Exploring Challenges to Inclusion in Participatory Design From the Perspectives of Global North Practitioners

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Participatory Design (PD) aims to promote inclusivity by involving users throughout the design process. However, Human-Computer Interaction (HCI) and social computing research have pointed to instances where PD as practiced can, paradoxically, be exclusive. We aim to understand some of the challenges that could lead to exclusivity in order to design more inclusive PD practices. To investigate this, we conducted interviews with ten expert PD practitioners based in the Global North whose focus is on inclusion. Synthesizing practitioners' accounts, we advance understandings of challenges surrounding: 1) instantiating shared spaces that empower partners; 2) developing common ground among stakeholders; and 3) balancing funding needs with open-ended PD. We contribute theoretical and empirical insights into these challenges and close by articulating potential implications for addressing these challenges to inclusion in PD.

CCS Concepts: • **Human-centered computing ~ Interaction Design ~ Interaction design process and methods ~** Participatory design

Additional Key Words and Phrases: Participatory Design, Inclusion, Marginalization, Design Worlds, Third Space

ACM Reference format:
Salma Elsayed-Ali, Elizabeth Bonsignore, and Joel Chan. 2023. Exploring Challenges to Inclusion in Participatory Design From the Perspectives of Global North Practitioners. *Proc. ACM Hum.-Comput. Interact,* 7, CSCW1, Article 130 (April 2023), 25 pages, https://doi.org/10.1145/3579606

1 INTRODUCTION

Participatory Design (PD) is an approach in Human-Computer Interaction (HCI), User-Centered Design (UCD), and social computing that emphasizes design with people instead of for people. In PD, users do not simply provide "feedback" or data to inform design work. Instead, the aim is for users to actively participate throughout the design cycle from its formative to summative stages. While doing so, their values and lived experience are cornerstones in the co-creation and collective imagining of systems and solutions that affect their lives and address multifarious needs of society [36,38]. The roots of this design approach lie in the Scandinavian workplace democracy movement in the 1960s [10,34,51], which continues to shape its long-standing ideal of democratizing design by expanding the boundaries of who gets to design.

However, a growing body of HCI and social computing research has uncovered how PD as practiced often falls short of its inclusive ideals [4,25,38,40,66,77,79]. For example, practitioners

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2573-0142/2023/01 – Article#130... $15.00
https://doi.org/10.1145/3579606

can struggle to deeply involve children with disabilities [3,29,40,75], older adults [1,23], immigrants [59], and transient communities [33,53]. This is a significant problem, as these exclusionary dynamics counteract PD's goal of democratizing design, and could paradoxically lead to the exacerbation, rather than dismantling, of inequities [38,79].

Our goal is to better understand some of PD's challenges to inclusion, specifically for individuals who have been historically and systematically marginalized, in order to design PD practices that are more inclusive and equitable. We refer to challenges as constraining factors [65] preventing people from achieving their goals in PD. We refer to inclusion as equal involvement of users with different lived experience in PD [55]. To understand some of the challenges to PD inclusion, we conducted semi-structured interviews with ten expert PD practitioners with experience conducting PD alongside communities, from academia, government, and industry across four regions in the Global North. We refer to the familiar dichotomy of designers and users in terms of **practitioners** and **partners**, drawing from Druin's theoretical framework [22] to better foreground the vision of users as equal partners. We use "practitioners" in a general sense to refer to researchers, designers, content experts, organizers, and/or facilitators of PD. Our empirical strategy gives voice to practitioner experiences across a range of various PD projects aimed at the inclusion of diverse individuals.

Taking an informed grounded theory and abductive approach [16,80] to our data analysis, we synthesize practitioners' descriptions of their experiences and present our conceptualizations of three of the most salient challenges they mentioned to inclusive PD. Based on our synthesis of interviewee accounts, we offer **theoretical** and **empirical** insights into these challenges, which may have been raised in prior studies, but were not foregrounded due to purpose (not the goal of the study) or scope (only highlighting one dimension of a challenge). For each challenge, we then consider possible design implications. Specifically, we contribute the following advances to prior understanding of these challenges:

1. First, we empirically complement prior case study observations and brief discussions of the complexities of locating spaces for PD with synthesized practitioners' first-hand accounts. We also apply the theoretical concepts of "design worlds" [73] and "third space" [63] to illuminate how selecting a location to enact PD is not just a question of access, but is also a matter of instantiating *shared spaces* where partners feel empowered and enabled to fully design. Using the design worlds lens, we also reveal deeper issues to remote PD beyond previously known technical and face-to-face (F2F) issues by positing the perspective that remote PD is "worldless." In doing so, we advance theoretical understandings of this complex issue.

2. Second, we describe how common ground issues not only manifest between PD practitioners and partners, but also among practitioners and among partners, in ways that may be amplified as we attempt to push towards more inclusive PD. We conceptualize this challenge using three dimensions to better understand its complexities and reveal opportunities for making PD more inclusive. In doing so, we add nuance to the challenge of developing common ground.

3. Third, we explicitly articulate the tension between the need for sustainable funding (and the attendant pressures of obtaining funding) and the diminished role of partners in what is otherwise supposed to be an open-ended design process. We complement a theorized and argued idea of "projectizing" [21,39] with first-hand practitioner accounts. In doing so, we add depth to the challenge of balancing funding needs with the open-endedness of PD.

2 BACKGROUND

2.1 Marginalization

Liang et al. define marginalization as "how a person experiences the world around them based on their identity and how others perceive them" [58]. They note that terms often associated with marginalized people like "underserved," "under-represented," and "minority" denote the failing of society, whereas terms like "vulnerable" denote the failing of individuals and frame marginalized people as weak, in need of help, or burdensome [58]. We align with Liang in the former view of marginalization. Marginalization encompasses systematic discrimination due to unfair policies and/or social practices [25]. Marginalizations can be overlapping [77], intersectional [25], and can change over time [58]. PD is delicately positioned in that it can either serve to counter or bolster existing marginalizations and power structures [56].

Marginalization can manifest across a variety of settings and characteristics. For example, Galleguillos and Coşkun reviewed 46 PD projects involving less privileged participants and identified the diversity of participants involved in those projects [53]. These include people who are excluded or disadvantaged due to not having access to resources, unable to exercise their voice, and are discriminated against on the basis of their age, sex, disability, race, ethnicity, socioeconomic status, or migration status [53]. Harrington et al. focus on marginalized people in a developed context including economically disadvantaged, gender-non-conforming, ethnic, disabled, and/or racialized communities [38]. Spiel et al. give examples of marginalization for children, including children who seek asylum, are disabled, live in low-income households, grow up with adoptive or foster parents, are obese, or are a person of colour [77]. In their overview of intersectionality, Erete et al. enumerate additional axes to marginalization including androcentrism, eurocentrism, educationalism, politics of appearance, classism, language bias, colorism, religion, and natalism [25].

We aim to contribute to broadened capacity to advance inclusion of communities across these specific manifestations. We acknowledge that some of these capacities may be enabled by community-specific interventions and design, but also recognize the possibility of fruitful transfer and joining together of issues and solutions across these intersectionalities, which can contribute to larger frameworks that can have broader impacts, such as Design Justice [20] and Critical PD [79]. This desire to synthesize insights motivates our choice to adopt an informed grounded theory [16,80] approach (expanded upon in our Methods below) to integrate first-hand practitioner accounts from a range of PD settings with sensitizing concepts and prior findings from the literature on PD and inclusion.

