Configuring Participation:
On How We Involve People In Design

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ABSTRACT

The term 'participation' is traditionally used in HCI to describe the involvement of users and stakeholders in design processes, with a pretext of distributing control to participants to shape their technological future. In this paper we ask whether these values can hold up in practice, particularly as participation takes on new meanings and incorporates new perspectives. We argue that much HCI research leans towards *configuring participation*. In exploring this claim we explore three questions that we consider important for understanding how HCI configures participation; Who initiates, directs and benefits from user participation in design? In what forms does user participation occur? How is control shared with users in design? In answering these questions we consider the conceptual, ethical and pragmatic problems this raises for current participatory HCI research. Finally, we offer directions for future work explicitly dealing with the configuration of participation.

Author Keywords

Participation; participatory design; performance art; participatory media.

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H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous;

INTRODUCTION

Participation is a subject of great interest to the HCI community. A search of the ACM Digital Library for papers using the term "participatory" returns 115 results across CHI 2012's archived and extended abstract papers. Traditionally, the term's use in HCI has been drawn from participatory design, an approach to the design of technology that calls for democratization and end-user involvement in the design process. The use of the term within the HCI research community often refers to this meaning still, describing the involvement of people in a

design process [17,21,33,54], or the gathering of insights and requirements to inform future design [24,56]. The underlying claim here is that their participation in design gives users[1] more control in determining the technologies they might eventually use in work or leisure. More recently "participatory" has come to mean considerably more in HCI than its traditional focus on design processes. Participation might also describe ways of distributing the decision making process within organizations or communities [14,15], to refer to audience involvement in the creation of a digital artwork [45,53], to discuss knowledge sharing on social networks [44,51,52] or unwittingly taking part in the collection of data [13,23]. The tenet of giving users more control is often still apparent in these contexts.

At CHI 2012, John Carroll acknowledged the aforementioned diversification of the term and called for some 'policing of participation' by the HCI community [57]. The concern was that within HCI the term 'participation' is becoming meaningless and often poorly articulated and theorized in papers. This paper contributes to this discussion. We argue that the diversification of participatory HCI—to include perspectives from participatory media, social media, crowd-sourcing and the arts—is a benefit to the community. It opens up the space for thinking about participation in design in broader terms than if we were to restrict ourselves to tight definitions or specific traditions. We are equally aware however that the expansion into new contexts can result in loss of the core values that motivated wider user participation in the first instance. In particular, we are concerned that the expansion of participatory HCI can lead to authors not articulating a number of assumptions within research and practice. These include not accounting for the agency of researchers, funders and the locations of engagement as contributing factors to the quality of user participation. This, we contend, can leave to exaggerated claims about the sharing of control with users.

In order to unpack these concerns we structure the paper around the following: First, we ask what has traditionally

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[1] We are very aware of the problematic nature of the term 'user', particularly in multi-faceted participatory work. We use it throughout due to its significance within HCI discourse and the equally problematic nature of using encompassing terms such as 'people' and 'participants'.

been the main value of user participation in design processes within HCI? Second, we contextualize *configuring participation* as both a way of problematizing how HCI sometimes frames user participation in design but also as a tool for thinking about the opportunities a broader definition of participation in design might bring. Third, we discuss the three main issues that configuring participation highlights; that participation can occur at multiple forms of engagement; a lack of articulating who initiates, directs and benefits from research where users participate in design; and the danger of ignoring the expertise and agency of researchers who participate in design processes. Finally, we offer summative conceptual, ethical and pragmatic challenges that this raises in relation to the core values of participation in design. This paper is synergetic with a growing body of work within the broader participatory design community that calls for and provides greater critical reflection on how we involve people in design processes [11,31,47]. Here however we focus on and contribute to the growing discourse on user participation in HCI by unpacking some central conceptual problems emerging in the research performed by the community. We highlight the benefits of a more holistic definition of participation, and provide guidance as to how such a holistic stance might be pursued in the future.

GOALS OF PARTICIPATION

First we explore three of the main goals that have motivated user participation in design processes within HCI: sharing control, sharing expertise and inspiring change.

