Peerdea: Co-Designing a Peer Support Platform with Creative Entrepreneurs

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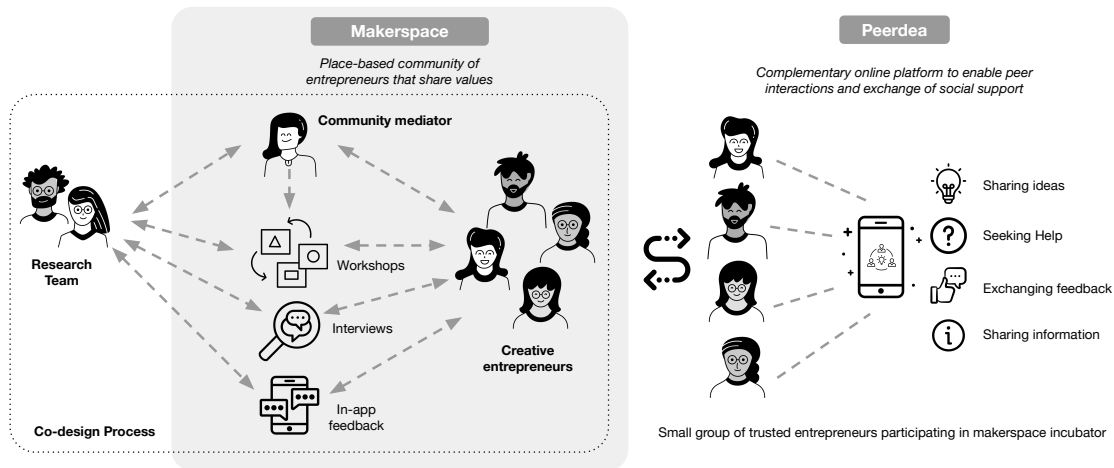
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Fig. 1. In this paper, we describe our partnership with a local feminist makerspace throughout a three and a half year (Feb 2020 to July 2023) collaboration to co-design a peer support platform, Peerdea, with 46 creative entrepreneurs.

Creative entrepreneurs join makerspaces to build relationships with vetted and trustful peers over time. Yet, as makerspaces increasingly use social technologies to connect members online, such technological adoption is often incongruent with the unique needs of creative entrepreneurs such as safeguarding their reputation and intellectual property. In this paper, we describe a multi-year partnership with a local feminist makerspace to build a social platform, called Peerdea, which centered creative entrepreneurs' needs such that online feedback and information exchange, and goal setting and accountability were more readily available to them. Through an iterative, community-collaborative approach with 46 creative entrepreneurs, we report on the kinds of peer support entrepreneurs sought on Peerdea such as feedback on in-progress and unpolished work. We argue that by aligning the platform's design with the makerspace's community of practice, Peerdea leveraged the relationship and trust building which occurs more readily in-person

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for entrepreneurs. In addition, we highlight the role of a community mediator who actively managed the relationships between researchers and entrepreneurs, surfaced failures and championed successes, and overall provided a critical link for co-design when participants' livelihoods were implicated.

Additional Key Words and Phrases: entrepreneurship, peer support, makerspace, community-based research, participatory design, creative economy, future of work

1 INTRODUCTION

In search of supportive networks, creative entrepreneurs often join place-based communities (e.g., makerspaces) to find like-minded and nearby entrepreneurs [45]. Whether these individuals recently started their businesses or have been sole proprietors for some time, creative entrepreneurs—individuals who commercialize their open-ended work [1] — leverage social support to learn new skills, navigate job insecurity and sole liability, and maintain their overall well-being in isolated working conditions [72]. In-person support networks, in particular, provide important opportunities for entrepreneurs to build trustworthy relationships overtime [2, 43]. Such vetted and trustworthy support is especially important for creative entrepreneurs who must constantly safeguard their creative process and intellectual property in order to protect their livelihoods [50].

However, makerspaces—like many other place-based communities—increasingly use social technologies to supplement or stand in for in-person activities such as social media platforms and online communities [5, 36, 45, 66]. While this opens up opportunities for continued community building online (e.g., when members cannot attend due to busy schedules, personal priorities, or even lockdowns), such technological adoption is incongruent with the unique needs of creative entrepreneurs for two key reasons. First, social relationships between creative entrepreneurs are often "cooptetive"—exhibiting a combination of cooperative and competitive behaviors [57]. It can be harder to parse intention and competency online [26], and creative entrepreneurs may limit the kinds of advice they ask for and give to peers [56]. Second, central to the success of creative entrepreneurship is an effective creative process: brainstorming, sharing, getting feedback [48]. Social technologies prioritize engagement and reach, and there are heightened pressures for creative entrepreneurs to carefully present themselves online, share polished work, and constantly protect their work from being used without permission or attribution (an unfortunately frequent occurrence) [50]. Taken together, the adoption of existing social technologies among makerspaces neglects the unique needs of creative entrepreneurs who want to engage online with trusted peers but who are unable to confront the overhead involved in cultivating dependable communities that may allow such interactions and developing alternate technologies.

Therefore, in this paper we describe our partnership with a local feminist makerspace, called Prototype, on a three and a half year collaboration (Feb 2020 to July 2023) to develop a social support platform with its creative entrepreneurs throughout the annual incubator program. Following a tradition of feminist makerspaces [31], Prototype unites individuals who share values of racial and gender equity in business and technology; Prototype's ethos is that "everything is a prototype and iteration is critical to success." With Prototype leadership and members, we took up a community-based collaborative design approach [34] to develop a platform called Peerdea ("Peer" and "Idea"). Peerdea

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[1]In this paper, we define creative entrepreneurship broadly and with the help of our community partner Prototype to include various kinds of open-ended work such as poetry publishing, fine dressmaking, body-inclusive yoga services, local plastic recycling, creative writing, gardening, composting services, queer-affirming massage therapy, coffee roasting. See the Methods section for more details.

seeks to scaffold asynchronous and online peer support including peer feedback and information exchange, goal setting and accountability, and general encouragement—all of which occurs within small groups of entrepreneurs (i.e., cohorts of entrepreneurs participating in Prototype's annual incubator, See Figure 1). Importantly, the platform leverages the relationship and trust building which occurs more readily during in-person gatherings among entrepreneurs [43, 44], such as incubator workshops and co-working hours within the makerspace. Yet, when Prototype's entrepreneurs are unable to make it to Prototype, the goal is for Peerdea to provide an online platform for productive and encouraging peer support and a dedicated space where entrepreneurs can share, track, and archive their ideas, get feedback, and encourage each other's creative and business success.

