direct communication with participants. After registering interest, an email was sent to each participant to outline the roles, responsibilities and deployment timeline, requesting a response with their desired

Figure 1. The different roles, responsibilities, outcomes and incentives for taking part in the deployment.

roles and mobile telephone number. Participants' numbers were used to provide tailored support in real-time.

Coordinating Support and Training
Previous research shows the effectiveness of using WhatsApp for coordinating geographically distributed engagements within the IFRC due to its ubiquity of use amongst volunteers [48]. WhatsApp has also been used to create more inclusive and democratic forms of organisational communication [2]. Following the recruitment campaign, WhatsApp groups were created to provide real-time support and training to participants. In total, 19 groups were created composing of 77 participants: 29 English, 23 Spanish, 15 French, 10 Arabic.

Training was coordinated by the authors through WhatsApp, with feedback provided in the participants' native languages. Participants were asked to introduce themselves, and were then sent a short video to demonstrate how to use the digital platform to achieve the responsibilities of each role. For innovation correspondents, participants recorded a test interview to familiarise themselves with the process, and shared it with their group to receive peer feedback. The researcher in each group used the recordings to discuss best practices, e.g. placement of the mobile device to control for audio quality. Research assistants received one-on-one reviews on their blog post before publication to support high quality writing. WhatsApp groups were used in the TalkFutures engagement to support informal chat with participants and to ask/answer questions alongside other data collection to gain insights. For example, participants described how their personal commitments and time constraints would often impact on completing tasks associated with their roles.

Findings
Here we report the engagement statistics (uptake, and activities associated with the three roles), primarily to understand the breadth of engagement across the organisation as evidence for our *representation* design goal (DG3).

Innovation Correspondents
108 interviews were recorded from 26 national societies, of which 13 were participants testing the mobile application and are excluded from the following analysis. In total, there was 11 hours 38 minutes created from 37 innovation correspondents with an average length of 7 minutes 33 seconds (min: 32 secs, max: 25 mins). An overview of participation by language is illustrated in Table 1. While there were fewer conversations recorded in Arabic on average, these were considerably longer. Low engagement by French speakers could be attributed to the limitations of our recruitment strategy.

	English	*Spanish*	*Arabic*	*French*
# Interviews	31	38	22	4
Total Length	04:25:48	02:50:17	03:56:43	00:25:32
Avg Length	00:08:34	00:04:29	00:10:46	00:06:23
# Interviewers	14	13	7	3

Table 1. An overview of participation in the innovation correspondent role by language. Total and average length are presented in hh:mm:ss.

Of the 37 innovation correspondents (23 male and 14 female) from 26 unique countries, 20 completed the responsibilities to receive an incentive. Participants were often young (75% were less than 30 years old), with mixed roles within the organisation (57% were volunteers, with the remaining evenly spread across being interns, staff, leaders and external experts). There was a small portion of participants that were prolific at capturing interviews, going beyond the required three interviews required to receive the role's incentive. For example, one participant recorded 16 of all 22 Arabic interviews, and another recorded 10 of all 38 Spanish interviews. These "hyper-engaged" patterns mirror previous research in distributed engagement projects [41, 48].

Of the 108 interviews, 69 featured recorded demographics about the interviewee; adding this information within the mobile application prior to an interview was optional. Of these, there were 18 volunteers interviewed, and 51 others who were in positions of varying power within the organisation: 6 intern,

23 staff, 13 leader, and 9 external experts. This highlights that interviewees were often senior staff than the interviewers, holding positions of power in the organisation. Of the 69 detailed interviewees, 70% were male and 30% female, and were often older (62% of the detailed participants were older than 31). There were 19 unique countries among these interviewees, ranging from larger (e.g. Colombian (15)), to much smaller branches (e.g. Saint Lucia (1)), which illustrates a breadth of participation from across the organisation.

Research Assistants
There were 28 participants registered as research assistants, with 9 completing all criteria for the role. In total, 67 comments were created (35 in English and 32 in Spanish) with an average length of 47 words (min: 4, max: 141). 9 blog posts were written by participants (5 English, 2 Spanish, and 2 Arabic) with an average length of 816 words (min: 468, max: 1227). Participants that completed this role were from 8 national societies and were primarily volunteers (7 volunteers, 2 staff) and a mixed age range (5 were younger than 30, 2 between 31–40, and 2 were 41+). 5 of the 9 participants also completed the innovation correspondents' tasks. That there was no engagement with this role by French speakers could be attributed to either recruitment or limited data to analyse.
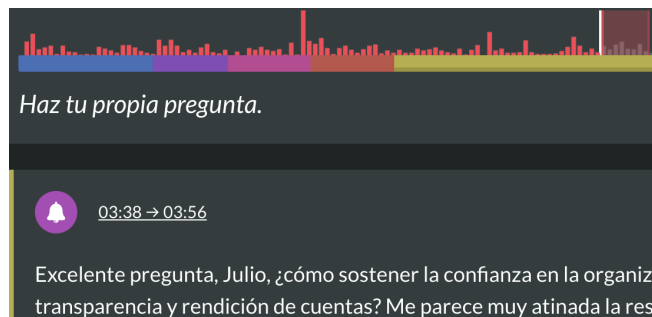

Figure 2. How an interview was presented and a participant's response.