Sharing control with users

Control and agency were explicit motivating factors in the early Scandinavian Co-operative Design movement [15,42]. The introduction of computers into workplaces prompted concern from workers and their unions that they would no longer have control over their roles and duties or that these roles would be deskilled or replaced altogether [28]. As epitomized by Kristen Nygaard's foundational work [42], the focus of early cooperative design actually involved very little design *per se*. Rather it emphasized the importance of providing these workers and union officials the knowledge and skills about the potential of computational systems so that their views would be better articulated when bargaining with management. In this vein, Caroll and Rosson [14] argue that user participation is primarily motivated by the moral proposition 'that the people whose activity and experiences will ultimately be affected most directly by a design outcome ought to have a substantive say in what that outcome is' [14, p.244]. As the participatory design movement gained traction in the United States the notion of sharing control with relevant end users was still of central importance [38]—albeit often motivated by commercial concerns such as developing more appropriate products and interfaces for market (e.g. [20]).

User participation in a design process—be this implied at the boardroom or explicit involvement in design

workshops—is heavily oriented towards destabilizing power structures that might enforce ill-considered technologies on groups who are not typically consulted. In HCI direct user participation is often associated with an agenda to empower groups of people whose views, opinions and needs might be the most ignored by mainstream society. Within HCI, many papers describing participatory processes provide examples of working with groups who might normally be excluded [17,29,54,55], people with very specific health and emotional needs [2,33] or in contexts where the introduction of ICT might be in conflict with cultural traditions [58]. Furthermore, as with the wider transition to the third-wave in HCI, participatory processes have moved beyond work-oriented contexts to deal with subjects such as stroke rehabilitation [2], museum exhibitions for children [48] and residential care [7] (among others). Within all of these examples there is an underlying concern that these groups are often disenfranchised by decisions made in the design of most technologies within the associated domains.

Sharing expertise through boundary objects

Leading on from the moral proposition of control, a pragmatic concern for user participation has been establishing ways to elicit knowledge, values and opinions from users in the design process. In this sense users are understood as a source of information and having certain types of expertise that should be intersubjectively shared and exchanged [14]. Therefore, a considerable emphasis has been placed on developing tools and methods for the elicitation of meaningful and useful information.

An omnipresent element of participatory design processes is the 'workshop'. Design workshops are typically gatherings of project teams (researchers, designers, system experts etc.) with users and stakeholders to identify challenges and develop new ideas. Ehn [15,16] refers to how the setting of such workshops is typically situated around the formation of 'boundary objects' [49], which act as shared articulations of knowledge of those participating in the design process. For example, Ehn discusses how participatory design workshops would involve the acting out of scenarios by workers with cardboard boxes that serve as imaginary computers [16]. Over the past two decades a number of workshop techniques have been developed that offer defined structures to the elicitation process. Methods such as future workshops [27], metaphorical design [35], and inspiration cards [20] all offer different approaches to provoke participants to articulate their existing practices and their concerns through such boundary objects.

As HCI has moved beyond workplaces as a focal point of studies researchers have adapted the approaches to eliciting information from users (e.g. [4,6,7,17,56]). Designing with people living with dementia requires a very different approach to designing with factory workers or office staff. As Lindsay et al. [33] discuss at length, the former requires the development of longer-term relationships with

participants through regular contact, sessions often need to repeat what was discussed before, and very little 'work' is done at the sessions themselves. Similarly, in residential care homes, participation from residents might be highly passive and researchers must be far more interpretive of and responsive to their needs [7]. In these cases elicitation is still a key quality of user participation but the manner in which it is captured, interpreted and embodied in boundary objects changes radically.

Individual, organizational and technological change

Another set of qualities associated with participation in design is motivating some form of change through the design process. Returning again to the Scandinavian cooperative design work, a key concern was that of reflecting current practices and inspiring subsequent change. Ehn [15] argued that user participation in design is a balance between an articulation of 'tradition' (i.e., what are peoples' current practices, experiences, etc – and how can we make best use of these in design) and 'transcendence' (i.e., how can people imagine possible futures, let go of current 'limiting' practice, or reflect on what they do). Bødker [8] has since argued that her experience as an advocate for participatory design has been to highlight to participants that there are alternatives available to them. This emancipatory view of participation highlights how a central aim was to alert users to their own a voice and enable them to use it.