In doing this work, we aimed to address three key research questions. First, how might a software platform provide peer support which leverages—and, in turn, supplements—the in-person relationship and trust building which occurs within a shared community space? Second, when a platform centers the relationship and trust building which occur more readily in person among entrepreneurs, what kinds of peer support may be achievable online among entrepreneurs? Because centering trust within the designed artifact requires centering trust within the design approach [34, 58], our third research question is: what kinds of relationship building between researchers and community members are required in order to facilitate software co-design?

In this paper, we present our findings on how the community of creative entrepreneurs assembled around the platform, how they accessed participation, and how use of the platform influenced their creative practice. To do so, our study involved data collection across several research activities: (1) platform development with community stakeholders (deploying and iterating with 37 creative entrepreneurs and nine members of Prototype's leadership throughout four rounds of the annual incubator), (2) platform usage (entrepreneurs sharing product ideas and goals with their peers in a small, private group, asking questions, providing encouragement and accountability), and (3) in-person and remote workshops (for platform set up, maintenance, and feedback alongside relationship building between researchers and entrepreneurs), semi-structured interviews, and a diary study. By triangulating these data, we found that rather than attempting to replace place-based communities with sociotechnical intervention—a common pitfall of sociotechnical design in entrepreneurship [19]— it was crucial to align Peerdea's design with Prototype's in-person community of practice [87] in order to strengthen peer support generally. In this way, we situate Peerdea as synergistic, bolstering online and offline peer support to go *beyond being there* [40], while emphasizing that being *there* is important, too. In addition, we detail the kinds of support creative entrepreneurs sought when trust was centered in platform design, such as the desire to share in-progress and unpolished work. We also report on how Peerdea failed to enable other kinds of peer support such as timely responses: small groups of entrepreneurs meant fewer people to respond and sometimes stalling lags.

Taken together, this paper makes the three contributions. First, this paper contributes a set of empirical insights that arose from entrepreneurs' experiences with Peerdea such as how entrepreneurs asked for feedback on their products and services, set goals and held each other accountable, and provided support more generally. We argue that to make social technologies more available to creative entrepreneurs does not require large-scale innovation, but instead can focus on small changes to existing interaction paradigms. Second, building on community-based participatory methodologies, we highlight the importance of a community mediator who both challenged and championed trust building between researchers and participants. Third, this paper contributes details of an approach to community-based collaborative design in computing which prioritized amplifying an existing community of practice.

2 RELATED WORK

In this paper, we draw on three bodies of scholarship: the opportunities and risks of creative entrepreneurship, online and offline forms of social support among creative entrepreneurs such as social media platforms and feminist makerspaces, respectively, and communities of practice as a framework to anchor technological intervention.

2.1 Creative Entrepreneurship

Creative entrepreneurs—individuals with commercial intent who are engaged in open-ended work [22, 64]—are a source of transformative change in society. They create new avenues for engaging in personally meaningful work [14], which can lead to new products and services, new models of business, and positive societal impact. Creative entrepreneurship covers a broad spectrum of individuals engaged in creative making across domains such as design, arts, and media who attempt to commercialize their products and services. This includes creators with diverse backgrounds, engaged in endeavors as diverse as selling personalized, hand-made goods on online marketplaces or providing local services or recreational experiences. For many people, creative entrepreneurship can be a pathway out of dead-end jobs [67], or unemployment [44, 48], illustrated in part by the spike in the creator economy during the COVID-19 pandemic [27].

2.1.1 Legal and Reputational Risks in Creative Entrepreneurship. As with most forms of independent work, there are many risks in creative entrepreneurship [88]. In this paper, we focus on two threats to entrepreneurs' livelihoods: intellectual property infringement and reputational damage. First, creative entrepreneurs must constantly protect their work from companies and other entrepreneurs who may use their ideas without permission or attribution, an unfortunately frequent occurrence [79–81]. While online tools provide cost-effective ways to promote and sell work, these tools can also further expose creative entrepreneurs to cases of intellectual property infringement [50]. For instance, the Etsy 2021 Transparency Report stated that 1.1 million items for sale were removed from the platform due to the intellectual property infringement [27]. Often, there is little accountability for such infringement and lack of attribution because of the lack of legal clarity of ownership in creative industries [17]. This is especially troubling as such copyright concerns are projected to grow rapidly alongside recent deployments of generative AI systems such as Midjourney [85]. In addition to intellectual property concerns, creative entrepreneurs must also safeguard their reputation. This is particularly pertinent for creative entrepreneurs, who attempt to share their in-progress work online to receive feedback, gain inspiration, and build a creative community [49, 50]. However, by sharing unpolished work, creative entrepreneurs risk being perceived as unprofessional or inadequate [49]. Taken together, the need to safeguard intellectual property and reputation must be taken into account when considering social support among entrepreneurs [57]. In this paper, we center these risks to livelihood by partnering with a feminist makerspace with a long-standing reputation for supporting equity, integrity, and creativity among local creative entrepreneurs.

2.2 Social Support and Trust Building among Creative Entrepreneurs

To combat and protect against such risks, creative entrepreneurs seek out social support among peers, friends, family, local and online communities and more. It is from these social resources that creative entrepreneurs get access to critical information [37, 38], business opportunities [74], and mentorship—all of which provide entrepreneurs with advice, feedback, and expanded network relations which can further promote entrepreneurial skill and self-efficacy development [75]. Moreover, entrepreneurs can use the reputation of their networks and contacts to attract potential investors and employees [71, 76]. For creative entrepreneurs, networks not only provide much needed social capital and support, but also opportunities to bolster creative practices through collective ideation and collaboration [57].