There were 197 unique visitors from 57 countries, who viewed interviews across 408 sessions with an average duration of 4 minutes 54 seconds. This increased engagement compared with the other role could be due to the time it took for the deployment to reach different National Societies, or the lower commitment required to listen to interviews. The IFRC promoted blog posts externally, which were viewed by 111 unique visitors from 24 countries for an average of 3 minutes 56 seconds. Participants drew from multiple interviews from across national societies and quoted these directly in blog posts.

Communications Assistants
Communications assistant were responsible for creating content from other participants data (e.g. *blog posts and comments*) to promote ideas and solutions. 15 participants undertook this role, with only 1 participant (a volunteer from Spain aged between 31–40) completing it. This participant produced 2 posters, and a presentation that highlighted quotes from interviews to showcase ideas from both innovation correspondent's interviews and research assistant's blog posts (Figure 3). This participant was a professional in the field of communications, which they described as the main reason for pursuing the role.

Limited engagement with this role could be attributed to it requiring pre-existing technical skills to complete the responsibilities. Further, communications assistants had to wait several weeks to engage in the process due to the role's dependency on data produced by participants in other roles.

Figure 3. A promotional poster created by a communications assistant.

Using TalkFutures Contributions to Inform Strategy
The innovation team thematically analysed interview data and blog posts created through TalkFutures to confirm findings from parallel and prior workshops, which informed the final recommendations in the strategy report. Podcasts were not yet created due to writing the strategy report [39].

PHASE TWO: POST-DEPLOYMENT INTERVIEWS
This section explores participants' experience of the deployment, and provides evidence towards the design goals of supporting engagement across all stages of the qualitative process (DG1) and lowering barriers to participation (DG2).

Study Design
Participants who completed all of their role's responsibilities were invited for one-on-one interviews. Of these, 5 were innovation correspondents, 9 research assistants, and 1 was a communication assistant. Participation in the interviews was voluntary, and 5 participants chose to not take part. 6 interviews (3 English and 3 Spanish) were conducted: 4 participants dropped out, citing time zone issues. Participants' demographics and roles are outlined in Table 2.

ID	Role	TF Role	Country	Age	Gender
P1	Volunteer	IC	Finland	21-30	Female
P2	Volunteer	IC	Brazil	21-30	Male
P3	Volunteer	IC, RA	Hong Kong	21-30	Male
P4	Volunteer	IC, RA	Spain	31-40	Female
P5	Manager	IC	Colombia	21-30	Male
P6	Volunteer	IC	Colombia	< 21	Male

Table 2. An overview of participant TalkFutures (TF) roles (i.e. innovation correspondent (IC) and research assistant (RA)) and demographics.

Interview Protocol
Interviews were semi-structured and began by discussing participants' background and involvement with the IFRC. The following four categories were covered: (1) why participants took part; (2) which roles they engaged with and value from contributing; (3) how they perceive their contributions are

represented and would be used; (4) how the process could be improved. Each question was tailored to the participant's role in the deployment. Open-ended questions were used in each category to guide the interview, for example: *"talk me through your process for preparing and recording an interview?"* and *"How do you feel that your contributions (interviews or thought piece) will shape Strategy 2030?"*.

Data Collection and Analysis

All interviews were audio recorded over a two-week period following the TalkFutures deployment and lasted between 16–36 minutes (average: 29 minutes). All interviews were transcribed verbatim by the authors in their native language, then translated into English when necessary. Our analysis of the interview data was focused on understanding the value of participation and quality of engagement for participants. Our analytic approach followed an inductive thematic analysis (TA) process outlined by Braun and Clarke [10]. Analysis was inductively coded by two authors who generated codes as labels with notes considering our research questions. This first step was finished with an agreed codebook between the two authors. Next, we organised the codes into initial themes based on our analysis. From the initial themes, the authors who conducted the analysis, considered if the themes were meaningful to the research question. This process resulted in three themes that describe the structure of our analysis.

Interview Findings

Our findings outline three themes that highlight different aspects of how TalkFutures met our proposed design goals.

Representing and Actioning Participants Contributions

Feeling that your voice is being heard by decision-makers and that it represents your communities' concerns are key tensions for participants in community engagements. Across our interviews, participants highlighted the importance of listening to and engaging with the qualitative experiences shared by other participants, and how this data could enrich the strategy as *"It wasn't merely listening to the voices of the [IFRC], but any person (P6)"*. Trust is key to building relationships and encouraging participation in community engagements. Some participants expressed trust that data they contributed would be heard and enacted by the IFRC, and would therefore lead to change within the organisation. P3 noted that the TalkFutures process could lead to trustworthy "solutions" that could impact branches across the organisation: *"I also had a trust that generally the same issues are everywhere, so that the solutions would be found using this process"*. However, this feeling of trust led to some innovation correspondents producing "professionalised" content, as they knew that it might be engaged with and acted upon by the IFRC as well as other participants. This highlighted the potential of misrepresenting views through this production process if the focus is on quality of output, rather than the desired capture of authentic experiences, e.g. some participants re-recorded interviews to exclude laughter.