User participation has been more explicitly design-orientated when introducing new technologies to inspire organizational and community change. Hayes [22] describes participatory approaches as having a lineage in action research, highlighting the significance of organizational and individual change as a key concern of early participatory design research. Here, participation becomes framed as an interventionist practice where new ideas, processes and 'lenses' [8] are introduced to provoke change. As such, approaches such as technology probes [25] and provotypes [37] fit in this space if incorporated into a long-term cyclical approach where the prototype is deployed to provide insight into changing work, home or community practices.

Another motivation behind user participation in design processes is that this will change future technology design to improve peoples' lives [14]. In one sense this implies new designs are improvements over existing technologies as they are more sensitive to the needs and desires of specific user groups. In another sense this also means that these designs, again, act as boundary objects with which to challenge the perceptions of stakeholders or to provoke discussion about key societal issues. Vines et al [55] describe their design work with groups of people aged over 80, with whom they collaboratively designed new payment technologies, which were then used as boundary objects for discussion with the British banking industry. Another example that takes a rather different approach to

communicating the outcomes of working with users is Alan F. Newell and colleagues' 'intermediary theater' [40]. Newell et al. work with professional actors to use theatrical performance in order to alter student and professional designers' attitudes towards older people. In these cases the researchers used these intermediaries as tools for communicating the needs of those groups they had been working with to key decision makers and young designers.

Summary: learning and sharing expertise

Central to the above values is that people are resourceful and skillful and researchers should establish ways for this knowledge to be shared, communicated and embodied in technology design. By cooperating and forming boundary objects we provide spaces for knowledge and skills to be shared and inspire preferable future states. We consider these important values for HCI in general—but we also question how these goals have been maintained as the scope for user participation in design has expanded.

CONFIGURING PARTICIPATION

To help us in our exploration of the values of participation in contemporary HCI research, we first make a proposition: rather than engaging in *participatory design* HCI researchers instead engage in acts of *configuring participation*. That is to say that the primary work being undertaken here is the design of the process—i.e. the configuration of the experience of participation itself. Johan Redström's work on 'user design' [43] is a useful starting point for explaining our argument. Redström suggests that although design disciplines (including HCI) have transitioned from considering users as cognitive information processors to generative agents of rich cultural experiences, there is still a predominant interest in 'fitting' people to technologies. While the terminology and models of the world that the discipline uses have diversified, the fundamental drive to ensure technology and people match one-another has not. In particular by focusing on 'users' we do our designing around the notion of 'use' and how we can ensure that people can become 'users' with as much simplicity as possible. He argues:

'[i]t is user design in the sense that it is design where the processes through which people turn into users are in focus and where the explicit aim is to work with the results of this process, i.e., how use and user should turn out. We, as designers, turn people into users by means of our designs, by presenting a thing to be used. By making the desired interpretation of the objects obvious and impossible to resist, we aim to design not only the object itself but also the perception, and even the experience, of it. Indeed, the terms 'user testing' and 'user evaluations' can be read in two rather different ways.' [43, p.129]

Redström argues against tight couplings between models of users and design outcomes. It echoes long-held arguments that manifest in HCI regarding systems designers who are eager to predict how people will act around their creations and the messiness of the situated actions that occur [50].

Focusing so much on determining who will be the eventual user of a technology leads us to forget that very often much designing occurs during use (as noted by many social historians of technology [41]). However we also believe that this argument provides insight into the problems of participation in design. Redström alerts us to how 'user design' manifests in complex scenarios where multiple disciplinary perspectives and stakeholders come together to determine who it is that is most likely to benefit from technologies in certain domains and contexts. We take Redström's argument further, considering that not only does HCI lean towards 'user design' in respect to the design of new technologies, but 'user design' occurs when we configure the process of participation. That is to say decisions made before and during user participation impact heavily on the quality of their involvement in design. This subsequently raises a number of problems related to the core goals of participation. Specifically, we argue that there are three key issues that need raising:

Forms of participation: It is rarely articulated how user participation in design occurs in different forms of interaction and engagement. This occurs not just when comparing projects but also across the timescale of individual projects and, undeniably, within workshops, meetings and other interactions between participants, researchers, stakeholders and partners.

Initiators and beneficiaries: Very often it is researchers, designers or funders who initiate user involvement, and decisions are made about who should and should not participate in projects. This also raises questions about who it is that benefits from user participation in design.