2.2.1   Feminist Makerspaces and Technological Mediation. In this paper, we are particularly interested in how makerspaces have assumed special importance as environments that can provide some of the social resources essential for creative entrepreneurial success [11, 31, 45]. Research has shown how interactions among makerspace members, catalyzed by supportive environments of makerspaces, can support entrepreneurial skill and self-efficacy development [45]. This apprentice-like model, building on a framework of communities of practice [87], enacted through in-person interactions, supports professional development in ways that are more approachable than formal mentorships [75] while also being more authentic and experiential than alternatives such as online courses [45]. Feminist makerspaces, in particular, provide spaces intended to diversify participation in making, entrepreneurship, and technology production by dismantling oppressive structures across business and technology [10, 31, 68]. Using "feminism as a framing", feminist makerspaces make salient the techno-heroism—or the idea that most societal problems can benefit from or be solved through technological intervention [18]—which is rampant in maker culture [31]. A feminist perspective uniquely engages members in conversations about how making, business, and tech could be reimagined by centering the lived experiences of those served, and prioritizing alternative sites of knowledge production which exist outside of institutional hegemony [3]. In doing so, the role of technological intervention within makerspaces can be challenged and reframed. For instance, Hedditch and Vyas leveraged the Design Justice framework proposed by scholar Sasha Costanza-Chock and the Design Justice Network [16] in order to facilitate the codesign of a platform for makerspace members—who were primarily women refugees and migrants—during the pandemic lockdowns in Australia [36]. Through centering safety and care, their intersectional approach to codesign resulted in a platform which facilitated makerspace members to watch videos to learn how to use certain technologies, how to make products from home, and more, all the while improving their English and IT literacy [36].

We take up this body of scholarship to therefore reimagine configurations of online and offline social support, specifically for creative entrepreneurs; a key group in feminist makerspaces. Such an extension is critical because, as described in the next section, it is unclear how to construct configurations of online and offline social support for creative entrepreneurs such that the value of social networks remains in alignment with the trust building, learning, mentorship, and professional development which makes feminist makerspaces so desirable in the first place [50].

2.2.2   Existing Social Technologies Inadequately Address Creative Entrepreneurs' Needs. Human-computer interaction (HCI) scholars have detailed how commercially-available social technologies are used by creatives to meet other like-minded individuals [8, 13, 52, 90], learn new skills [65, 86], share best practices [65], develop professional status and reputation [65], receive design feedback on finished products [13, 33, 60], find mentorship and help [8, 25, 42, 45], or even to raise funds [4, 46]. However, these large-scale communities comprising predominantly-virtual relationships between peers are often deficient in trust [61], reciprocity and shared context [50], thus limiting the kinds of support they creative entrepreneurs ask for and provide to peers [56]. For creative entrepreneurs, developing trust in an online setting can often be more difficult than face-to-face given the risk posed to safeguarding both their livelihood and creative processes [6, 47, 89]. This is because the conditions which produce trust among entrepreneurs—shared values, goals, and risks, and open communication and transparency [72]—are difficult to develop and maintain online for creative entrepreneurs [1]. Recent HCI scholarship has detailed how for entrepreneurs from "lean economies"—economies where citizens deploy resourceful tactics to address their needs with fewer resources [19]—such technologies may be unappealing, unavailable, or perhaps even harmful to use when operating a business [2, 19, 20, 43, 44, 51]. Avle et al. discuss how entrepreneurs in Detroit, United States and Accra, Ghana preferred leveraging in-person networks of individuals who were known, vetted, and trusted in order to establish and maintain technology use for their business [2].

Such trust was especially critical because, as Hui et al. describe, entrepreneurs from lean economies often pursue entrepreneurship not out of choice but out of economic necessity [44]. Through a partnership with a local feminist makerspace, we argue that the commercially available social technologies which are often used by makerspaces [45] neglect the needs of creative entrepreneurs–specifically their needs for ease of sharing alongside safeguarding their intellectual property and creative reputation [50]. Further, we build on this work to show that, if social technologies take seriously the unique needs of creative entrepreneurs, it may be possible to design a platform which leverages unique configurations of online and offline support to marry the benefits of both.

2.3 Anchoring Platform Development through Communities of Practice Framework

When considering a conceptual framework to guide the development of a social technology with creative entrepreneurs, we note the importance of approaching technological innovation with a critical perspective to avoid overly technological outcomes [16]. We therefore utilize the pedagogical framework of "Communities of Practice" and view makerspaces through this lens as groups who share common interests and partake in social exchanges to pursue learning and skill development [78, 87]. We take up this conceptual framework as a lens for considering how technological intervention may strengthen rather than harm Prototype's community of practice. For instance, Schwen and Hara's analyzed four case studies where communities of practice attempted to implement social technologies and other forms of technological mediation between members [70]. The authors found that developers tended to overemphasize the role technological mediation should play within the communities of practice, and that the strongest communities of practice used social technologies the least as to encourage other forms of relationship building offline (but note, they did not altogether reject the role technology within communities of practice, and nor do others familiar with the topic). Ultimately, Schwen and Hara argued that, when considering the role of technology in communities of practice, "participatory decision making is the only ethical stance possible in this social theory context" [70], because the community's intention was central to goal setting and evaluation of social technologies. Therefore, the final body of scholarship which we synthesize is design methodologies which may align best with fostering equitable participation in design.