2.2 Challenges to Inclusion in PD

Our research builds on an extensive body of literature in HCI and CSCW on challenges to inclusion of diverse communities in PD. Some past research has discussed challenges to inclusion in PD in general terms that cut across specific communities. For example, in their CSCW 2017 workshop titled "Reflection on Design Methods for Underserved Communities," Erete et al. underscored how communities were not supported in the co-design process [25]. Le Dantec et al. observed how certain user communities, even in relatively wealthy and privileged societies, were hard to reach [55]. Galleguillos and Coşkun observed how less privileged participants faced more barriers to participation and engagement in PD than others [53]. Other researchers have discussed challenges to inclusion of specific communities. For example, Gautam et al. observed how Nepalese sex trafficking survivors were unable to fully engage with the design process [30]. In a series of case studies, Sabiescu et al. observed that Roma minority in rural Romania and community members in different Mozambican provinces were often unable to assert their views on the nature of participation in PD [70]. Hussain et al. found that Cambodian children who use prosthetic legs were unable to have high levels of user participation [41]. Holone and Herstad

observed how children with severe disabilities were unable to engage in "true" PD [40]. In a series of case studies, Spiel et al. similarly observed how autistic children and visually impaired children were unable to exercise a level of participation that was expected [77]. Based on four years of PD in an economically depressed city in the U.S., Walsh et al. observed how racially marginalized youth were often unable to participate as much as they wished [82]. Jagtap et al. conducted interviews with NGO workers in India, identifying barriers to involving community members who are lower income in design projects [45]. We aim to expand the range of empirical evidence presented in these past works by interviewing PD practitioners whose experience cuts across a variety of settings and communities.

What explains these challenges to inclusion and what can be done about it? Our work here extends a significant body of work that has explored this question. We focus our discussion here on three specific threads of work that we extend: challenges around locating PD, common ground, and funding. We later elaborate in detail in the Discussion how we extend prior insights on these challenges to inclusion in PD and what can be done to address them.

2.2.1 The Challenges of Locating PD

A number of past studies have noted the challenges to inclusion that arise when PD sessions are held in practitioners' locations, such barriers in public transportation to travel to the lab [82], or difficulties relying on busy caregivers to transport partners to practitioners' locations [2,23]. One common response to these challenges is to move PD sessions to partners' locations. But this too has been associated with its own inclusion challenges. One prominent theme is the added complexity of power dynamics with multiple stakeholders, such as the need to involve community coordinators when working with older adults in the community [27], the complexities of navigating and relying on teachers and parents when working with neurodiverse children [28,75,77], struggles to preserve the voice of sex trafficking survivors while working with them through/with sex-trafficking survivor organizations [30], and navigating power dynamics with apartment complex authorities on site when working with low-income housing residents [38]. Furthermore, holding PD sessions in partners' locations may come with its own scheduling conflicts: for example, [52] noted that conflicting schedules with sports activities complicated the scheduling of PD sessions in an elementary school.

Remote PD has been proposed as one solution to the difficulties of partners and practitioners moving into each other's physical locations, opening access to more people like individuals with disabilities, mothers of young children [85], or those who are not co-located [19,26,61]. Yet, remote PD (often called "distributed participatory design" or DPD, in past work [49]) in its current forms may bring its own set of challenges. For example, technical challenges may hamper design iterations in a DPD tool with child partners [84].

In this paper, we build on this work in three ways. First, we add specific empirical depth to often passing mentions of these challenges in Findings and Discussion sections (e.g., [2,23]). Second, we extend discussions of DPD's limitations beyond technical limitations into thornier ethical issues that complicate inclusion in PD (e.g., unexpected ethical challenges around what is "in view" during DPD). Finally, we reframe the problem from one of choosing a location, to one of constructing a shared space; we do this by bringing our practitioners' discussion of these issues into conversation with powerful theoretical concepts, such as Muller and Druin's notion of "third spaces" [62,63], and Schön's concept of "design worlds" [73].

2.2.2 The Challenges of Common Ground

Another thread of prior work has described how inclusion is stymied by gaps in common ground, primarily between practitioners and partners. For example, Harrington et al. described how historic research injustices left partners with poor impressions of a local university and its researchers [38], and Giglitto et al. documented how student researchers' preconceptions and lack of empathy towards members of an Egyptian local community raised challenges to inclusive PD [31]. Rosner et al. additionally observed how practitioners' vague language undermined the existing rich vocabulary of mender partners developed across years of their sewing experience [69].

In this paper, we build on this work by re-situating the issue of common ground in the larger set of possible interactions between stakeholders in PD. Traditionally, PD has focused on the relations and interactions between practitioners and partners [76]. In addition to confirming issues of common ground between practitioners and partners, we also describe challenges to attaining common ground that have received less attention in the literature: between practitioners and practitioners, and between partners and partners. In this way, we explicitly articulate the multifacetedness of the challenge of common ground.

2.2.3 The Challenges of Funding

Finally, PD efforts often face challenges obtaining sustainable funding to effectively engage PD projects and partners across academia and industry [27,41]. Beyond the basic function of ensuring that effective activities can be conducted, in appropriate spaces, and with appropriate materials [41], funding has been described as crucial for ensuring that resources are available for taking time to build relationships and trust, such that partners themselves can take on leadership roles [25,27,41]. While funding is an issue that cuts across and dictates the direction of many research activities, its effects are magnified in the context of PD alongside diverse communities. These implications have been touched on briefly in prior work. For example, Lazarin and Almeida found that budget constraints often prohibited access to marginalized groups and the organization and management of their participation [54]. Additionally, researchers and practitioners typically receive a salary while participants do not but are expected to make their knowledge available free of charge or for a low cost [9].

In this paper, we extend this discussion by adding empirical confirmation of these issues. We also add empirical depth to more emerging articulations of the tension between the close-ended "projectizing" that often comes with funding and the open-ended nature of PD work [21,39].

3 METHODS

We conducted an interview study to obtain an improved understanding of some of the challenges to inclusion that PD practitioners face and how they navigate those challenges. Our motivation for using an interview-based approach was to foreground and synthesize themes across a wide range of first-hand experiences, which extends the scope of empirical findings relating to inclusivity in PD. We were also motivated to use interviews to reveal intentionality and inspire practitioner reflection on their inclusivity in PD. While participants received no compensation for volunteering their valuable time and expertise, our interview provided them the opportunity to share their experiences for dissemination to a wider audience and engage in reflective practice and reflection-on-action [72]. Schön's notion of reflection-on-action entails reflecting on a situation that has happened and considering what might need to be changed for the future [72]. Reflective practice can additionally surface people's unconscious values, attitudes, and assumptions influencing their practice, as well as to open up new opportunities to experience the

world in different ways [74]. Semi-structured interviews were conducted individually via Zoom software (participants were given the option to select another audio or videoconferencing method, if preferred) at a time convenient to participants. Interviews lasted approximately 1 hour, with the shortest interview lasting 39 minutes and the longest interview lasting 1 hour and 43 minutes.

Table 1. Study Participants (Pseudonyms are used in place of real names.)