Sharing control: While a core value of user participation is the sharing of control with users, this can mask the agency, expertise and agendas of the researchers or designers leading or facilitating the participatory process.

These three issues we collectively consider important elements for understanding how HCI engages in configuring participation. In the following sections we go through each of these issues individually. It is our argument that these are issues shared across a number of 'participatory' subjects in HCI. Emerging fields of HCI research such as participatory media, crowd-sourcing and performance art in many ways share the core goals of participation in design: to share control beyond the designer, to elicit and share human expertise and to motivate change. At the same time they provide lenses with which to make these goals somewhat problematic. In discussing these issues we draw upon examples from these fields to illustrate our concerns and to consider future directions for user participation in design.

IN WHAT FORM DOES PARTICIPATION OCCUR?

Our first consideration is that very rarely is it considered that when users do participate in design processes that these can happen at very different degrees of engagement—not just between projects but also often within an individual project over time. In other 'realms' of participation—such as participatory media and the performance arts—there is a critical awareness to the degrees at which people contribute to a particular project. We discuss these in turn below.

Defining participatory media is in itself not a simple task. Most contemporary definitions (e.g. [44]) state that participatory media is 'many-to-many' media where all people connected to a specific network can receive text, images, audio and video (and more) from all others on a network. While there are substantial differences between the notions of participatory media and participatory design, there are also a number of synergies in their underlying principles. For example, much of the rhetoric surrounding participatory media refers to how users are given more of a share in the production of content and become prosumers (producer-consumers) [36]. As such, users of participatory media are both active producers and passive consumers of media. While participatory media can support prosumption, the levels at which users engage with such media can vary dramatically. Bernoff and Li's [5] 'social technographs' framework groups users of participatory media into 6 categories: creators, critics, collectors, joiners, spectators and inactives. Here, users of participatory media range from those who actively upload videos and music or write blogs through to those who just comment on websites and those who just spectate, consuming the media provided by other users. Of course, individuals might blur into multiple categories—but the insight here is that the forms of engagement in participatory media are diverse and continually fluctuate.

This can be illustrated by a common example—YouTube. Although YouTube has over 800 million unique users each month [59] it is estimated that only approximately 20% of these regularly upload content and post comments on the website [5]. The remainder primarily view videos. YouTube's participatory and business model is driven by this spectatorship. Relatively passive interactions such as these add to the view counts of videos, adding to Google's and the video uploader's advertising revenue and, if popular enough, raising it in the 'currently being watched' pages. This, in turn, generates further views. Recommended videos appear to the side, eliciting spectators to continue to watch related videos and, as such, generating further views and revenue. While there is much evidence of user-generated content throughout, the experience of YouTube is very much designed to facilitate the engagement of spectators.

We can also turn to examples from within digital and performance art that explore the different forms of engagement that occurs between performers, spectators and audience members. Benford et al. [3] distinguish the *audience* from *bystanders* in understanding the experiences of spectators of Blast Theory's mixed reality game *Uncle Roy All Around You*. Here, a virtual game is explored and acted out on the streets of a busy city center where players

interact with performers acting as characters from the game. Benford et al. describe how the audience are spectators who are 'witting', in the sense that they are aware that the performance is taking place and can attempt to interpret the performers actions. Bystanders are 'unwitting' in that although they are implicated as spectators they are unaware of the performance and therefore unable to interpret actions as that belonging to a performance. This has some resonance with design processes where users unwittingly participate in the development of a new technology. Take, for example, some of the tactics used by Google in their development of their Voice Search [18] functionality on Android's JellyBean operating system. One of the reasons why Google's voice tool is so advanced is that in 2007 they started a freephone business directory service called GOOG-411. The service was popular, possibly due to it being free compared to the relatively expensive services already available in the US and Canada. The primary reason for the services existence, however, was to enable Google to collect a large database of voice and phoneme data to underpin its speech recognition algorithms [39]. Once this was achieved GOOG-411 was closed down. Putting aside Google's ethically suspect data collection methods and the political values associated with this company, there is a sense with this example that users have unwittingly participated in the definition of a new technology.