Having unique responsibilities for roles led to participants being task-driven, with high attention to detail in how they represent other participants' experiences. In contrast to capturing interviews, when research assistants performed analysis, they often ensured that the original voices of interviewees was

hyperlinked in written reports to represent the experiences of those interviewed. This was to ensure other participants could more easily revisit and engage with the original content, for example, P4 describes quoting an interviewee as wanting to *"make sure that their views were meaningfully expressed in my article ... as they are the ones represented globally"*. Others were more sceptical of how their contributions would be used, and if they would impact the organisation at all: *"I saw that many, many interviews on the website were not commented, I don't know if people will hear. It's like having a lot of data, but for you [IFRC] to not process that ... then the data is not useful (P2)"*. This led to a desire to know who, how, and from where others were engaging with their content, highlighting that since this data was not currently visible, they felt a disconnect between what they contributed and how useful it was for other participants or stakeholders within the IFRC.

Navigating Infrastructural Barriers

The IFRC's existing structure creates siloes between branches that limit communication and knowledge exchange that could benefit individuals or the broader organisation. Despite our efforts to mitigate these barriers, recruitment processes remained a key tension point as they could exacerbate existing barriers to participation. For example, P3 had a unique perspective through volunteering for the Canadian and Hong Kong branches, noting that material about TalkFutures was only advertised through one branch and that *"If [the IFRC] really want to hear more voices, then they will need to push more aggressively, and take a proactive approach to trickle the campaign down to the bottom."*. P3 suggested that change at the highest level of the organisation is required to overcome this recruitment barrier, suggesting that 'aggressive' promotion is needed for more voices across the organisation to be heard. Despite this, participants recognised that engaging in TalkFutures reduced some existing barriers, such as knowledge exchange and communication between branches, which was not previously possible with the IFRC: *"This process opened up the chance to communicate with any stratum of the IFRC, and collectively think of what can be done (P4)"*.

Innovation correspondents were responsible for interviewing local stakeholders to explore potential solutions to challenges outlined by the IFRC. Participants describe how the process of interviewing senior staff provided a broader understanding of the complexity of the organisation's structure, which was previously difficult due to the power and communication barriers present. This led to a deeper sense of belonging between stakeholders and the organisation. For example, P4 interviewed several stakeholders, including senior members in different national societies (e.g. *"I interviewed the director of the Argentinian [branch], someone from the Ecuadorian [branch] ... my coordinator in the Spanish [branch]."*) and volunteers in their local branch, noting that this enabled them to *"...know the different sides of the coin ..."*. Conversely, other participants had ideas for how TalkFutures could enhance offline engagements, with P2 suggesting expanding the responsibilities of the innovation correspondent role "with tools to engage locally and physically with the people" through hosting in-person "workshops" in local branches. Despite TalkFutures being a "hybrid" approach to community engagements [52],

offline engagement was limited to interviewing others. P2 highlights that some participants may want more responsibility, suggesting that offline activities could be an opportunity to bring knowledge shared from other the global innovation correspondents to discuss and disseminate it locally.

Innovation correspondents were not provided any rules or restrictions on who they could interview; they were encouraged to make use of their personal networks of colleagues, friends, and family to identify experts they believed could share valuable insights on the questions for that local context. This resulted in some participants making use of experts within their local communities, while others reached out to more senior members of the IFRC branches in other countries. This gave control to participants on whose voices should be contributed and shifted power from decision-makers to participants who are typically "subjects" in these processes. This led to participants often interviewing those in power, who are more likely to contribute in traditional engagements, reinforcing existing issues of representation. Sourcing opinion from outside IFRC was important to participants and exemplified through wanting to share more critical perspectives from domain experts to *"diversify the contributions that interviewees bring (P3)".*

Impact on Personal and Professional Development
Engaging with roles required pre-existing skills or the drive to develop new skills, which added additional barriers that restricted the potential reach and participation of TalkFutures. Apply existing skills was a key motivation for participating (e.g. *"I wanted to use my professional skills in communications to engage with other volunteers"* – P4) or to develop new skills to increase employability such as *"understanding better how the IFRC works from an organisational level. (P4)".* Several participants described developing soft skills that they considered would be more beneficial to their day-to-day contribution in the IFRC. For example, P5 described building confidence and overcoming shyness through the process of interviewing others: *"I didn't upload them [first few interviews] because I was too shy ... I learned from these first few interviews, so I got better at interviewing.".* Participants also saw potential in building social capital by expanding and internationalising their professional network through the innovation correspondent role as this enabled them to *"talk to other people with different backgrounds and interests" (P2)* and *"expand my research and connections and network" (P2).* For others, meeting new people was more important than building a professional network and the possibility to engage with international peers whose culture, nationality and diverse contexts provided an exciting opportunity for knowledge exchange.

DISCUSSION
The following section discusses our findings in relation to the initial design goals of the TalkFutures process and offers suggestions to consider in the design of similar approaches.

DG1: Provide Alternative Modes of Participation
This design goal aimed to support alternative modes of participation in the capture, analysis, and reporting stages of a community engagement. Although Gabber was designed to facilitate participation across the qualitative workflow, it had

not yet been used in distributed engagements [7, 64]. Consequently, role-based activities were introduced to support participation with these qualitative practices. Our findings highlight that instrumentalization of procedural participation – a process whereby participants use a project to realise their organisation's objectives without consideration for the scope of the problem [9] – facilitated independent and distributed engagement. Prior research shows that decision-makers primarily use technology in the initial stages of community engagements [8, 15, 17, 52], that facilitation is required to support participation [6, 53] and the impracticality of analysis of qualitative at scale [52]. These challenges parallel citizen social science (CSS) that aims to harness citizen participation in qualitative research on societal issues that affect participants [36, 63], but as yet research has not explored CSS in practice. *We built on the intersection of these research domains through exploring what was required in digitally enhanced community engagements to structure and support procedural participation for both decision-makers and participants.*