Name	Region	Background	PD Setting(s)	PD Partners
Bansuri	North America	Academia	University Lab, Grassroots Community	Diverse youth, young children, teenagers, diverse families, teachers, local industry
Maria	North America	Academia	Public City Library, Primary School, Secondary School, Grassroots Community	Diverse youth, teenagers, diverse families, public library staff, school library staff, local industry
Musa	Scandinavia	Academia	Primary School, Grassroots Community	Children with disabilities, young children, policymakers, local industry
Jad	North America	Government	Public City Library	Diverse youth, public library staff, local industry
Junichi	North America	Academia	University Lab	Children, teenagers, older adults
Calian	North America	Industry	Company UX Lab	Diverse youth, teenagers
Jana	Scandinavia	Academia	Grassroots Community	Citizen groups, urban planners, local industry, youth groups, nonprofits
Jacinta	United Kingdom	Academia	Primary School	Young children, children, teenagers
Chen	Continental Europe	Academia	Primary School	Children with disabilities, older adults with disabilities, policymakers
Kofi	Continental Europe	Academia	Primary School, Grassroots Community	Children and adults with disabilities, diverse children and adults

3.1 Participants

To obtain a diversity of personal accounts and lived experience, we recruited ten PD experts based in the Global North (Table 1) whose intersectional identities shape how they design and work around challenges to inclusion. We sought practitioners who have experience involving people who are traditionally excluded from PD or have made it their goal to be more inclusive in their PD practices by working with a range of communities including children, individuals with disabilities, lower income groups, and ethnically diverse communities. Recruitment was done mostly using snowball sampling, and convenience sampling. To some degree, the sampling approach inevitably limited our pool of PD experts to the Global North. All recruitment was completed online through email. Inclusion criteria required that participants be PD practitioners with substantial domain knowledge and have at least five years of experience with PD with a focus on inclusion. Eligibility criteria required that participants must be English speaking to

ensure an accurate comprehension and representation of their lived experience. This is further expanded upon in our Limitations section.

Participants work across a range of PD settings. Seven participants serve as PD facilitators within educational (primary school, secondary school, or university lab) settings, with two participants leading Cooperative Inquiry [22] teams at their higher education institutions. Five participants have led PD in grassroots community settings, two participants have led PD within public city library settings; and one participant has led PD within industry (although other participants have engaged in industry collaborations). With regards to gender, five participants were men, four participants were women, and one participant was nonbinary. While not intended at the onset of recruitment and for reasons of availability, all participants have experience leading PD with diverse youth. In the Discussion section, we reflect on this common feature of our participant pool, given our goal of contributing to broader inclusion efforts in PD. However, we point out that our participants' experiences still cover a broader range of diverse communities, including older adults with disabilities, nonbinary adults, and families from lower socioeconomic backgrounds. Additionally, because youth PD practitioners are part of a relatively small community, we had to take additional steps to protect participant's privacy. First, all data has been anonymized in this paper to the best of our ability, including the use of pseudonyms in place of participant's real names. Second, we omit data on participants' race/ethnicity, which may be identifiable, although several participants have intersecting identities tied to race/ethnicity, gender, and/or disability, and have all co-designed with partners who are often marginalized due to their intersectional identities. Third, we delineate each participant by region while giving a sense of geographic variation. All aspects of this study have been approved by our university's Institutional Review Board (IRB).

3.2 Interview Protocol

Semi-structured interviews were conducted to obtain a better understanding of some of the challenges to inclusion PD practitioners encounter. The lead researcher conducted all interviews. Interviews began by asking participants introductory questions such as "Can you tell me a bit about yourself?", "Please describe PD using your own words," "Which PD tradition do you most closely adhere to?", "Who are the users you typically work with?", and "How do you go about recruiting users or building relationships with them?"

Participants were then invited to reflect on challenges to inclusion. Examples of questions included "What challenges do you frequently face with user participation?", "How do you strive towards getting a diversity of users?", and "What have you found to be effective methods, tools, or approaches for navigating challenges to inclusion?" As a form of reflexive practice, the researcher asked participants to share their most successful PD experience as well as their least successful experience and why they felt that way about them. Participants were invited to share how Covid-19 has affected their PD practice and inclusion.

Lastly, participants were given the opportunity to share any additional points or to ask the lead researcher questions. When appropriate, we made use of probing questions to delve deeper into participants' responses; frequently, these probing questions were requests for specific examples, in order to obtain a more empirically grounded understanding of their first-hand experiences.

3.3 Qualitative Data Analysis

We conducted our analysis using Thornberg's informed grounded theory [80], which is rooted in Charmaz's constructivist grounded theory [16] and the pragmatist idea of abduction. Grounded

theorists like Charmaz and Thornberg reject the notion of pure induction. Instead, they opt for an abductive approach to reasoning that both relies on inference about empirical experience and uses prior knowledge and theories as lenses for explaining new data [13,16,32,48,80]. In informed grounded theory, the analytic process is grounded in the data while also encouraging theoretical sensitivity [13,80]. Instead of delaying a review of literature, informed grounded theory argues for a theoretical sampling of literature to enhance researcher's theoretical sensitivity as well as potential of research to build on extant theories [80]. As such, we iteratively moved back and forth between our interview data, analysis, and pre-existing knowledge and theories in search for patterns and the best possible explanations [80].

In total, 10 hours and 16 minutes of interviews were transcribed in full and analyzed by the lead author using the qualitative data analysis platform NVivo. An initial pass of the first six interviews was conducted by open coding and writing preliminary analytic memos [16] with an eye towards challenges to the inclusion. Three of the top challenges and examples of first-round open codes included "No way of getting to PD sessions," "Communication breakdowns among participants," and "Funding agency or partner organizations dictating project direction." In accordance with informed grounded theory, we used existing notions such as "design worlds" [73], "third space" [63], common ground [81], and "projectizing" [21,39] as sensitizing concepts to provide a framework for analyzing the remainder of our data [12,16,48]. Our initial codes evolved with our sensitizing concepts to guide focused coding and the formulation of subcategories. For example, the initial code of "Communication breakdowns among participants" coupled with the sensitizing concept of common ground became one dimension of a challenge. The lead author iteratively returned to the ten transcripts with the subcategories in mind. Additionally, once each coding round was completed by the lead author, the entire team would review, discuss, and iterate on the most recent set of codes altogether.

As underlined in informed [80] and constructivist grounded theory [16], it is important for researchers to engage in reflexivity and communicate their positionality in relation to their inquiry. Reflexivity entails "self-questioning" on whether one's research delivers on its ambitions to break down oppressive social structures rather than reinforce them [6]. In this study, Maria is a co-author, whose experience in PD could not have been overlooked in this study. Maria also leads a Cooperative Inquiry [22] team based in North America, which the lead author has directly engaged with as a co-designer. While the research team collaborated in preparation of this manuscript, Maria did not participate in the direct analysis and coding of data, with the exception of our joint coding round reviews as noted above. All members of the research team are also ethnic and racial minorities fully committed to the inclusion of historically and systematically marginalized individuals. Our identities and motivations have thus played a large role in shaping our research agenda.

4 FINDINGS

The following section summarizes findings from the interviews, presenting excerpts from participant's accounts of their experiences with inclusion as PD practitioners. We walk through three of the most salient challenges participants mentioned in their interviews, which are thematically grouped based on our qualitative data analysis. Some of the challenges identified as influencing inclusion in PD relate to 1) complexities of location, 2) difficulties attaining common ground, and 3) tensions relating to receiving and sustaining funding for PD projects. Past work in HCI and CSCW has touched on aspects of these challenges; we focus in this section on describing in detail how these challenges were described by our participants, and articulate in

detail in the Discussion how our interviewees' descriptions extend prior understanding of these challenges.

4.1 Challenge #1: Complexities of Location

Seven participants provided insights into the complexities of where PD occurs and its impact on inclusion. Participants shared their experiences working across various locations, from university labs or partners' places (e.g., school, hospital, community center) to remote PD.