It occurs to us that these discussions on forms of engagement highlight limitations in the way in which user participation is understood in HCI. First, it alerts us to how user participation in design is much broader in scope than is often maintained. For example, those who happen to be walking to work or doing their shopping become implicated as spectators of performances occurring within the city landscape. The more passive users of YouTube who 'spectate' have a stake in shaping the experience of others who come to use the website. Those who used Google's directory services contribute data that is used to design the architecture for future services. These highlight how users might participate in the design of new systems through unwitting actions. These processes are still participatory in the sense that small contributions hold significant weight on the outcome and experiences of others.

Second, we observe how user participation in design processes is equally as complex in terms of forms of participation as it is in participatory media and performance art. It alerts us to how participation in 'x' process can never be framed as a binary in or out. Users can participate in ways that are witting, unwitting, spectator-like, as a reflexive commentator or as a creator that leads the participation of others. We are not suggesting here that user participation should occur in multiple forms at one time but that it already does so. In design workshops, meetings, interviews and forums individuals engage and contribute in very different ways. Some participants are passive, some vocal. Some engage with the topic at hand, some deviate into unrelated but equally important issues. Perhaps more

disconcerting—as with the Google example—participants might contribute to a project under one pretense but their input is extrapolated in new ways. Light [30] alerts us to how in participatory design there is rarely any reflection on the micro-dynamics of interaction between participants and researchers and the impact this has on participatory processes. Articulating these different forms of participation along with the scale of such interactions [30] is a crucial consideration when configuring participation.

WHO INITIATES AND BENEFITS?

Projects of participation require 'actors' to initiate them and to direct them over time. In HCI however it is rarely discussed who initiates participation, who benefits, and how this is directed over time. We might assume that initiation is led by members of the project team performing a study or designing a particular system. It is often these individuals who recruit participants, lead workshops and act as a point of contact for those taking part. If we continue tracing back initiation however, those who write research proposals (such as faculty members) or stakeholders and funding organizations that write the call for proposals and policy documents to which they respond heavily influence this process. Clearly the array of actors implicated in initiating wider user participation in design is complex and diverse. We consider that understanding who it is that initiates and benefits from such action is important as it impacts upon who participates and where it is performed.

First, let us discuss issues to do with who participates. Our contention here is that the settings within which participation is initiated has a significant impact on the quality of participation and also who it is that gets involved. In order to problematize this, we take another example from participatory media. Over the last several years there has been increased interest in 'democratic innovation' sites such as OpenIDEO and Innocentive where members of the public are encouraged to participate in helping to solve societal challenges. Such a challenge might be: 'How might we restore vibrancy in cities and regions facing economic decline?' [34]. Members of the community can then add suggestions in comments, add photos and drawings, comment on ideas and vote ideas up and down until, over time, 'winning' ideas are selected. The point to be made here is that, in reality, such democratic innovation sites tend to draw in those most inclined to participate in design innovations (i.e, designers, creatives, consultants and business people). The language on such sites support this, where 'challenges' go through a temporal sequence of refinement, evaluation, conceptualisation and realisation— the language associated with an expertise in design rather than everyday terminology that is more widely accessible. Therefore, one of the key issues at hand here is that while the provision of new tools imply democratization and giving agency to disenfranchised users, these tools often have a tendency to be most appropriated by those whose voices will likely already be listened to [6].

In contexts where designers, researchers and participants are collocated there are similar issues to be raised about who initiates participation and where. Writing candidly for a moment, the lead author has worked on a project where older participants were invited from an existing advocacy and research panel. These participants—unbeknownst to the researchers at the time—had for over 20 years taken part in studies at a University, which mostly exploring the longitudinal changes on their memory in later life. Although the project in this case was focused on understanding their experiences in a particular domain to inform technology design and policy work, for some time there was some suspicion from participants that researchers were 'testing' them. When given probe-like packs to take home with them they often referred to them as 'homework' and would complete all that was asked. This called into question the knowledge being shared—i.e., how meaningful is probe data if it is considered homework? Furthermore, it heightened attention to the difficulties surrounding the role of participants from advocacy groups and research panels acting on behalf of or as representatives of their peers. These become particularly pertinent issues when claims are made about the inclusion of often excluded members of society—i.e., just how meaningful is this form of participation when the participants have been in and out of Universities for 20 years? This illustrates that very often the manner in which user participation is initiated and the settings it takes place in can heavily shape the design process.