2.3.1 Community-Based Approaches to Software Development. Given the need to center trust in sociotechnical design with creative entrepreneurs, we consider design methodologies which prioritize trust and relationship building. To do so, we draw on scholarship which seeks to address power imbalances in design practices [34, 84], increases transparency to participants of researcher intentions and research methodologies [30, 58], and fosters long-standing and mutually beneficial research collaborations [34, 73, 77]. For instance, in their recent account, Harrington et al. disambiguate participatory design—derived from efforts to democratize the design of workplace technologies— from *community-based* participatory design, where participants are from local community settings which have been historically marginalized [34]. To facilitate more effective trust building in community-based participatory design, Harrington et al. suggest researchers consider the context and history of the research setting such as the historical relationship between researchers' institution and community site [34]. To further support trust building among researchers and participants, researchers can reciprocally disclose information about themselves to participants, as participants are asked to do in study designs [31], and recognize forms of knowledge production beyond academic and formal knowledge sites [84]. In addition, to be successful, community-collaborative approaches to computing research must adhere to equitable partnerships at ever stage of a design process (including problem articulation and data analyses, two research steps where are often done by researchers without community input [15]. By taking into account community perspectives, lived experiences, and tacit knowledge as legitimate within a research cycle, participants can
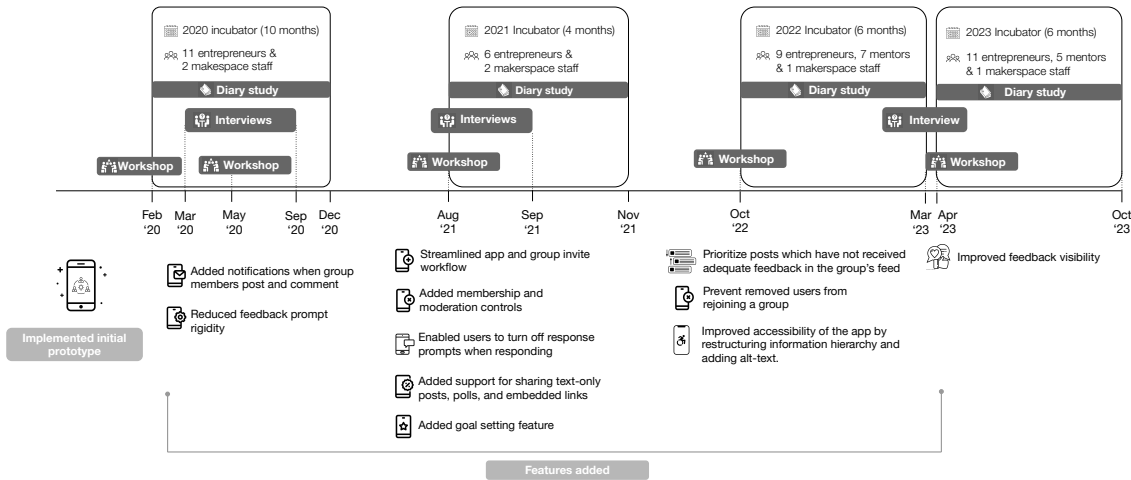
Fig. 2. Timeline of Peerdea's co-design process with 46 creative entrepreneurs and mentors, specifically highlighting when workshops, interviews, incubators, and feature implementations occurred. Note that there were repeat users across years as entrepreneurs transitioned in mentorship and makerspace leadership roles.

more readily see their voice reflected within a research collaboration; ultimately, this can reaffirm to communities that researchers' actions are in fact aligned with the intentions they stated early on. We take up these calls and build on this body of work by providing methodological details of trust and relationship building between entrepreneurs, and research and entrepreneurs, at every step of a co-design process to design, build, and deploy a peer support platform with our community partner.

3   METHODS

3.1   Our Community Partner, Prototype

Our community partner was Prototype, a feminist makerspace located in the city of Pittsburgh, PA. Founded in 2016, Prototype's mission is to build gender and racial equity in creative entrepreneurship by "providing affordable access to high tech tools and equipment, offering workshops that prioritize the experiences of marginalized communities, and cultivating a professional support network." Prototype's ethos is that "everything is a prototype" and feedback and iteration are critical to success, especially early on in a design process. The first author and lead developer of Peerdea was a member at the makerspace for one year prior to the collaboration. This provided the basis of a trusting relationship between the research team and makerspace leadership, as she acquired a deeper historical understanding of the space and those whom the space was dedicated to serve [34].

3.1.1   Prototype's Incubator. Prototype offers a six-month long incubator to emerging businesses led by women, people of color, people with marginalized gender identities, and low-income individuals. This incubator started as a year-long program but Prototype founders learned that entrepreneurs preferred a six-month commitment. Over the course of the last five years, the Prototype incubator has served over 40 entrepreneurs with makerspace mentorship and monthly workshops on topics such as legal entity formation, marketing, financial planning, business pitch development, and goal setting; typically one workshop per month. (Note: not all participating entrepreneurs used Peerdea). More recently,

Prototype incorporated a mentorship program within the incubator, where previously incubated entrepreneurs act as role models. Upon successful completion of the program, incubated companies deliver a business pitch to the local community and are provided with a $500 honorarium.

3.2 Participants

We worked with entrepreneurs throughout four annual incubators hosted by Prototype. The first incubator ran Feb 2020-Dec 2020 (10 months); the second incubator ran August 2021-Dec 2021 (4 months); the third incubator ran from Oct 2022 to Mar 2023 (6 months); the fourth incubator runs from April 2023-Oct 2023 (6 months)—we report on data until the time of this submission: mid July 2023; see Figure 2. In total, there were 46 creative entrepreneurs who were Peerdea users: 37 creative entrepreneurs who participated in the incubator and used Peerdea throughout these four incubators (11 in 2020, 6 in 2021, 9 in 2022, 11 in 2023), and nine support staff and mentors joined who Peerdea groups. (Note there were repeat users across the years, as some who participated in the incubator became mentors or staff in following years; not all entrepreneurs who participated in the incubator used Peerdea). The domains of creative entrepreneurs were varied as Prototype does not limit participation in its incubator to certain kinds of making or creative work. We note it is particularly important to share definitional authority for words like "creative", "design", and "maker" [62], as these words have historically been used in narrow ways which exclude non-traditional forms of knowledge [84]. Entrepreneurs who partook in the incubator created products, services, or both: inclusive beauty products and children's toys, cooking spices, fine dressmaking, creative writing, herbal products, poetry publishing, founding an open-source machine shop, founding a technical support program for women, body-inclusive yoga, local recycling program, gardening and plants, composting service, queer-affirming massage therapy, coffee roasting, and more. The demographics of the entrepreneurs participating in the incubator reflected the underrepresented groups Prototype intended to support: those with underrepresented identities in entrepreneurs due to their gender (women and non-binary individuals), race (Black, brown, white), age (18 to over 55), and sexual orientation (queer and straight). In addition, entrepreneurs' companies ranged in maturity from newly minted and getting organized, to five years old and seeking scale and stability.