4.1.1 Designing in Physical Locations

Participants distinguished between practitioners' locations that necessitate partners to go to, and partners' locations that necessitate practitioners to go to. We begin by describing the complexities our participants observed in the former. Calian leads Cooperative Inquiry [22] in their company's user experience (UX) lab and reflected on how access to PD is limited to "*whoever can make it to your facility.*" Calian continues, "*if it's just in one vicinity, you are kind of gated by the individuals that live within driving distance or that are even willing to drive to your location.*" In scenarios where PD occurs in practitioners' locations, this may restrict who gets to participate in PD. Calian's comment echoes a prior study's empirical observations of the barriers of public transportation for their child partners traveling to the lab [82], and adds empirical depth to prior brief mentions in Methods and Discussion sections about the hypothesized challenges of access for marginalized partners, such as aphasic adults with physical limitations who may rely on caregivers for transport [2], and older adults [23].

With this challenge in mind, there may still be inclusionary benefits to designing in practitioners' locations. For example, Chen, who has organized PD with children and adults with disabilities, mentioned how being in practitioners' settings can enable access to specialized materials and equipment: "*we have children visiting our lab for a reason. We wanted to kind of introduce them to laser cutters and 3D printing and we did a few sessions where we soldered bits together.*" There are oftentimes specialized materials and equipment that can only be accessed if PD occurs in practitioners' spaces, which is especially important for PD projects whose goals are to introduce partners meaningfully and equitably to new technologies or systems. Without access to these tools, some partners may never have the opportunity elsewhere or otherwise to learn or use them.

Conversely, conducting PD in partners' locations may resolve access and transportation issues, which may enable a greater number and diversity of people to participate in PD. Not only can holding PD in partners' locations be more convenient for partners, but conducting PD in a location where partners are already accustomed and attuned with the sociocultural norms may allow their lived experiences to be better or more accurately represented. This can also open up a rich world for partners and practitioners to draw from. For example, Chen noted how partners' settings can contain partner-specific materials: "*for a lot of the concept work and ideation where we would naturally go and visit their world because that's where the technology would reside.*" Along a similar vein, Musa, who has organized large-scale PD projects with youth, government, and local industry partners, recounted a PD project that was "*very locally embedded. It was very situated in that particular context. It was not some kind of abstract thing that they were designing for.*" Designing within a familiar context may enable partners to draw connections between what they are designing and their personal lives. Musa continued, "*it was very relatable for all the partners involved, for the kids who live close by, because they knew the hospital and the area around it, and for the kids in the hospital.*" When designing in their own environments, partners are the experts of that environment, which may contribute to feelings of comfort and power. This finding

empirically complements reflections by Muller, who argued collaboration with users in their work contexts made for conversations grounded in concrete work experiences [62].

However, during their interviews, participants illuminated certain features of the environment that can hinder inclusion and pose additional challenges to holding PD in partners' locations. One common challenge mentioned by participants to conducting PD in partners' settings is having to navigate existing dynamics and power structures. This can include institutional and organizational constraints, such as having to navigate inflexible school schedules set by administration and teachers, as exemplified by Jacinta, who has worked with youth of varying ages, races, and socioeconomic backgrounds: "*it's hard to be in secondary schools because obviously they've got timetabled hours.*" This may result in certain voices being excluded from PD. Jacinta's comment echoes a previous passing observation in a methods section about conflicting schedules with sports activities complicating the scheduling of PD sessions in an elementary school [52].

Conducting PD in partners' environments may also lead to the introduction, involvement, and intervention of other stakeholders. Kofi reflected on their experience as an academic working with neurodiverse children and their parents and teachers. Kofi gave the example of a child who indicated at the beginning of every PD session that they did not want to participate, yet may have felt compelled to since their teacher was there: "*the teachers and the parents were sometimes really annoying, but they were also stakeholders that gave you access to the kids.*" This finding empirically complements a wide range of prior in-depth case studies that have revealed similar complex dynamics with multiple stakeholders [28,30,38,75,77].

To summarize, our participants shared their experiences grappling with the inclusionary tradeoffs of conducting PD in practitioners' versus partners' physical locations. PD in practitioners' locations may prevent basic access, but may conversely allow partners to become familiarized with new design equipment they otherwise may not have access to. On the other hand, conducting PD in partners' locations may be more convenient and familiar for partners, but may require navigating additional institutional constraints and stakeholders.

4.1.2 Designing Remotely

Traditionally, PD has been conducted in physical locations. Remote PD has been proposed as way of resolving access and transportation challenges. However, remote PD also raises newfound challenges to inclusion in PD. Previously known challenges of remote PD are often technical or social, with aspects of F2F communication being lost. Our participants highlighted additional challenges to inclusion that contrast to designing in physical settings.

Our participants reflected on the acute lack of grounding presence in remote PD, which seemed necessary for grappling with difficult emotions that might arise. For example, Kofi stated how in certain situations PD should not be conducted remotely due to the sensitivity of the subject matter, associated trauma, and differences in embodiment and presence to navigate difficult topics: "*I can't really do [a specific PD project] right now because it's also about bodies and intimacy and I don't want to do that online either because it's such a disembodied way.*" Kofi continued, "*I don't want to be there sitting like kilometers away and then the person just shuts down the Zoom conversation, and I do nothing, I cannot take up any kind of care or responsibility that I have other than by invading their private space potentially, and that is so horrendous to me as a thought.*" Not only could PD conducted remotely potentially be harmful if partners must recall traumatic experiences without nearby support but could also be an invasion of privacy and may not entirely or accurately capture a partner's lived experience. This finding empirically complements the in-depth case study observation of Harrington and Dillahunt in their co-design of tech futures with Black youth [37], who documented how partners were hesitant to share their personal

experiences and unfinished ideas, and extends the range of this theme from a single setting with black youths in an urban setting to a wider range of partner populations covered by our practitioner interviewees.

Participants also noted challenges to inclusion relating to design materials and methods when conducting PD online. Tooling was one challenge mentioned by Junichi: "*It's still easier for the kids to use physical artifacts versus like a digital drawing board or whiteboard or Jamboard.*" Partners who are unfamiliar with, unable to use, or do not have access to certain tools may have been prevented from realizing their creative potential, which could lend them to not having a voice, despite being able to attend PD sessions. Junichi discussed the need for more coordination and facilitators when conducting PD remotely: "*In the online setting we found that it's harder to conduct those sessions, document those sessions, and have some of the backchannel coordination and all those different aspects going on. So, we need a higher ratio between the adults and children in that regard.*" Having fewer facilitators could lead to partners not receiving the attention they need or feeling that their opinions are not valued. Jana, who is interested in the intersection of urban planning and PD, also mentioned that within an online space "*it's not obvious to know what to say and to whom and should the video be targeted to specific communities, should it be open to all, should it be shared.*"

We also found that participants encountered ethical challenges and had to navigate uncharted territory relating to what was permitted by their institutions while conducting PD remotely. For example, Junichi shared there are "*other ethical challenges and sometimes things arise that are different*," like unpredictable scenarios where partners display things that should not be recorded. Jacinta gave the example related to recording where "*the school had a policy of no photographs…that was quite problematic because the kids were trying to show us things, and it was quite hard*," which could have led to miscommunication, misinterpretation, or misrepresentation of partner's ideas. This could also be challenging for partners who rely on or prefer non-verbal means of communication. This finding empirically complements a previous case study observation of concerns about showing sex trafficking survivor partners' faces in photos from a photo elicitation activity, due to safety concerns [30].