Prior research shows the potential of roles in engaging distributed members in complex processes of capturing media during a community engagement [48], but limited the scope to exclude analysis or reporting [52, 64]. *We extend this research through exploring how roles and the associated activities can enable distributed participation in the analysis and reporting of qualitative data. Our findings highlight that drawing from participants' existing skills motivate participation.* However, while there were high levels of engagement and completion for innovation correspondents and research assistants, this was not the case for communications assistants, which could be due to the higher levels of technical skills required (e.g. graphic design) or its dependency on data from the other two roles. *One risk to consider in future work when configuring roles is that having skill requirements could amplify differences between skilled and non-skilled participants. Our findings outline that opportunities for capacity building were a key motivation for participation.* Careful configuration must be taken when designing roles to ensure that they consider both the types of skills required to complete each activity and the possible skills that participants could apply or obtain from taking part.

DG2: Reduce Barriers to Procedural Participation
This design goal aimed to increase opportunities for procedural participate through reducing existing technical, geographical and time barriers identified in prior research [15, 18, 34, 52]. Our findings show a reduction of geographical barriers through designing digital spaces for distributed participants to connect, listen to, and engage with each other's views. One finding surfaced through the innovation correspondent role was that participants independently selected and interviewed others who were in positions of relative power as they wanted to best represent local expertise and saw this through seniority. While the interviewer role redistributed power from decision-makers to participants, these more "official" stakeholders are most likely to be invited to participate in traditional engagements (e.g. workshops), therefore reinforcing whose views are shared and represented. *This highlighted the importance*

of designing instruction into roles and activities to prevent compounding existing power imbalances.

Mahyer et al. highlight the issues for decision-makers to perform qualitative analysis at scale and suggest "hybrid approaches" that combine offline and online engagement activities to overcome existing analysis, inclusion and participation barriers [52]. ***Our research explores such an approach in practice through the design and configuration of Talk-Futures. Key to this, was designing asynchronous engagements that structured in-person data capture, and distinct roles for the analysis and dissemination online.*** Our findings highlight that this hybrid approach strengthened relationships between participants who might not otherwise interact, and broadened their knowledge of how the organisation works, which they attribute as motivators for continuing to engage with other roles – mirroring prior work in community engagements [15, 17]. The responsibilities of the research and communication assistant roles were more complex and had less uptake. We recommend using one-off events to collaboratively engage with contributed data to illustrate how and what the outcomes of these roles would be.

DG3: Improving Procedural Representation

Participants who contribute to community engagements can feel alienated or excluded from the final output as decisions made during analysis and dissemination of their contributions can be opaque [18, 22, 52]. Crowdsourcing can reduce existing factors that limit representation in face-to-face engagements, e.g. time, resources, etc. [5, 33, 51]. While this can increase demographics engaged, it does not necessarily increase the quality and value for individuals [47, 68]. This design goal aimed to simplify contributing to qualitative processes through the design of specific activities. This would enable individuals to see their voice represented in the ongoing outcomes as a mechanism to highlight the value it brought to others, e.g. through blog posts and summaries. The output is typically summarised documents (e.g. a strategy document) where space is limited, and therefore including details of all contributions or the selection process is challenging. ***We have shown through TalkFutures the value participants expressed from being able to access, view, and engage with perspectives outside their local branches and how this strengthened relationships and trust between participants and broadened their knowledge of how the organisation works.*** Despite participants having trust in the IFRC, our findings highlight that some participants wanted more transparency for how data they contributed would be represented and actioned by the IFRC and the impact this would have beyond the strategy engagement, mirroring findings in prior research [15, 22, 53].

Data transparency in research improves the validity of reported findings and is used to build trust between readers and the community [58]. In qualitative research, considerable importance is placed on capturing the authentic experiences of participants but, inevitably, researchers make decisions about which to represent in their reports [57]. Our findings show that transparency could help build trust between stakeholders. One approach we recommend exploring that could help contextualise and ground the final document in community members contri-

butions is data provenance [4], i.e. being able to trace contributions from the final output to the original source and its history. Prior research suggests *linked data* to structure and potentially automate the transparency of NGOs financial practices and therefore promote accountability to donors [54]. Technologies are increasingly being used to democratise all stages of community engagements (e.g. [6, 64]) that can automatically record *engagement metrics*, i.e. describing how people access, use, or engage with a system. ***We propose engagement metrics as an alternative to linked data as they are often already being recorded in digital platforms and have the potential to represent individual or aggregated interactions to not only show provenance, but also surface individual contributions and their impact.*** For example, engagement metrics could be used to show who in an organisation listened to an interview and contributed in a community engagement process. Participants could then determine (or be automatically shown) which voices are included (or excluded) in reports that informed public policy, thereby holding decision-makers accountable.

LIMITATIONS

We believe that our findings related to the challenges with implementing hybrid approaches to distributed qualitative practices, participant desires for increased data transparency, and the use of roles to structure participation could all be applied to both local and distributed engagements. We recognise that our TalkFutures deployment took place in a single organisational context (the IFRC) and consequently some of our findings are likely not generalizable in other engagement contexts, e.g. navigating infrastructural barriers. As such, future research seeking to adopt these approaches must consider how these findings map to the intended research context.