Second, having questioned who it is that initiates user participation in design processes, it is also worthwhile questioning who it is that is benefitting. As we noted at the start of the paper, one key goal of user participation is that it leads to some form of change—to participants, to society, or to organizations. While Ehn [15] aspired for participants to experience transcendence, it is very rare that the benefits for participants are articulated in HCI research. Iversen et al. [26] have called for a return to a focus on the personal gains of participants in participatory design processes. Although there are examples of reflective interviews following up on the experiences of participants (e.g. [10,11,32]) these are rare.

In the aforementioned context of OpenIDEO it is quite transparent as to who gains from user participation. Although the 'contributors' own the ideas proposed in response to challenges, many are sponsored by commercial enterprises (such as Nokia, Barclays Bank) and we might infer that a number of the "better" ideas are placed into practice by these organizations. In the context of academic research it is a little harder to identify the beneficiaries. In the UK context we might ascertain that, again, a number of the beneficiaries are in commercial organizations. In order to be successful in bidding for research grants many projects now have to have industrial partners that are involved in the research throughout. This fits in with a wider agenda within the UK where research councils have to provide evidence to their funders (the Government) as to the wider societal and economic impact the work they pay for has on the nation. In this context understanding whom these beneficiaries are is important as it might identify situations where user participation becomes extrapolated.

Furthermore, it would also be fair to assume that the researchers leading the research gain from user participation. For example, Vines et al. [55,56] briefly refer to how the experience of meeting regularly with eighty year olds to discuss concerns about access to banking made them reflect on their own financial habits. Researchers do nonetheless gain from user participation in many other ways as well. Data from workshops and ethnographies acts as the basis for arguing why certain decisions have been made in the design process ("this feature was incorporated based upon feedback from our co-designers"). Having information from participants—paper prototypes, transcribed data, sketched scenarios—provides not only valuable information for design but for evidencing that these eventual designs represent the views of users. This data is typically included in conference presentations and archived papers, and offers a sense of transparency between the participants and the manner in which this is interpreted and documented by researchers [9]. We do not mean to be overtly critical here—and certainly the authors of this paper have performed this practice in the past and will continue to do so—but it alerts us to how, in Iversen et al's terms, researchers 'gain' from user participation in design.

HOW IS CONTROL SHARED?

Our final issue to consider is the ways in which control is shared with users. Here we do not question whether control *is shared* but to what *degree it is shared* and what role might the researcher play here. The manner in which control is shared can in itself alter significantly depending on the manner in which participation is configured, the methods used and the degree to which the design process is bound. Again, we believe there is insight to be gained here from work just outside the normal HCI literature on participation, in work undertaken in the digital performing arts. We use this to highlight the nuances of sharing control.

One of the primary concerns within the interactive and performance arts is the exploration of the relationships between the triad of the artwork, the artist and those who participate in experiencing the work (the audience, spectator, viewer etc.). Influential semiotics and aesthetic theorists such as Umberto Eco and Ernst Gombrich have long argued that the meaning of works of art—be this literary works, visual art or performance pieces—are shaped by the artist but left incomplete in order for spectators, readers and viewers to complete. These notions have been appropriated *en masse* in the field of digital art, often on the assumption that digital technologies provide a rich ground for exploring more active and interactive spectatorships [19]. These principles have also fed into a number of examples of performance art in HCI (e.g.

[45,53]). One such example is the *humanaquarium*, an interactive installation where two musical performers (a soprano and a synth/mandolin player) sit inside a plain looking box [53]. The acrylic front of the box acts as both a transparent window to the performers and as a touch-enabled surface. On the rear wall behind the performers are projected visualizations that respond to the voice of the soprano. Audience members could interact directly with the touch-sensitive front panel resulting in alterations to the sound outputs and the visualizations on the rear of the box. Furthermore, the *form of engagement* from the audience had a significant affect on the aesthetic quality of the performance. If the audience was less engaged then the enclosed performers would try to entice them in and *initiate* interaction. A third-member would pretend to be an audience member, demonstrating how to interact with the screen. Although the functional qualities of the work changed little over the course of a year, the performers described how they came to understand the piece better over time. They *benefitted* from being sensitized to how their expressivity as performers would often be a hindrance to shyer audience members coming forward to interact directly. They learnt how to adapt their performance to specific contexts and different audiences and start 'designing from within' the box.