In sum, while a remote setting affords new opportunities and may make it easier to access PD, using a new design space may also raise newfound challenges to inclusion. Some of the challenges our participants recounted to conducting PD remotely include differences in grounding presence and embodiment, difficulties with design materials and methods, as well as unforeseen ethical challenges.

4.1.3 Complexities of Location: Summary

Our overall interpretation of our participants' accounts is that there is no single "best" location for PD that maximizes inclusion: each of the possible locations of practitioners' settings, partners' worlds, or remote PD raise their own complex and thorny barriers to inclusion. In the Discussion, we synthesize our participants' comments about "wordlessness" to theorize a reframing of the problem from one of choosing a location, to that of co-constructing *shared spaces* where all partners can feel empowered to design.

4.2 Challenge #2: Difficulties Attaining Common Ground

Difficulties attaining common ground was a challenge to inclusion seven participants mentioned. Common ground entails attaining a mutual understanding through identifying and negotiating differences in expectations, priorities, and practices [50]. We found that difficulties attaining common ground emerge not just 1) between PD practitioners and partners but also 2) among PD

practitioners, and 3) among PD partners. We expand on these three dimensions and provide empirical support below.

4.2.1 Practitioner-Partner Gaps: Language, Perspective, and Relatedness

Participants described challenges to attaining common ground between practitioners and partners. First, participants described challenges stemming from the use of jargon, which are a type of shared language barrier [14]. Maria reflected on their experience as an academic working across educational contexts (e.g., public, private, and home-school) and youth populations, including youth from low socioeconomic backgrounds and under-represented races and ethnicities. Maria felt that PD practitioners came from an "*ivory tower…where I feel like that division is very obvious when they talk, from the use of jargons to the way they come there, what you wear. I think all of that either discourages or encourages people to participate. I think we need to be mindful of that.*" Jad, who leads youth programming at a public library in a large metropolitan city in the United States, recounted how their use of design vernacular was met with confusion: "*if you're a librarian, information sciences is your thing—that's where you are. So, here I come in and I say, 'you're going to do Participatory Design with kids to learn digital media,' [and then librarians respond] like 'whoa, what is that?'*" Musa noted the need to explain things "*in a bit more child-friendly language*" when designing with children. From these accounts, we see how using design jargon may lead to difficulties in attaining shared language and common ground. This may prevent partners from finding and gaining access to PD opportunities, participating at all, or participating to their best ability. These findings complement a previous PD study's observations that historic research injustices left partners with poor impressions of a local university and its researchers [38].

Participants commented on differences in perspectives, experiences, and knowledge that may be implicit in PD. For example, Maria observed how the ethos of PD may be strange to members of communities who have historically faced injustice [38]: "*their voices are always suppressed so it's hard for them to think like 'oh, I can actually say something, I can actually contribute.'*" Jacinta recounts instances when practitioners had gaps in knowledge about the community they were working with: "*I've also had Ph.D. students in the past who've gone into schools not knowing anything about the UK school environment so there's a risk then that you interpret things a certain way.*" Jacinta added that one collaborator "*had all sorts of assumptions about teenagers that were just really a long way away from [reality], and they're all based on [the collaborator] as a teenager.*" Challenges to inclusion may result from assuming or not acknowledging each other's' capacities, expertise, and experiences of historical injustice. This finding echoes a past study documenting student researchers' preconceptions and lack of empathy towards members of a local community [31].

Another theme in participants' descriptions related to how practitioners and partners related to one another. For instance, Maria recounted a personal experience where design partners were more comfortable with her than other collaborators: "*If you are designing with minoritized communities, if you don't have any minority team members it's really hard to connect with them. I can tell you that itself is a barrier.*" Maria gave a personal example: "*Long time ago I had a session with middle school kids in [location redacted] and then I realized I brought a team of five white women plus me to co-design with thirty Black kids, and they were just super reluctant to participate. They all wanted to be in my team. I'm not saying this because I'm friendly, I just think they connect better with people who look like them. That was a moment of awakening for me.*" While we cannot definitively say whether Black child design partners gravitated towards Maria because of her race,

Maria's account demonstrates that partners may have felt more at ease and may have more readily participated when working with someone who they could relate to better.

In summary, our participants touched on instances where difficulties to attaining common ground were apparent between practitioners and partners. These included the use of exclusionary design jargon, assumptions or lack of acknowledgement of each other's knowledge and experiences, and relatedness. As we push towards more inclusive PD, we argue that a fundamental dilemma arises where these gaps may become more pronounced.

4.2.2 Practitioner-Practitioner Gaps: Traditions, Implementations, and Paradigms

While the dominant strain of previous work has touched on gaps between practitioners and partners, we found that common ground issues also emerge among practitioners. Chiefly, these may emerge from differences in PD traditions, implementations, and paradigms. Musa shared a perspective on the "*heated debate*" between traditions, noting, "*I also know the tensions a little bit sometimes between the Scandinavian perspective of doing things and the American perspective*." Musa continued, "*the Scandinavian PD guys I find are a bit reluctant to provide a clear definition of what it is and a clear set of rules to follow, and I get that, but I'm also sometimes a bit skeptical about that, like I have discussions with some of my colleagues at [Scandinavian organization redacted] that I sometimes feel like they deliberately want to keep it very complicated*." Jacinta also mentioned "*there's long been a European versus American clashing*." Closely tied to PD tradition, differing PD implementations may contribute to difficulties in attaining common ground among practitioners and even partners. Junichi, who leads a Cooperative Inquiry [22] team based in North America, stated how "*there were some people that really still thought that [PD] had to be implemented the same way, and that's not the purpose—the idea is to adapt to the circumstances that you have*." Junichi gave the example that "*there are some [practitioners] that do PD in like one-off workshops or small sets of workshops, or maybe even just an hour dropping into a classroom, and those are different approaches and those are valid approaches. But those are just different methods or techniques of approaching Participatory Design*." These differences in tradition and implementation may influence inclusion in PD or cause unnecessary barriers to entry for those hoping to incorporate PD into their practice.

While some participants were explicit about adhering to or ascribing to a specific paradigm, we observed that this debate is not simply a matter of being clear-cut Scandinavian versus North American PD but is much more nuanced. We found that some PD practitioners may choose to either not strictly follow a certain design tradition or may take a different approach by borrowing from other movements and intellectual disciplines [5]. Chen, who is interested in accessibility and Critical Design, expanded on this: "*I'm getting interested in questions around what technology does in our society, anyway, in a much bigger philosophical perspective. And that kind of brings me more towards an interpretation of Participatory Design that really has politics embedded very deeply*." Chen further elaborated that they "*look to Political Science to do Participatory Design*." This finding complements and extends related work (e.g., [21,43,44]) which re-orients and foregrounds the historically political ethos of participatory design that empowers partners not only to develop their design abilities but also to take "a critical and reflective stance toward technology through their engagement in design work" [43].

Gaps among PD practitioners are an often implicit, yet underexplored dimension of common ground. As articulated by our participants, these gaps can manifest through differences in PD traditions, implementations, and paradigms. By bringing this dimension to the forefront, we can see the effects this may have on inclusion of different stakeholders in PD.