CONCLUSION

This paper presents TalkFutures, a sociotechnical process designed to foster participation across all stages of community engagements. Our literature review of the limitations of community engagement processes informed three design goals that we explored through a real-world deployment of TalkFutures as a component of a strategic engagement with the IFRC. Our findings show that designing for role-based configuration of activities supported participants independently pursuing complex modes of participation in all stages of a community engagement, with varied success across each role. We argue that increasing the transparency of data use promoted participants' sense of representation, both during the engagement and in the final outputs of the process. However, participants desired greater transparency in how decision-makers used their data and how its use translated into post-engagement impact. Furthermore, to support engagement with distributed communities, it is vital to structure participation to make it meaningful to the individuals involved and to value the skills, experiences, and expertise that they have to offer.

REFERENCES

[1] Mariam Asad, Christopher A. Le Dantec, Becky Nielsen, and Kate Diedrick. 2017. Creating a Sociotechnical API: Designing City-Scale Community Engagement. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. ACM, New York, NY, USA, 2295–2306. DOI: `http://dx.doi.org/10.1145/3025453.3025963`

[2] Mariam Asad and Sarah Schoemann. 2015. Designing for Civic Events. *Interactions* 22, 6 (Oct. 2015), 58–61. DOI:`http://dx.doi.org/10.1145/2829859`

[3] Daniel Auferbauer and Hilda Tellioglu. 2019. Socio-Technical Dynamics: Cooperation of Emergent and Established Organisations in Crises and Disasters. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. Association for Computing Machinery, New York, NY, USA, Article Paper 218, 13 pages. DOI: `http://dx.doi.org/10.1145/3290605.3300448`

[4] Khaled Bachour, Richard Wetzel, Martin Flintham, Trung Dong Huynh, Tom Rodden, and Luc Moreau. 2015. Provenance for the People: An HCI Perspective on the W3C PROV Standard through an Online Game. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. Association for Computing Machinery, New York, NY, USA, 2437–2446. DOI: `http://dx.doi.org/10.1145/2702123.2702455`

[5] Mara Balestrini, Yvonne Rogers, Carolyn Hassan, Javi Creus, Martha King, and Paul Marshall. 2017. A City in Common: A Framework to Orchestrate Large-scale Citizen Engagement Around Urban Issues. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17*. ACM Press, New York, New York, USA, 2282–2294. DOI: `http://dx.doi.org/10.1145/3025453.3025915`

[6] Tom Bartindale, Delvin Varghese, Guy Schofield, and Miki Tsukamoto. 2019. Our Story: Addressing Challenges in Development Contexts for Sustainable Participatory Video. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Article 437, 12 pages. DOI:`http://dx.doi.org/10.1145/3290605.3300667`

[7] Rosanna Bellini, Jay Rainey, Andrew Garbett, and Pamela Briggs. 2019. Vocalising Violence: Using Violent Mens' Voices for Service Delivery and Feedback. In *Proceedings of the 9th International Conference on Communities & Technologies - Transforming Communities (C&T '19)*. ACM, New York, NY, USA, 210–217. DOI: `http://dx.doi.org/10.1145/3328320.3328405`

[8] Kirsten Boehner and Carl DiSalvo. 2016. Data, Design and Civics: An Exploratory Study of Civic Tech. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. ACM, New York, NY, USA, 2970–2981. DOI: `http://dx.doi.org/10.1145/2858036.2858326`

[9] Daan Boezeman, Martinus Vink, Pieter Leroy, and Willem Halffman. 2014. Participation under a spell of instrumentalization? Reflections on action research in an entrenched climate adaptation policy process. *Critical Policy Studies* 8, 4 (2014), 407–426. DOI: `http://dx.doi.org/10.1080/19460171.2014.950304`

[10] Virginia Braun and Victoria Clarke. 2006. Using Thematic Analysis in Psychology. *Qualitative Research in Psychology* 3, May 2015 (2006), 77–101. DOI: `http://dx.doi.org/10.1191/1478088706qp063oa`

[11] Caron Chess and Kristen Purcell. 1999. Public Participation and the Environment: Do We Know What Works? *Environmental Science & Technology* 33, 16 (1999), 2685–2692. DOI: `http://dx.doi.org/10.1021/es980500g`

[12] Stephen Coleman. 2004. Connecting Parliament to the Public via the Internet. *Information, Communication & Society* 7, 1 (2004), 1–22. DOI: `http://dx.doi.org/10.1080/1369118042000208870`

[13] Stephen Coleman and John Gøtze. 2001. *Bowling Together: Online public engagement in policy deliberation*. Hansard Society. 48 pages.

[14] Stephen Coleman, Kruakae Pothong, and Sarah Weston. 2018. Dramatizing deliberation: A method for encouraging young people to think about their rights. *Journal of Public Deliberation* 14, 1 (2018). `https://www.publicdeliberation.net/jpd/vol14/iss1/art2`

[15] Eric Corbett and Christopher A. Le Dantec. 2018a. Exploring Trust in Digital Civics. In *Proceedings of the 2018 Designing Interactive Systems Conference (DIS '18)*. ACM, New York, NY, USA, 9–20. DOI: `http://dx.doi.org/10.1145/3196709.3196715`

[16] Eric Corbett and Christopher A. Le Dantec. 2018b. Going the Distance: Trust Work for Citizen Participation. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Article 312, 13 pages. DOI:`http://dx.doi.org/10.1145/3173574.3173886`