3.3 Workshops

Before the first incubator began in 2020, we conducted a series of design workshops with 26 creative entrepreneurs at Prototype in order to begin to build rapport with makerspace members and leadership and learn how entrepreneurs built supportive networks within Prototype. Insights from this design workshop series (described in [Anonymous]), informed the design of the initial Peerdea prototype (See Figure 2). With the first round of incubated companies in 2020, we conducted two group workshops. All members of the incubator were encouraged to attend; 11 entrepreneurs attended for the first workshop, and eight entrepreneurs attended the second workshop. In 2021, we hosted one group workshop at the beginning of the incubator (six entrepreneurs attended), and in 2022 and 2023 we co-hosted a workshop one month after the incubator began with another of Prototype's workshop leaders focused on marketing (with seven and eight attendees, respectively). The shift in how Peerdea was introduced with other activities throughout the workshop reflected Prototype's and the research team's constant iteration for more seamless integration of the platform within the makerspace's program. The first workshop in the incubators served a means to (1) introduce Peerdea and make connections between the Peerdea platform and the incubator, such as discussing how Peerdea extended the overall ethos of the makerspace that "everything is a prototype" and (2) lay the initial ground work to carry out the co-design

process throughout the rest of the year. Because of the emphasis on building connections between research team and makerspace, the research team was present at the first workshop for the incubators (the first author was present at all workshops and the remaining research team members who attended shifted over time based on schedules). All in-person workshops provided childcare and food, organized by both the research team and makerspace. See Figure 2 for an overview of when workshops occurred throughout the four incubators.

3.4 Semi-Structured Interviews and Diary Study

During the 2020 incubator, we conducted seven one-on-one interviews (throughout the months of March, April, May, June, September) with participants to understand the more detailed individual experience of using Peerdea, and how it might be improved. During the remaining incubators, we conducted four one-on-one interviews with participants. In both years, interviews were optional for entrepreneurs and makerspace leadership and those who participated were interested in being more involved in the process of designing Peerdea. The decreased frequency in interviews across the three and a half year collaboration further reflects how Prototype's leadership implemented entrepreneurs' requests to better integrate Peerdea within the incubator's core activities and reduce the requests for external tasks. In total, we interviewed seven entrepreneurs in the 2020 incubator, three entrepreneurs in the 2021 incubator, and one entrepreneur in 2023.

Paper journals were provided to users directly during the first workshop. Entrepreneurs were instructed to use the journals as worked best for them: to take notes during the other workshops in the incubator, to describe their use (and non-use) of Peerdea, as well as provide an alternative to Peerdea if technological mediation was undesirable [43]. During interviews, entrepreneurs would refer to their journals for notes taken weeks or months prior. Together, this enabled us to learn about essential aspects of Peerdea use and appropriation not captured in log data. For example, diaries and interviews allowed us to understand moments when a user considered asking or giving feedback, but then decided against it (a critical moment of non-use that log data would not capture). See Figure 2 for an overview of when interviews occurred throughout the four incubators.

3.4.1 Interview and Diary Prompts. For the diary prompts (which were printed in the first couple pages of the provided journals), we primarily asked questions about how users experienced posting in Peerdea such as: Can you recount for us the last time you shared a post to your group? What did you expect to happen after you posted? What feedback did you receive? Do you plan to keep your creations the same? In addition, interview and diary prompts included questions about how users experienced giving feedback: Have you responded to someone else in your group? What kind of feedback did you offer? How did it feel to offer support? The interviews enabled more free-flowing discussions around how the incubator was going, whether or not entrepreneurs felt connected to their cohort, and how this progressed over time. Finally, interview and diary prompts also included questions for how we might be able to improve Peerdea by addressing bug as well as including new features: Have there been things you'd like to do on Peerdea that are currently difficult to accomplish? At the end of the incubator, we asked participants to share any journal entries with us but this was emphasized to be highly optional (three entrepreneurs did so in total).

3.4.2 Response to COVID-19. The COVID-19 pandemic heavily impacted the creative entrepreneurs whom we worked with. Entrepreneurs and small business owners who were less established were some of the hardest hit by the pandemic as legislation for government support required various tax and legal information which many novice entrepreneurs did not have prepared [29]. For immediate support, we reemphasized to the entrepreneurs that our research team

could provide other types of assistance alongside Peerdea, such as technical assistance. We also doubled participant compensation from ($10/hour to $20/hour) for interviews and workshop participation.

3.5   Data Collection and Analysis

We collected the following log data on Peerdea for data analysis: posts' contents (author, poll options, media, caption, links), the text-based responses to posts alongside feedback authors, the number of "hearts" a post received, and the timestamp of all posts and comments. During interviews and workshops, the research team captured audio recordings and took field notes. All recordings were transcribed via an automated service (Temi.com) and reviewed for errors and typos by hand. We analyzed these data through a process of open coding to identify initial themes across the workshops. After the conclusion of the first incubator, the first three authors engaged in affinity diagramming [59] over the course of three weeks (which was done remotely because of lockdowns via Mural.com), where the first and second authors reviewed each transcript from the first incubator and marked sections that informed and extended this paper's motivations. Together, three authors formed clusters around key themes. Four authors repeatedly met to iteratively refine a set of analytic memos which expanded on themes emergent across our data [12]. For the log data, two authors—including the founder of Prototype—independently coded all of posts throughout the first three incubators, where the codes focused on identifying the type of post. Examples of these initial codes included: "request for feedback on work", "introducing business or self to group", "general encouragement", "mobilizing or gathering", "conducting customer research", and "announcing monthly goal". From these detailed initial codes, two authors met to review a majority subset of posts to review codes.

3.6   Overview of Software Co-Design Process

We provide details of our approach to software co-design. First, to communicate malleability of the prototype and increase chances for critical feedback, Peerdea initially had a limited feature set with a simple user interface [82]. When features were requested by participants, the development team would add the request to the issues list on the GitHub repository. Researchers worked to implement changes rapidly so that entrepreneurs could see their feedback reflected quickly—entrepreneurs even commented on this quick turnaround. Importantly, our approach to software co-design extended beyond the platform into relationship and trust building within the space. For instance, researchers participated in many of the workshops offered through the incubator, and the first author started to host weekly technical office hours for entrepreneurs in the makerspace (modeled after [43]). Prioritizing relationship and trust building between researchers and entrepreneurs sought to ground the design process within the values and ethos of Prototype, provide immediate value to entrepreneurs, and facilitate platform maintenance and repair.