4.2.3 Partner-Partner Gaps: Opinions, Ownership, and Expertise

Another underexplored dimension of common ground is that among partners. Participants noted how difficulties to attaining common ground manifested through exchanges among partners with differing opinions. For example, Maria recounted differences in opinions between librarian partners: "*Because this was a huge group, we are all individuals, we have our opinions, we also have our own perception on what challenges are actually challenges during a crisis. We have people who are quite liberal to people who are very conservative in this group. There are people here who said that 'if someone doesn't wear a mask, they cannot enter the library' to a person who said, 'well masks don't really work', right. So, we had like this spectrum of people.*" Partners may feel alienated or othered by other partners if they voice an unpopular opinion, which may impede certain partners from participating or feeling like valued members of the design group. This finding echoes a previous study where the broad involvement of South African community members in the co-design of a billing system made it difficult to reach common ground and consensus [81]. Traditional PD techniques may start to break down as practitioners work with more diverse communities, which could lead to partners feeling ostracized or excluded from the group.

We also synthesized that difficulties to attaining common ground can also emerge as a result of partners being possessive of their ideas or maintaining a competitive rather than collaborative mindset. For example, Junichi shared how "*it's easier, in many cases, for a kid to come up with their own ideas and be married to their own ideas and only live in their own world.*" Junichi continued, "*so it is harder to actually collaborate and work with other people and come up together with ideas and be able to build on one another's ideas.*" Fixation and ownership of one's ideas can hamper collaboration and lead to divisiveness or othering among partners.

Another challenge that surfaced from our interviews relates to differing levels of expertise among partners, especially when made explicit or used in a deconstructive or demeaning way. Jana shared an experience where they "*asked people about their expertise and specifically organized tables so that there's a mix of different expertise at each table, and one of the tables just didn't work because some of the people felt overrun by others using their expertise to shut down the others.*" Partners imposing their knowledge or opinions on other partners can potentially lead to misunderstandings and exclusion of other PD partners.

The challenge of attaining common ground can also be examined through interactions among partners. Our participants shed light on how these exclusionary gaps can manifest through differing opinions, a need for ownership and feelings of competitiveness, and an imposition of one's expertise. Like the two other dimensions of common ground, these gaps may become more pronounced as we attempt to involve a greater diversity of people in PD.

4.2.4 Difficulties Attaining Common Ground: Summary

Our overall interpretation of our participants' accounts is that the challenge of common ground is deeply multifaceted: while our participants echoed previously discussed issues with difficulties in attaining common ground between practitioners and partners, they also articulated how common ground issues between practitioners and practitioners, and partners and partners, also stymy inclusion in PD.

4.3 Challenge #3: Tensions of Funding

Seven participants reflected on the tensions between a need for sustainable funding and constraints on the role of partners and the open-endedness of PD through the rigidity that can come with funding.

4.3.1 Need for Sustainable Funding

Participants mentioned how funding impacted the sustainability and continuity of PD partnerships and projects. Participants recounted how they were no longer able to maintain PD partnerships and projects once their funding was depleted or not renewed. Jana shared how "*it was the end of my postdoc, so again this funding possibilities. I left... I wasn't able to sustain this collaboration that had started and taken place over a year and a half. I couldn't continue on my own.*" As Jana stated, "*how do you continue these things? You can't because there's no support.*" Jana's comments echo previous findings that in order for PD to become more inclusive, the goal that drives funding should be long-term community partnerships rather than ephemeral collaborations established just for the duration of a project [25], to promote trust and an evolutionary alignment between community partners' and practitioners' goals. Calian had a different experience than Jana. Calian explained how they could hypothetically have access to as many participants as they needed in their company, even going as far as turning down participants: "*on the corporate side because we have more means to say 'no' to participants... It's probably easier for us to do that versus in academia where you only have so much funding to work with and so many participants you have access to.*" The continuity of partnerships can be especially challenging for non-industry practitioners to maintain, which may consequently affect who gets to participate in PD and to what extent.

4.3.2 Constraints on Partner's Role and Open-Endedness of PD

Conversely, external funders can influence the extent to which partners are included in the design process. Participants commented on how a caveat to funding is that partner's roles may be diminished through the subversiveness of their design outputs and restriction on open ideation and innovation, which may not align with the funder's goals. For example, Calian shared an anecdote where "*the whole process was about designing something for kids that kids wanted and this adult kept going, 'No, you can't do that,' because you know in their head they had this restrictive idea of like 'this is how we have to build the product.'*" Similarly, Junichi shared that "*there's a little bit more pressure sometimes to get that prototype out the door and there is also sometimes reliance more on the adult's ideas in industry and it takes some building of trust to be able to actually trust what kids are saying sometimes.*" Our participants illuminated how partners were sometimes no longer treated as equal partners and co-creators when additional stakeholders, such as industry collaborators who were the primary funders, were involved. Kofi raised personal doubts about industry collaborations, stating, "*I didn't feel it was kind of appropriate because we then would have facilitated that access to a group that the parents entrusted, and then we would use that trust to facilitate access for its industry and basically literally exploited children to make profit.*" Funding, while a practical requirement or enabler in many design projects, also raises challenges for inclusion in PD.

Participants recounted challenges navigating different stakeholder agendas, particularly those of funding bodies who were often more focused on tangible results rather than keeping PD open-ended. Jana recounted, "*for me it has always been more stressful to have industry partners.*" Jana continued, "*because industry is also expecting certain results that I'm not sure I know how to cater for when I am more interested in keeping things a bit open-ended.*" In a similar vein, Musa stated, "*I think it cost me a year of my life in terms of stress and to navigate all that because it was quite complicated with all the different agendas among the project partners...we had quite strict deliverables and milestones and things that we needed to develop.*" Participants felt stressed and constrained when additional stakeholders and funding bodies were involved in PD projects as it

led to greater expectations and a need for concrete design outputs, which may not be in line with what partners and communities envisioned.

Participants also made note of funding bodies' misconceptions of how PD should be conducted. For example, Bansuri reflected how funding partners' "*goals and your goals might be different. So, the partner's overarching goals might be to create this awesome product to make more money but then you find out your assumptions are all wrong because kids don't know what this means so your design is wrong.*" Bansuri continued, "*it's always a surprise for [industry partners] to realize that it takes more design sessions than like usability sessions.*" Likewise, Chen described one instance where the funder's design problem could not be validly addressed with PD: "*I told my colleagues and the funding body that this study will not produce any results because it's insane to think that [partners] will become happier as soon as you give them a [specific technology].*" Chen continued, "*we did the project, we got the money and sure enough, the study produced another result.*" Methodological misconceptions can also prove challenging to inclusion, as Jana discussed: "*there has been friction between us, as the design researchers from academia and the bigger industry partners who were also used to a certain way,*" like agile methodologies. Funder misconceptions of goals, design problems, and PD methods can oftentimes lead to their surprise or disappointment towards outcomes. It can also lead to exclusion or alienation if the objectives and intentions of funders, practitioners, and partners are clashing.

4.3.3 Tensions of Funding: Summary

Overall, our participants made explicit a core tension between the need for sustainable funding and the implications this may have on the inclusion of partners through the rigidity that may come with funding. Interviewees shared examples where partners' ideas were overlooked, concrete design outputs were prioritized, and PD goals and methods were misconceived. We expand our discussion of this "double-edged sword" of funding for PD in our Discussion section below.

5 DISCUSSION

Overall, our findings raised three challenges constraining practitioner efforts toward greater inclusion in PD: location, common ground, and funding. In this section, we synthesize the insights from our findings with prior literature. While aspects of the three challenges emphasized by our participants have been noted in prior studies, our abductive approach [16,80] affords opportunities to add to existing work both empirically and thematically, to reflect on new theoretical insights, and to consider implications for design.