[17] Eric Corbett and Christopher A. Le Dantec. 2018c. The Problem of Community Engagement: Disentangling the Practices of Municipal Government. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Article 574, 13 pages. DOI: `http://dx.doi.org/10.1145/3173574.3174148`

[18] Clara Crivellaro, Rob Anderson, Daniel Lambton-Howard, Tom Nappey, Patrick Olivier, Vasilis Vlachokyriakos, Alexander Wilson, and Pete Wright. 2019. Infrastructuring Public Service Transformation. *ACM Transactions on Computer-Human Interaction (TOCHI)* 26, 3 (may 2019), 1–29. DOI: `http://dx.doi.org/10.1145/3310284`

[19] Clara Crivellaro, Alex Taylor, Vasillis Vlachokyriakos, Rob Comber, Bettina Nissen, and Peter Wright. 2016. Re-Making Places: HCI, 'Community Building' and Change. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. ACM, New York, NY, USA, 2958–2969. DOI: `http://dx.doi.org/10.1145/2858036.2858332`

[20] John Dewey. 2012. *The Public and Its Problems: An Essay in Political Inquiry*. Penn State University Press, Henry Holt and Company. `http://www.jstor.org/stable/10.5325/j.ctt7v1gh`

[21] Andy Dow, Rob Comber, and John Vines. 2018. Between Grassroots and the Hierarchy: Lessons Learned from the Design of a Public Services Directory. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Article 442, 13 pages. DOI: `http://dx.doi.org/10.1145/3173574.3174016`

[22] Andy Dow, John Vines, Rob Comber, and Rob Wilson. 2016. ThoughtCloud: Exploring the Role of Feedback Technologies in Care Organisations. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. ACM, New York, NY, USA, 3625–3636. DOI: `http://dx.doi.org/10.1145/2858036.2858105`

[23] John S. Dryzek, André Bächtiger, Simone Chambers, Joshua Cohen, James N. Druckman, Andrea Felicetti, James S. Fishkin, David M. Farrell, Archon Fung, Amy Gutmann, Hélène Landemore, Jane Mansbridge, Sofie Marien, Michael A. Neblo, Simon Niemeyer, Maija Setälä, Rune Slothuus, Jane Suiter, Dennis Thompson, and Mark E. Warren. 2019. The crisis of democracy and the science of deliberation. *Science* 363, 6432 (2019), 1144–1146. DOI: `http://dx.doi.org/10.1126/scienceaaw2694`

[24] Sheena L. Erete, Emily Ryou, Geoff Smith, Khristina Marie Fassett, and Sarah Duda. 2016. Storytelling with Data: Examining the Use of Data by Non-Profit Organizations. *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing - CSCW '16* (2016), 1271–1281. DOI:`http://dx.doi.org/10.1145/2818048.2820068`

[25] Jenny Fan and Amy X Zhang. 2020. Digital juries: A civics-oriented approach to platform governance. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '20)*. `http://doi.acm.org/10.1145/3313831.3376293`

[26] Frank Fischer. 2012. Participatory Governance: From Theory To Practice. *The Oxford Handbook of Governance* February (2012), 1–16. DOI:`http://dx.doi.org/10.1093/oxfordhb/9780199560530.013.0032`

[27] Frank Fischer and Herbert Gottweis. 2013. The Argumentative Turn Revisited. *The Argumentative Turn Revisited* (2013). DOI: `http://dx.doi.org/10.1215/9780822395362`

[28] Frank Fischer, Douglas Torgerson, Anna Durnová, and Michael Orsini. 2015. Introduction to critical policy studies. *Handbook of Critical Policy Studies* (2015), 1–24. DOI: `http://dx.doi.org/10.4337/9781783472352.00005`

[29] James S. Fishkin. 2009. *When the People Speak: Deliberative Democracy and Public Consultation*. Oxford University Press. 252 pages.

[30] Sarah Fox and Christopher Le Dantec. 2014. Community Historians: Scaffolding Community Engagement Through Culture and Heritage. In *Proceedings of the 2014 Conference on Designing Interactive Systems (DIS '14)*. ACM, New York, NY, USA, 785–794. DOI: `http://dx.doi.org/10.1145/2598510.2598563`

[31] Archon Fung. 2004. *Empowered Participation: Reinventing Urban Democracy*. Princeton University Press. `http://www.jstor.org/stable/j.ctt7rp4r`

[32] Connie Golsteijn, Sarah Gallacher, Lisa Koeman, Lorna Wall, Sami Andberg, Yvonne Rogers, and Licia Capra. 2015. VoxBox: A Tangible Machine That Gathers Opinions from the Public at Events. In *Proceedings of the Ninth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '15)*. ACM, New York, NY, USA, 201–208. DOI: `http://dx.doi.org/10.1145/2677199.2680588`

[33] Daniel Gooch, Matthew Barker, Lorraine Hudson, Ryan Kelly, Gerd Kortuem, Janet Van Der Linden, Marian Petre, Rebecca Brown, Anna Klis-Davies, Hannah Forbes, Jessica Mackinnon, Robbie Macpherson, and Clare Walton. 2018. Amplifying Quiet Voices: Challenges and Opportunities for Participatory Design at an Urban Scale. *ACM Transactions on Computer-Human Interaction (TOCHI)* 25, 1, Article 2 (Jan. 2018), 34 pages. DOI: `http://dx.doi.org/10.1145/3139398`