3.6.1   Encouraging User Appropriation over User Adoption. Rather than encouraging high usage levels of platform use or constant growth of the user base [53], our approach to Peerdea's deployment was to encourage system appropriation: encouraging users to use the system in a way that works best for them regardless of how much or little data was generated [21, 24]. We gauged appropriation techniques by inquiring about feedback seeking practices participants used beyond the platform during interviews, as well as prompting these reflection within participants diaries. As an example of how entrepreneurs appropriated Peerdea: after practicing asking for feedback within Peerdea, entrepreneurs transferred this practice to other tools such as on business cards, social media, and email marketing.

3.6.2   Community-Driven Data Collection and Analysis. Throughout the three and a half year collaboration, our data collection practices evolved based on community priorities, and the bandwidth and preferences of Prototype's leadership and entrepreneurs. For instance, during the first three Peerdea workshops, the research team set up audio recording devices throughout the room (in-person or Zoom room), and presented entrepreneurs with the study's consent form for audio recording. However, entrepreneur's expressed dissatisfaction about these practices which seemed disconnected to their purpose in the incubator: to receive actionable advice for how to start or improve their business. Together, Prototype and the research team decided to make two substantial changes to the roll-out of Peerdea within the incubator. First, we stopped recording audio in the Peerdea workshops. This meant that the only data collection throughout the third incubator was in-app log data collection (which entrepreneurs could ask to have deleted at any time, as per the in-app consent form). Second, we combined the onboarding session with an existing marketing workshop, where we introduced Peerdea at the end and spent 30 minutes helping entrepreneurs to set up the application on their phone.

3.7   Overview of the Peerdea Platform

We developed a standalone application with Prototype so that the development team could more readily respond to entrepreneurs' requests and not be limited by other applications' constraints (e.g., limited or nonexistent application programming interfaces). Peerdea was implemented as a native smartphone application on the iOS and Android platforms, with a React Native frontend, and a GraphQL backend that connects to a MongoDB instance. In addition, we use Amazon's S3 to serve images for improved performance. Entrepreneurs downloaded Peerdea through TestFlight or the Play Store. Peerdea's source code is open-sourced under a GPL 2.0 license. Upon installation, Peerdea users created a profile and articulated a high-level goal to complete within the course of the incubator. Each workshop, Prototype leadership encouraged entrepreneurs to post a related monthly goal based on their takeaways from the workshop. This structure was designed to help entrepreneurs be more accountable toward achieving their overarching aims for the incubator, by breaking their larger goals into a series of distinct, nearer-term objectives [55]. On their profiles, entrepreneurs could update their pictures and bios, as well as delete any of the concepts they had previously shared.

Small, Private Groups. Interactions between entrepreneurs on Peerdea occurred within small groups of less than 25 to support trust building [61]; the incubated cohorts ranged from 6-12 entrepreneurs, and makerspace staff and mentors could also join these groups (all entrepreneurs who partook in Prototype's incubator joined a private group called "Prototype2020", "Prototype2021", "Prototype2022", "Prototype2023"). Peerdea groups are not publicly discoverable, restricting visibility to only those who have been invited to participate in a group; (See Figure 4). Entrepreneurs were able to view the members of their group at all times. Group administrators (e.g., the incubator leader and makerspace co-founder) could invite users and remove users.

Sharing "Concepts" in Group Feed. Prototype's ethos that feedback is critical to success reflects related design literature which posits that early-stage feedback (i.e., formative assessment) leads to increased iteration [32] and ultimately improved quality of outcomes [7, 82]. Users post within their small groups. These posts are called "concepts" to further signal the importance of sharing work which may be at a conceptual level rather than a completed product or service. As Figure 3 shows, Peerdea's authoring interface for concepts enables users to share in a variety of media such as photos, videos, polls, questions, and links. When a concept is shared, all group members receive a notification stating a group member needs feedback as soon as possible.

Viewing and Responding to Posts. Users in a group can view concepts posted to that group within the group's feed, which displays all concepts in reverse chronological order, with one exception: posts which have received no feedback
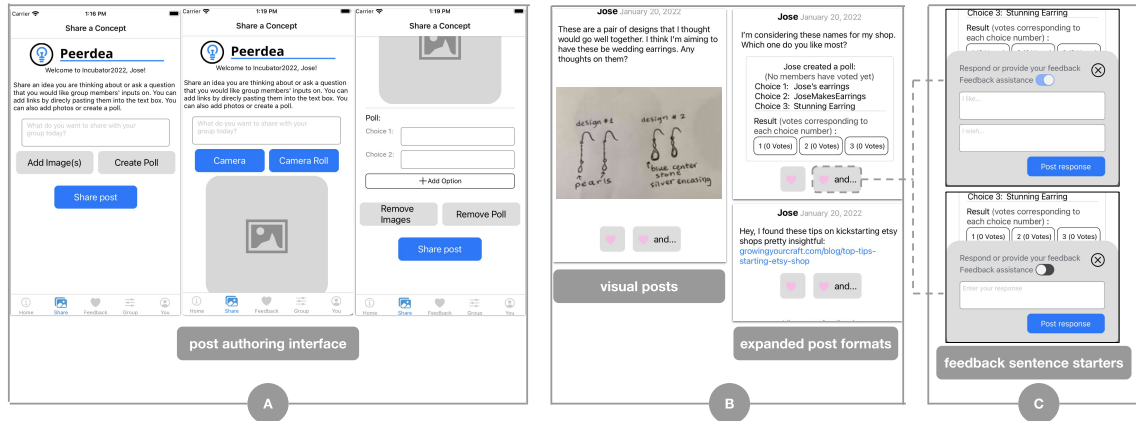
Fig. 3. Peerdea users share posts in a variety of media such as photos, videos, polls, questions, and links within the incubator group (A). When a post, or "concept", is shared, others in the group (i.e., the other entrepreneurs in Prototype's incubator) can respond through text-based comments by clicking on "Heart and..." or just "hearting" the post (B). Users can provide feedback with Peerdea's optional scaffolding (C).

in over a week are listed first. To facilitate Peerdea users in providing effective feedback quickly, Peerdea uses sentence starters common in design critique [23]: one starter scaffolds positive feedback ("I like…", "I love…", "The strength is…"), and the other encourages constructive feedback ("I wish…", "What if…", "One question I have is…"). To leave a comment, a user clicks on the "[Heart] and..." button (similar to the "Yes and" approach from improvisation to frame all suggestions within encouragement [63]) and can optionally use the provided sentence starters (See Figure 3).