5.1 From Location to Shared Spaces

Our findings clearly articulate that neither practitioners' nor partners' physical locations, nor a remote setting, are ideal spaces for fully including marginalized partners in PD. How then might we navigate this complex trilemma? We posit that powerful concepts in HCI and social computing may provide clarity to this question and illuminate additional challenges and opportunity spaces. One example that has been used previously within the context of PD is Muller and Druin's notion of "third space," described as an "in between" region taking place neither in users' domain or developers' that allows participants to combine their knowledge into new insights and plans for action [62,63]. "Third space" has underpinned other concepts such as Liaqat et al.'s "shared third space" for helping equalize immigrant grandparent and grandchildren contributions in storytelling and intergenerational PD [59]; and Bustamante Duarte et al.'s articulation of "safe

spaces" as environments promoting open communication, knowledge exchange, and beneficial engagements among all participants [15], developed in their PD work with young forced migrants. A lesser used, but also powerful concept is that of Donald Schön, known as "design worlds" [73]. Design worlds are holding environments for design knowledge whereby things, relations, and qualities reside. They are built, entered, and inhabited environments by and for designers while designing [18]. Hence, practitioners and partners inhabit disparate design worlds, and PD could be interpreted as a way of bringing together people from different design worlds and bridging worlds. Below, we explicate the potential of this concept to interpret the challenge of location.

Using design worlds as an interpretive lens allows us to illuminate the degree to which practitioners' and partners' physical locations are richly grounded design worlds that empower them—with resources and grounding—to design in unique and complementary ways. Perhaps one reason why current implementations of remote PD fall short is because they lack this rich sense of grounding. In order to make PD work in a remote environment, we need to grapple with its current sense of "worldlessness:" as participants like Kofi revealed, it differs from the grounded, embodied, material, and clearly delineated design world character of partner or practitioner physical spaces. While remote PD could help with the problem of access, if we do not grapple with what "world" it is and design it thoughtfully to be grounded and empowering, it can exacerbate, rather than ameliorate, issues of exclusion in PD.

A possible solution path for the problem of "worldlessness" is to grapple with how to instantiate shared spaces that adapt to include partners and practitioners regardless of location and initial differences. We imagine that in these shared spaces, partners and practitioners feel enabled and empowered to fully design, and can bring aspects of their identities, lived experiences, and worlds into the shared space. We respond to calls by Benton et al., who argue that PD must "support a design environment in which individuals feel comfortable and confident generating and sharing creative ideas alongside designers" [8], as well as calls by Robertson and Simonsen for design researchers to create situations, tools, and methods to enable full participation and sustainability of partnerships [67]. Similarly, Harrington et al. call for supporting marginalized people to engage on their own terms in a comfortable environment where individuals feel empowered rather than further marginalized [38]. Our early concept of shared spaces borrows elements of Muller and Druin's "third space" [62,63] and Liaqat's "shared third space" [59], such as their hybridity, neutrality, and not being "owned" by any reference field, and expands on it to further emphasize ownership, agency, and grounding empowerment of design partners. These shared spaces might enable further empowerment of partners to become design protagonists: here we are inspired by Chen's efforts to integrate critical design theory into PD, which echoes Iversen et al's [43] efforts to define a new role for young users as "protagonist" and critical designer of the technological systems in their everyday lives. This effort was tightly related to the construction of a shared space, involving youth as design process leaders in an urban planning project for a local municipal park wherein they traversed a practitioner-centric makerspace, their own partner-based classrooms, and their neighborhood park together [43].

Precisely how to instantiate shared spaces could be a fruitful issue for future inquiry. Here, we sketch out some ideas that were spurred by participants' comments. First, practitioners doing remote PD could consider where partners are joining from and try to ensure some stability in that respect. In their PD with children with ADHD, Cibrian et al. argue that one aspect of inclusion is creating processes and environments for children who process the world differently to be successful [17]. There may be a need for clearer guidelines on what can and cannot be recorded,

especially when working alongside minors and marginalized people. Another implication might be the need for more facilitators to manage backchannel coordination and document sessions adequately to accurately represent partner's experiences. Lastly, stakeholders could collectively agree upon a location that is not only accessible to all, but also work to construct a shared space that enables and empowers partners to fully design and reflects project goals sufficiently; here, DPD might be framed not just as a method to counter problems of physical access, but as a new opportunity to co-construct a shared space that could integrate the best aspects of practitioners' and partners' design worlds.

Overall, we argue that location is about more than access—it is about instantiating a shared space where partners feel empowered and enabled to fully design. Choosing a location to enact PD activities is not as simple as deciding between a university lab versus a primary school or physical versus remote location, but is much more nuanced, complex, and largely depends on the purpose and goals of the team. We used concepts such as design worlds [73] and third space [63] to help us reveal where PD is situated is not simply a question of choosing the setting most accessible by partners, which may be their location or remote by default. Rather, it is also a question of instantiating a shared space that makes partners feel included, self-empowered, comfortable, and supported in their design and decision-making.

5.2 The Multifacetedness of Common Ground

The dominant strain of prior work has articulated how common ground gaps exist between PD practitioners and partners. Our findings confirm this gap is indeed an important area of common ground breakdowns that must be surmounted, and add depth by expanding the range of empirical evidence to include first-hand practitioner accounts. Importantly, we also make explicit and extend two underexplored dimensions of common ground including the gaps among practitioners, and among partners, which we found may be more pronounced as we attempt to push towards more inclusive PD. In doing so, we add nuance to the challenge of common ground.

Building further on Chen's comments about the emphasis of politics in certain PD traditions, the gap between traditions that are more focused on improving the design of products—such as North American traditions of PD—and traditions that emphasize higher levels of engagement with issues of politics and power—as in Scandinavian traditions of PD [7,82]—may be more pronounced and critical to engage with as more and more practitioners design across novel contexts and constellations of users [36]. We argue that when designing with individuals who have been historically and systematically marginalized, issues of power may be more salient, and leaving assumptions about the need to design a "thing" unchallenged may do more harm than good [20,38,42,56,64,77]. PD's underlying ideals of democratizing and decolonizing design cut across its multiplicity of traditions and implementations.

Some implications of the multifacetedness of the challenge of common ground might include the need for interventions that may go against the ethos of equal PD (e.g. strategic positioning of individuals within the space [79]; design probes common in projects where users are subjects rather than partners [10,46,71]); acknowledgment of the knowledge and expertise that partners and practitioners bring to the table; putting aside unnecessary jargon; as well as more flexibility and willingness to improvise [57,76] in the face of unforeseen circumstances arising from the diversity of backgrounds among partners and practitioners. We envision the co-creation of common ground "kits" containing keywords, etiquette, or symbols fundamental to the design context, or possibly a crowdsourced database of concrete techniques for being more inclusive in PD practice. How to help foster common ground between and among PD practitioners and partners remains an open question, but by conceptualizing it along our three dimensions we

reveal opportunities for PD and are better positioned to understand its complexities. Examining the challenge of common ground through these dimensions is a fruitful area for further discussion.

5.3 Tensions Between Sustainable Funding and Open-Ended PD

Our findings echo a common need for funding to effectively engage PD projects and partners across academia and industry [27,41]. Our participants' comments help illuminate how the need for sustainable funding in PD is a proxy for enabling and supporting the formation of trusted relationships, a shared vision among PD practitioners and partners, as well as infrastructures and venues for future democratic dialogue [56]. A lack of funding is especially challenging for long-term engagements with activist agendas, which are common in PD [11,45]. This can also prevent access to communities and the facilitation of their participation.