[34] Mike Harding, Bran Knowles, Nigel Davies, and Mark Rouncefield. 2015. HCI, Civic Engagement & Trust. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 2833–2842. DOI: `http://dx.doi.org/10.1145/2702123.2702255`

[35] Brian W. Head. 2007. Community Engagement: Participation on Whose Terms? *Australian Journal of Political Science* 42, 3 (2007), 441–454. DOI: `http://dx.doi.org/10.1080/10361140701513570`

[36] Raffael Heiss and Jörg Matthes. 2017. Citizen Science in the Social Sciences: A Call for More Evidence. *GAIA - Ecological Perspectives for Science and Society* 26, 1 (jan 2017), 22–26. DOI: `http://dx.doi.org/10.14512/gaia.26.1.7`

[37] Judith E. Innes and David E. Booher. 2004. Reframing public participation: strategies for the 21st century. *Planning Theory & Practice* 5, 4 (2004), 419–436. DOI: `http://dx.doi.org/10.1080/1464935042000293170`

[38] International Federation of Red Cross and Red Crescent Societies (IFRC). 2019a. About S2030 | The Future Red Cross and Red Crescent. (2019). Retrieved April 20, 2020 from `https://future-rcrc.com/about-s2030/`

[39] International Federation of Red Cross and Red Crescent Societies (IFRC). 2019b. Strategy 2030. Platform for change. Global reach, local action. (2019). Retrieved April 20, 2020 from `https://future-rcrc.com/wp-content/uploads/2020/01/S2030-EN.pdf`

[40] International Federation of Red Cross and Red Crescent Societies (IFRC). 2019c. Volunteers - International Federation of Red Cross and Red Crescent Societies. (2019). Retrieved April 20, 2020 from `https://media.ifrc.org/ifrc/what-we-do/volunteers/`

[41] Nassim Jafarinaimi, Eric M. Meyers, and Allison Trumble. 2014. Designing Meaningful Participation: Analyzing Contribution Patterns in an Alternate Reality Game. In *Proceedings of the 18th International Conference on Supporting Group Work (GROUP '14)*. ACM, New York, NY, USA, 306–309. DOI: `http://dx.doi.org/10.1145/2660398.2663778`

[42] David W. Johnson and Roger T. Johnson. 1999. Making cooperative learning work. *Theory Into Practice* 38, 2 (1999), 67–73. DOI: `http://dx.doi.org/10.1080/00405849909543834`

[43] Ian G. Johnson, Alistair MacDonald, Jo Briggs, Jennifer Manuel, Karen Salt, Emma Flynn, and John Vines. 2017. Community Conversational: Supporting and Capturing Deliberative Talk in Local Consultation Processes. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. ACM, New York, NY, USA, 2320–2333. DOI: `http://dx.doi.org/10.1145/3025453.3025559`

[44] Aniket Kittur, Jeffrey V. Nickerson, Michael Bernstein, Elizabeth Gerber, Aaron Shaw, John Zimmerman, Matt Lease, and John Horton. 2013. The Future of Crowd Work. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work (CSCW '13)*. ACM, New York, NY, USA, 1301–1318. DOI: `http://dx.doi.org/10.1145/2441776.2441923`

[45] Aniket Kittur, Boris Smus, Susheel Khamkar, and Robert E. Kraut. 2011. CrowdForge: Crowdsourcing Complex Work. In *Proceedings of the 24th Annual ACM Symposium on User Interface Software and Technology (UIST '11)*. ACM, New York, NY, USA, 43–52. DOI: `http://dx.doi.org/10.1145/2047196.2047202`

[46] Lisa Koeman, Vaiva Kalnikaité, and Yvonne Rogers. 2015. "Everyone Is Talking About It!": A Distributed Approach to Urban Voting Technology and Visualisations. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 3127–3136. DOI:`http://dx.doi.org/10.1145/2702123.2702263`

[47] Karim Lakhani, Anne-Laure Fayard, Natalia Levina, and Healy Pokrywa. 2012. OpenIDEO. (2012). Retrieved April 20, 2020 from `https://ssrn.com/abstract=2053435`

[48] Daniel Lambton-Howard, Robert Anderson, Kyle Montague, Andrew Garbett, Shaun Hazeldine, Carlos Alvarez, John A. Sweeney, Patrick Olivier, and Ahmed Kharrufa. 2019. WhatFutures: Designing Large-Scale Engagements on WhatsApp. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Article 159, 14 pages. DOI: `http://dx.doi.org/10.1145/3290605.3300389`

[49] Christopher A. Le Dantec. 2012. Participation and Publics: Supporting Community Engagement. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)*. Association for Computing Machinery, New York, NY, USA, 1351–1360. DOI: `http://dx.doi.org/10.1145/2207676.2208593`

[50] Christopher A. Le Dantec, Mariam Asad, Aditi Misra, and Kari E. Watkins. 2015. Planning with Crowdsourced Data: Rhetoric and Representation in Transportation Planning. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '15)*. ACM, New York, NY, USA, 1717–1727. DOI: `http://dx.doi.org/10.1145/2675133.2675212`

[51] Narges Mahyar, Michael R. James, Michelle M. Ng, Reginald A. Wu, and Steven P. Dow. 2018. CommunityCrit: Inviting the Public to Improve and Evaluate Urban Design Ideas Through Micro-Activities. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Article 195, 14 pages. DOI: `http://dx.doi.org/10.1145/3173574.3173769`