We provide a brief overview of Peerdea usage to help contextualize the findings. Within Prototype's 2020, 2021, 2022, and 2023 incubator groups on Peerdea, entrepreneurs shared 67 posts in total. The kinds of posts included: introducing oneself and business to the group (often sharing previously completed work alongside to highlight their domain and expertise), polling to conduct customer research or to take community pulse on a topic, seeking feedback on business branding, seeking feedback on product or service ideas, seeking feedback on near market-ready or finished products and services, sharing near-term goals or requesting co-working in pursuit of accountability (polling to find times to meet in-person), status updates or general check-ins, and sharing encouraging words. All posts posing a question received responses from the group, and many others also received words of encouragement or general information exchange.

3.8 Positionality

We disclose the identities and positionality of the researchers and authors of this paper who are comfortable with doing so, as a concern for reflexive design research practice and as a commitment to intersectionality [69]. The research team composed of middle-class researchers working as faulty, staff, or pursuing postgraduate and undergraduate education at private and public universities in the US, and well as a co-founder of a feminist makerspace. We reflect on how the research team's racial identities—white and Asian—are similar and different to those whom we partnered with in this study, as well as nationality (US, India and Canada) and age (ranging between early 20s to late 30s). In addition, we consider how the authors' experiences outside of the research collaboration may provide converging and diverging perspectives: three researchers have been involved in the creating and sustaining of feminist makerspaces, three researchers are involved in their own creative entrepreneurship endeavor (dance, graphic design, photography and animation) and three researchers have been immersed in serial, tech-based entrepreneurship in the Silicon Valley.
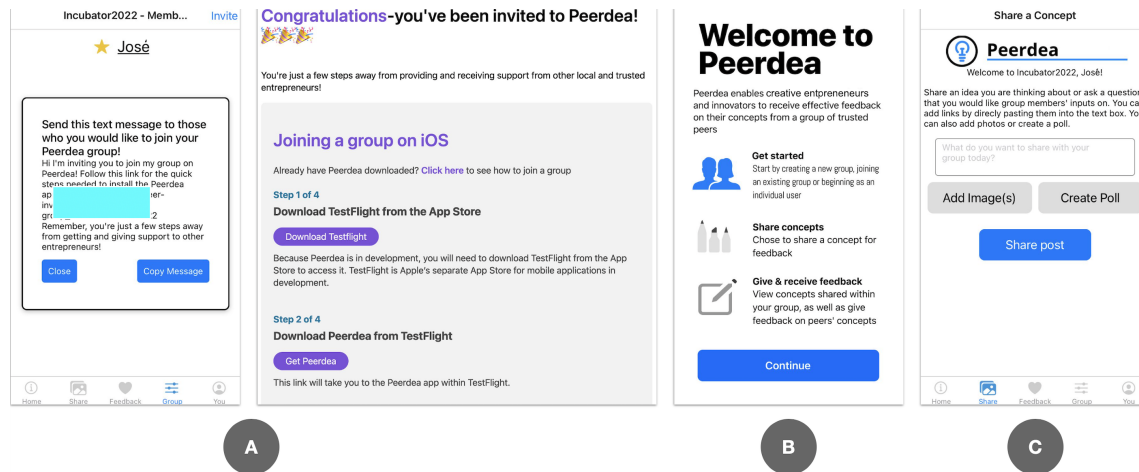
Fig. 4. When an entrepreneur receives an invitation to join Peerdea from a trusted peer (A), the set up instructions automatically tailor to whether their device is an Android or iPhone. Then, a user is prompted to post within the group (C). (The screenshots included in this figure shows the installation steps for an iOS user).

4   FINDINGS

Here, we present the major themes that we identified in our analysis, each presented as a separate subsection. We first describe how creative entrepreneurs gathered around and used Peerdea in pursuit of social support which predominant social technologies inadequately address: asking for feedback on unpolished work alongside safeguarding their reputation and intellectual property [49, 50, 54]. In doing so, we detail how creative entrepreneurs' descriptions of their use of Peerdea extended Prototype's community of practice [70] such as by creating an intentional space for accountability support and more general business advice. These findings speak to our first two research questions, demonstrating one implementation of a software tool that maintains contact among trusted peers, how the tool in turn strengthens the communal foundations of the makerspace, and the ways in which individuals seeks support. Alongside these successes, we then share three ways Peerdea failed to provide adequate peer support online which future work could explore [41]. These also serve to address our second research question recognizing the ways in which technology-mediated supported can remain deficient. Finally, we take a step back to detail the critical role of a "community mediator" who positioned themselves between researchers and creative entrepreneurs to uniquely challenge and champion the co-design process, more readily captured negative feedback of Peerdea, and facilitate crucial relationship building and translation work between researchers and community stakeholders. This speaks to our third research question, discussing how the triadic arrangement of researchers, mediator, and community members can activate meaningful community participation.

4.1   Extending Prototype's Community of Practice Online

In this section, we focus on how Peerdea successfully provided an online space which exemplified Prototype's community of practice and ethos: that everything is prototype and iteration is critical for success. In particular, we synthesize participants' reflections on how Peerdea's reliance on existing and growing relationships which were trustful and safe was needed for entrepreneurs' creative and business experimentation, and how Peerdea supplemented these

relationships by providing an intentional space where expectations were set for mutually beneficial exchanges on iterative work.

To start, Lorraine, who made inclusive children's toys featuring a range of skin tones shared her first post on Peerdea which showcased past work: *"One of my past dolls made of clay and the idea I am 'toying' with for future play dolls to be manufactured".* Included in Lorraine's post was a photo of a doll she had sculpted for an art gallery. Here, Lorraine shared a completed product with an eye towards the kinds of inclusive dolls she could make for a commercial line, ultimately inspired by her granddaughter's love of dolls. Throughout the incubator, posts shifted towards sharing more in-progress work. Violet, who had a local recycling non-profit, shared a post which stated: *"...I have to rebrand my creative recycling program...These are just some brainstorming notes I've been taking-please let me know if anything strikes a cord for you, or provide words/a name that isn't mentioned here. Thanks!"* Alongside this post description, Violet shared a photo of notes she had written in her journal, with around 15 different ideas for a new business name. She later followed up to share another post with several different logo options for her rebrand, which included her business's new name. Shifts in usage reflect the relationship building occurring throughout the incubator as well as Prototype leadership signaling value and modeling behavior by using the platform themselves within the incubator groups.