Notably, our practitioners' first-hand accounts also provide confirmatory evidence for funding issues raised in prior work [21,39], particularly around the tension between the "projectizing" that often comes with funding and the open-ended nature of PD work. For example, Quintana and Frauenberger discussed how learning scientists needed to "projectize" a grant/project into a set of design requirements that did not translate well to open-ended, partner-driven PD [21]. Similarly, in an EU-funded partnership, Holdgaard and Yndigegn discuss how funders structured the inclusion of citizen partners. This in turn made the design process top-down as opposed to its ideals of open, inviting, and equal co-design [39]. They argue this close-ended "projecting" stands in contrast to open-ended "thinging," discussed by Ehn and his colleagues, whereby partner roles are not fixed but rather negotiated throughout PD [24].

Similarly, our interview participants pointed to instances where funders dictated the direction of a PD project, thereby minimizing practitioners' and design partners' agency in deciding project trajectory. Calian shared how an industry partner overlooked children's' ideas because that partner already came in with preconceived ideas of what they wanted the end product to look like, despite it being intended for children. In this example, children's' roles reflected those of informants rather than partners in PD [22]. This echoes Holdgaard and Yndigegn's sentiments, who question whether a project can still be defined as PD if the funding regime marginalizes the project's PD agenda [39]. Bansuri also shed light on the oftentimes "practical" side of PD, whereby industry's overarching goals are to obtain a set of design requirements rather than a better understanding of how children learn or how to help children participate more fully. Funders and funding bodies can sometimes have a different understanding of PD than practitioners or partners that, when coupled with unexpected or non-confirmatory results, can lead to disappointment and even alienation or exclusion. Navigating these tensions, we argue, can be especially challenging for partners who may be perceived as having less "power," as it is even less likely that their voices would be able to push back against the "projectizing" of design.

Overall, our findings make explicit the tension between the need for sustainable funding in PD (and the potential of industry or government funding to supplement this) and the "projectizing" [21] of what should be an open-ended process. It is important to note that while we discuss these challenges individually, they are interrelated and interact with each other in ways that impact our efforts to develop more inclusive PD partnerships. These challenges are also magnified in the context of PD with diverse communities. For example, external funding sources may not only foreground their design goals and outcomes [11,27,45], they may also inadvertently influence who is compensated for participating, and how. Similarly, a "sustainable funding" source may raise questions about how trust and relationships are developing. Alternatively, it may exacerbate concerns that a relationship is built on misplaced incentives and a mismatch regarding goals.

A design implication for these complex funding challenges is the need for funding regimes that understand and prioritize PD and research projects and engagements, with a particular emphasis on projects that center diverse voices. Our findings echo calls by Erete et al. who suggest the need for long-term community partnerships, which would ideally lead to joint grant applications and revised funding models [25]. The tensions also underscore the importance of clarifying individual agendas, goals, and methodological expectations in the early stages of PD.

5.4 Limitations and Future Work

There are a few limitations of our work relating to the generalizability or transferability of our findings and selection of our participants. First, we acknowledge that while our participants overall had collaborated with diverse communities, including children, individuals with disabilities, lower income groups, and ethnically diverse individuals, all participants either deeply engage or have engaged primarily with youth as design partners. We did not purposefully sample for practitioners who work with marginalized youth, so our conclusions are not a priori aimed at illuminating challenges to inclusion of this specific community. Yet, it will be useful for future work to explicitly explore the generalizability or transferability of our findings to PD with other communities beyond marginalized youth.

We believe that PD practitioners aiming to be more inclusive will find our analysis of three challenges helpful for their work, although some findings may be more generalizable or transferable than others (and are by no means exhaustive of challenges that exist currently and may exist in the future). For example, we imagine the possibility of common ground challenges among partners manifesting in any context, irrespective of whether it is a predominantly marginalized youth or adult context. On the other hand, common ground challenges between practitioners and partners might be less pronounced in certain scenarios such as PD with adults, and more pronounced when adding the dimension of youth. For example, our findings are consistent with previous work [35,83] that has documented how children can often be possessive of their own ideas; it is an open question whether/how this also plays out with other partners. Regarding challenges partners face in going to practitioners' locations, some issues that we might think are only true of marginalized children, such as transportation and access issues [82], are also common in other communities as well, such as older adults [23], adults with physical limitations [1,2], and socioeconomically disadvantaged adults who may rely on public transportation or balancing difficult work schedules in order to participate in PD.

While many of our participants were racial and ethnic minorities, we acknowledge that most of our participants reside in regions in the Global North that are more educated, industrialized, rich, and democratic than the average global population [60,78]. Most of our participants have also received graduate degrees and, thus, come from an already privileged standpoint. As experts with at least 5 years of experience with PD, these were also likely individuals with stable employment and power with which to engage in PD. One of our eligibility criteria were that participants be English-speaking to ensure as accurate comprehension and representation of their lived experience. We acknowledge that this language constraint could preclude participants whose first or second language is not English or may not be comfortable being interviewed in English. Future work will strive for geographic breadth [7,60] by broadening recruitment to regions in the Global South, and to other regions where English is not the de facto *lingua franca*. We are also interested in interviewing practitioners who do not have graduate degrees or have pursued alternative paths to becoming PD practitioners, partners with experience in PD, and non-users who are unfamiliar with PD generally, with the caveat that the work must be planned and

conducted carefully so as to not overburden them [47,68]. This could also include students or those who are newer to PD who may struggle with the identified challenges most.

Lastly, we do not claim to uncover root causes to inclusion challenges in PD, nor do we claim that our findings vis-à-vis each challenge are comprehensive. Inclusion in PD is more complex than many practitioners imagine initially, especially with communities and individuals who have been historically marginalized and/or underrepresented as partners. However, the three challenges that arose from our analysis were the most salient to our participants, and also enabled us to deepen our understanding of the dimensionality and complexities of seemingly static (and perhaps even mundane) PD and larger design research issues like funding.

6 CONCLUSION

In this paper, we elucidated a number of challenges to inclusion in PD using an interview-based approach with expert PD practitioners based in the Global North. Through informed grounded theory [16,80], we shed light on three of the most salient challenges to inclusion in PD that arose from our data analysis: location, common ground, and funding. We contributed theoretical and empirical insights into these challenges, in addition to design implications. First, we empirically complemented prior case study observations of the complexities of location with synthesized practitioners' first-hand accounts; we also used theoretical concepts from HCI including "design worlds" [73] and "third space" [63] as analytical lenses to highlight how the location where PD takes place is not just a question of access, but also a matter of instantiating a shared space where partners are fully supported in their design and decision-making. We also revealed deeper issues to DPD beyond previously known sociotechnical issues by advancing the perspective that remote PD is "worldless." Second, we described how common ground issues not only manifest between PD practitioners and partners, but also among practitioners and among partners, in ways that may be more pronounced as we attempt to push towards more inclusive PD. Third, we made explicit the tension between the need for sustainable funding and the diminished role of partners in what is otherwise supposed to be an open-ended process. We also added to the theorized idea of "projectizing" [21,39] through our first-hand practitioner accounts. We hope this paper sparks further conversation on inclusive PD practices. We also hope to see improvements to current practices or solutions be ideated and implemented to address these challenges and the numerous other challenges that exist.

ACKNOWLEDGMENTS

We thank the PD practitioners who volunteered their time to share their experiences. We would also like to thank Dr. Tammy Clegg, Dr. Amanda Lazar, Dr. Jessica Vitak, and CSCW reviewers for their valuable feedback on our paper.

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Received January 2022; revised July 2022; accepted November 2022.