[52] Narges Mahyar, Diana V. Nguyen, Maggie Chan, Jiayi Zheng, and Steven P. Dow. 2019. The Civic Data Deluge: Understanding the Challenges of Analyzing Large-Scale Community Input. In *Proceedings of the 2019 on Designing Interactive Systems Conference (DIS '19)*. ACM, New York, NY, USA, 1171–1181. DOI: `http://dx.doi.org/10.1145/3322276.3322354`

[53] Jennifer Manuel, Geoff Vigar, Tom Bartindale, and Rob Comber. 2017. Participatory Media: Creating Spaces for Storytelling in Neighbourhood Planning. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. ACM, New York, NY, USA, 1688–1701. DOI: `http://dx.doi.org/10.1145/3025453.3025745`

[54] Matthew Marshall, David S. Kirk, and John Vines. 2016. Accountable: Exploring the Inadequacies of Transparent Financial Practice in the Non-Profit Sector. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 1620–1631. DOI: `http://dx.doi.org/10.1145/2858036.2858301`

[55] Thomas Maskell, Clara Crivellaro, Robert Anderson, Tom Nappey, Vera Araújo-Soares, and Kyle Montague. 2018. Spokespeople: Exploring Routes to Action Through Citizen-Generated Data. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. ACM, New York, NY, USA, Article 405, 12 pages. DOI: http://dx.doi.org/10.1145/3173574.3173979

[56] Donald McMillan, Arvid Engström, Airi Lampinen, and Barry Brown. 2016. Data and the City. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. ACM, New York, NY, USA, 2933–2944. DOI: http://dx.doi.org/10.1145/2858036.2858434

[57] Andrew Moravcsik. 2014. Transparency: The Revolution in Qualitative Research. *PS: Political Science & Politics* 47, 01 (jan 2014), 48–53. DOI: http://dx.doi.org/10.1017/S1049096513001789

[58] Marcus R. Munafò, Brian A. Nosek, Dorothy V. M. Bishop, Katherine S. Button, Christopher D. Chambers, Nathalie Percie du Sert, Uri Simonsohn, Eric-Jan Wagenmakers, Jennifer J. Ware, and John P. A. Ioannidis. 2017. A manifesto for reproducible science. *Nature Human Behaviour* 1, 1 (jan 2017), 0021. DOI: http://dx.doi.org/10.1038/s41562-016-0021

[59] United Nations. 2015. World Youth Report. (2015). Retrieved April 20, 2020 from https://www.un.org/development/desa/youth/world-youth-report/2015-2.html

[60] Matti Nelimarkka. 2019. A review of research on participation in democratic decision-making presented at SiGChi conferences: Toward an improved trading zone between political science and HCI. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019). DOI:http://dx.doi.org/10.1145/3359241

[61] Kruakae Pothong. 2020. Youth Jury Policy Deliberation: Towards a Fair and Responsible Internet. *Children and Society* 34, 1 (2020), 93–108. DOI: http://dx.doi.org/10.1111/chso.12359

[62] Larissa Pschetz, Kruakae Pothong, and Chris Speed. 2019. Autonomous distributed energy systems: Problematising the invisible through design, drama and deliberation. *Conference on Human Factors in Computing Systems - Proceedings* (2019), 1–14. DOI: http://dx.doi.org/10.1145/3290605.3300617

[63] Kingsley Purdam. 2014. Citizen social science and citizen data? Methodological and ethical challenges for social research. *Current Sociology* 62, 3 (2014), 374–392. DOI: http://dx.doi.org/10.1177/0011392114527997

[64] Jay Rainey, Kyle Montague, Pamela Briggs, Robert Anderson, Thomas Nappey, and Patrick Olivier. 2019. Gabber: Supporting Voice in Participatory Qualitative Practices. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*. ACM, New York, NY, USA, Article 377, 12 pages. DOI: http://dx.doi.org/10.1145/3290605.3300607

[65] Horst W. J. Rittel and Melvin M. Webber. 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4, 2 (01 Jun 1973), 155–169. DOI: http://dx.doi.org/10.1007/BF01405730

[66] Jesse Schell. 2008. *The Art of Game Design: A Book of Lenses*. Morgan Kaufmann Publishers Inc., San Francisco, CA, USA.

[67] Alex S. Taylor, Siân Lindley, Tim Regan, David Sweeney, Vasillis Vlachokyriakos, Lillie Grainger, and Jessica Lingel. 2015. Data-in-Place: Thinking Through the Relations Between Data and Community. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 2863–2872. DOI: http://dx.doi.org/10.1145/2702123.2702558

[68] Melissa A. Valentine, Daniela Retelny, Alexandra To, Negar Rahmati, Tulsee Doshi, and Michael S. Bernstein. 2017. Flash Organizations: Crowdsourcing Complex Work by Structuring Crowds As Organizations. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. Association for Computing Machinery, New York, NY, USA, 3523–3537. DOI: http://dx.doi.org/10.1145/3025453.3025811

[69] Vasilis Vlachokyriakos, Rob Comber, Karim Ladha, Nick Taylor, Paul Dunphy, Patrick McCorry, and Patrick Olivier. 2014. PosterVote: Expanding the Action Repertoire for Local Political Activism. In *Proceedings of the 2014 Conference on Designing Interactive Systems (DIS '14)*. ACM, New York, NY, USA, 795–804. DOI: http://dx.doi.org/10.1145/2598510.2598523