As with the goals of user participation, audience involvement in the creation of the *humanaquarium* is crucial. Tensions emerge however regarding how control is distributed to the audience. While it illustrates to us the messy boundary between artist, spectator and artwork whilst the performance is in progress it also emphasizes how the finality of the artwork is in the hands of the artist. Taylor et al. [53, p.1863] explicitly refer to the inherent tensions they faced as artists who desired to 'introduce more complex structures, musical motifs and visual narratives and [… interact …] with each other musically' and the need to contingently simplify the aesthetic 'product' to facilitate audience interaction. While the artists are reacting to the behaviors of the audience the finality of these interactions—in how they lead to the production of the performance—are interpreted by the practitioner. Similarly, those audience members who reconfigure the visualization and the audio output are operating within a predetermined set of variables that were defined when the system was designed. The performance itself is an *act* of collaboration as those interacting with it are still working within the realms of the artist(s) intent. But at the same time, the piece is not complete without their presence and engagement in the work.

The *humanaquarium* example is useful as it problematizes the relationships between researchers and users in participatory HCI. As alluded to by Brown et al. [12], it is quickly forgotten how researchers themselves have specific sets of expertise, make judgments and have agendas that they bring as co-participants in design. Although researchers act under the pretext of sharing control with users, they still act as interpreters through which activities are organized, discussions facilitated and, typically, sessions are recorded, documented and then archived. While users might be involved in the formation of boundary objects, very often researchers determine the ways in which these are staged. The fact that very often user involvement occurs in 'design sessions' or 'workshops' illustrates some of our issues here—this is the language of the designer and not those of 'users' (and, of course, the same problems can be said of the word 'user'). As such, we might ask here what decisions are being made and by whom—and whether there are ways in which, like the *humanaquarium*, the sharing of questions and decisions might change over time. In long-term participatory work covering months and years such filters might become less evident but undoubtedly still a factor. As such, while control is certainly shared, it must not be forgotten that the researcher is as crucial an agent in the participatory process as any other participant.

PARTICIPATORY CHALLENGES AND FUTURES

Echoing recent calls for greater critique and reflection on how participatory research is performed and communicated [47], we have alerted the HCI community to some problems inherent in research that involves users as participants, partners or collaborators in design. We have suggested that while there is a humanistic and democratic impulse within participatory research, we must be aware of the fundamental agency of the researchers and designers in configuring the process of participation and its outcomes. By alerting the community to issues about control and agency, we by necessity need to ask questions about the motives of involving people in design—particularly who initiates participation, and who benefits from it. Furthermore, we have highlighted the limitations of tight definitions of participation in design as it distracts us from articulating and exploring how participation can occur to varying degrees of engagement and witting-ness. In this concluding section we restate these concerns in the form of conceptual, ethical and pragmatic problems, and suggest some future strategies to navigate through them.

Conceptual challenges: One of the tenets of involving users as partners or collaborators in design processes is that they are given more control in defining their own technological futures. This, we have contended, can fail to acknowledge the still considerable agency of researchers and their responsibilities to funders and other stakeholders. Furthermore, we have highlighted how the changing landscape in HCI through participatory media, performance art and novel data collection techniques necessitates a much broader understanding of what user participation means. Participation can be highly passive and even unwitting but still potentially satisfying for those involved.

Ethical challenges: These are ethical in the sense that when we configure participation we must make explicit the influencing factors that leads to certain individuals participating over others. While strictly determining who

can and cannot be involved is often done so to bound the design (and subsequently the use) space, this reduces the potential to incorporate diverse voices in the design process and can lead to the voices that are heard most often being rearticulated. There are also ethical concerns in that it is not always clear to those who participate how their data and 'voices' will be represented and what they will be used for. Furthermore, unwitting participation implies an element of deception or at the very least a lack of full informed consent for those taking part. As such, unwitting forms of participation highlights a lack in existing procedures of ethics committees and review boards in accurately assessing ethical issues in participatory research.

Pragmatic challenges: In not explicitly considering the issues raised in this paper—such as in what form do people engage in design, how is control shared, and who initiates, benefits and leads the research— many research opportunities are lost. By predetermining who participates we immediately limit the potential for our designs. Furthermore, by working with those that best fit our agendas, methods and expertise the research we perform is less challenging, innovative and inclusive.

In response to these challenges we suggest four future strategies.

Transparency in documentation: Configuring participation is often motivated by agendas, either those of researchers, their employers, funders, or project partners and stakeholders. *A priori* agendas can impact upon the outcomes of the project or at the very least how they are documented and archived. This is not to suggest that researchers purposely misrepresent a project or misguide participants—rather we are just aware that it is easy for the agendas and values of researchers to implicitly affect how qualitative work is interpreted. A simple way of maneuvering through these issues is to be more transparent in personal agendas from the start. In view of this we add to the growing call for researchers to make their stance explicitly known from the offset in publications [9] and for greater candor in how processes are documented [1]. Such sincerity however should incorporate multiple perspectives and voices, and not just those of the researchers.

Explore preconceptions: We consider transparency important in the process itself regarding the expertise and preconceptions shared by the researchers and those taking part in the research. The impulse to configure participation leads to a number of assumptions being made about whom should and should not be involved in HCI research. We suggest that this could in itself be looked on positively and integrated into design work. Once we accept that preconceptions exist, then designers and participants can collaborate with one another to identify in what ways these assumptions need to be reconfigured. Here we contend that the participants might need to test their own assumptions as much as the researchers. One example that touches on this is the questionable concept technique, which merges concept designs and prior contextual data (excerpts from interviews) with opportunities for participants to comment on the ideas and, more importantly, the contexts they were inspired from and the values embedded within by the researchers [56].

Configure multiple forms: We have argued that participation in design occurs not just at the state of yes and no, in and out, but across degrees of awareness and engagement within the design process. We have not had the space to fully scope this out, but we consider it important that future work considers configuring participation across all manner of forms. This might include situations where users are involved very passively, to those where activists and advocates direct and shape the agenda, to situations where participants are guided by researchers. Our point here has been that all manner of forms and levels of participation are in play at any moment in time already—it is that these are rarely articulated or made sense of. Furthermore, this reveals opportunities for exploring how participation can be more open and reflexive, to support people to offer as much and as little as they desire but still feel they have contributed. Simon [46] alerts us to how in the context of a museum, visitor participation can occur at a variety of levels—and we contend that having multiple forms in a single project leads to a richer participatory environment. At the same time, this is not to suggest a hierarchy to these forms, and that one form of participation should be given greater credence than others.

Another concern we have raised is that configuring participation might lead to those whose voices are most likely to be heard being listened to again. We consider being flexible in where we set the boundaries for participation important if the voices of those less likely to become involved are to be reached. Those less likely to take part do not always do so because researchers do not identify them—they simply just do not have the motivations and desires to participate. One result of a more lightweight framing of participation might be the opportunity to identify novel and less intrusive ways to bring these views into the design process.

Participants reconfigure the process: Finally, it occurs to us that as well as taking part in the design process, there are opportunities here for users to be given a greater share in *defining* the design process. It is not unusual for researchers to involve users and participants in defining the problem space [6] but it is less often that participants are offered a stake in defining the process and tools that might resolve these problems. We imagine that providing users opportunities to define the methods, tools and techniques used to create boundary objects would be a fruitful area to explore different forms of participation and different degrees of sharing control in the design process. In this sense, while the researcher might come to the users with a configuration in mind, opportunities are provided for it to be reconfigured over time.

CONCLUSION

In this paper our goal has been to bring to attention the plurality of participation in HCI and the problems and possibilities this brings to future research. We have called for a more nuanced understanding about how control is shared between researchers and participants, for the initiators and beneficiaries to be more explicitly revealed and for there to be a broadened and more reflexive understanding regarding the forms which participation can occur in. These issues are currently neglected within HCI literature. Furthermore, neglecting these issues may mean we loose sight of the core goals of user participation in design that the community has articulated for nearly 30 years. Even so, we should also be prepared to allow traditions to develop and change. These are very exciting times indeed, and with new technologies comes new audiences and new perspectives on what design could and should be. These are opportunities not to be missed.

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