Alex, who ran a machine-shop focused on equity in making, reflected on this shift, noting the importance of how Peerdea aimed *"to train people in this language of constructive feedback giving and asking."* Similarly, Neha, who ran a technology program for women, reflected on how Peerdea helped to inform their creative process: *"I think [Peerdea] really pushed me to start thinking about things differently and create a solution where we had the problem [and] we didn't know what we were doing."* Talia, who owned a creative writing business, specifically reflected on the importance of ensuring positive feedback among entrepreneurs: *"It [asking for feedback on Peerdea] was very kind, and it wasn't even a shredding process. People were like, 'Wow, this is really intriguing! I want to know more. This is where I'm confused.' "* Here, Talia reflected on prior experiences asking for feedback, where she felt as if she was being torn down or "shredded" with negative remarks. Talia continued on to share how the equal parts of critical and positive feedback—scaffolded by entrepreneurs' use of the optional sentence starters—she received on Peerdea allowed her to more easily digest the critical remarks: *"So these are the gaps I need to fill in which isn't anything to be [ashamed of]."*

Entrepreneurs emphasized that such constructive conversations were not happenstance within Peerdea, but instead, as Carly, the owner of a local poetry publishing company, shared: *"I think it's a lot easier to take feedback positive and negative from people that you know, and trust."* Similarly to Carly's preference to not receive feedback from troves of anonymous crowds, Bailey, who created digital art, reflected on how Peerdea's reliance on existing offline relationships. In particular, she was able to more readily engage in authentic communication online when it came to getting feedback on her business ideas. Here, Bailey reflected on asking for feedback from someone whom she was good friends with:

> "I feel like we're pretty good at, if we have an issue or something, we're good at communicating about it. So we have a foundation of good, open, honest communication. In relation to feedback, it just kind of felt safe to like give each other feedback when asked."

Another participant riffed on Bailey's comments by emphasizing that such trustful relationship do not occur overnight: *"It takes times to build relationships necessary for critical feedback. I feel like we've gotten to a point where we're pretty comfortable telling each other what we think...I think this is the main thing and just all the rapport that comes with that".* When it came to exchanging critical feedback in particular, preexisting relationships helped ensure that critical remarks where coming from a place of genuine support rather than malintent.

Moreover, by centering trust, entrepreneurs viewed Peerdea as a place where they could document their creative process, ultimately to safeguard their intellectual property. One entrepreneur referred to Peerdea as a "poor man's copyright" as they discussed Peerdea's functionality alongside a traditional poor man's copyright: *"You make a recording of what you did and you mail it to yourself. And you have that timestamp of that mail, that official mark externally, that says it was your idea...if anybody tries to steal something you can at least say 'Hey, I couldn't afford to do the trademark, but I did this much. So now can we retroactively put the trademark in?'.* Particularly, they highlighted how Peerdea's timestamps provided an additional layer of intellectual property protection helped them to feel confident to start their ideation process: *[Peerdea] actually reminded me to be this kind of like an initiator of, to get the ball rolling for what an iterative process is, because at the end of the day, your outcome might not necessarily look anything like what you started with, but it's important that, that you're able to see that direction and where, where it goes."*

Entrepreneurs found Peerdea's intentionality around feedback and accountability to be helpful, as compared to many other online communities—big and small—comprising primarily promotional posts not intended to foster constructive conversations [28]. For instance, Bailey reflected on how having a distinct platform for support exchange, separated from their other online spaces, can promote experimentation while minimizing potential for reputational damage:

> "I'm the sort of person who's overly conscientious about intruding on people's space or asking them for favors that maybe they don't want to, like, maybe they don't want to give me feedback or maybe they don't feel comfortable giving honest feedback. And they'll just tell me what I want to hear."

For Bailey, it was critical that everyone within the group had made the explicit goal to provide each other with feedback and support. Olivia, an entrepreneur with a budding apparel and graphic design business, described the benefits of these clearer expectations, as someone who also had a hard time encroaching on other entrepreneurs' time: *"I know that anybody that's on that platform is already specifically willing to give and receive feedback."* Olivia described how she used this intentionality to address a concern she could not address elsewhere: discussed how she was able to use Peerdea to get feedback on an idea she was considering that was somewhat different to what she currently offered: putting her graphic design prints on T-shirts, rather than just selling them as just prints:

> "I don't want to mess with my followers' heads, but I also want to be able to do something new...So I posted on Peerdea a design idea for a t-shirt and asked if the style that I did was going to work well with my current aesthetic. It was really good to just hear a little, honest feedback: 'Yes, there is continuity', because it's so subjective for me. "

Olivia described how she was worried that a change in product direction would "mess with [her] followers' heads" and ultimately break the brand continuity she had been working so hard to achieve on her social media accounts. On Peerdea, where self-presentation and reputation concerns were mitigated, and where experimentation was more readily supported, Olivia was able to quickly gauge a new product idea.

4.2 Asking for Peer Support on Peerdea Felt Like Stalling (and Other Failures of Peerdea)

In this section, we share failures of Peerdea to align with a feminist practice of exposing unintended consequences of designs [3]. While Peerdea's design continued to evolve based on entrepreneurs' requests, it is important to highlight some of ways which, even with the implementation of requests, Peerdea failed to provide adequate peer support [41]. Entrepreneurs repeatedly echoed three concerns (1) small groups meant fewer people to provide feedback, and sometimes entrepreneurs wanted a higher quantity of feedback, (2) the shared context of Prototype' incubator and Pittsburgh, PA was not always enough, and sometimes entrepreneurs needed feedback from those with shared domain expertise, and

(3) the collective experience of asking for early-stage feedback felt to some like stalling or side-stepping, rather than making forward progress.

First, Peerdea's small groups were based on the average size of the incubator with a cushion for Prototype leadership and researchers to also join to provide feedback when activity was low. However, sometimes entrepreneurs wanted more feedback, not only to collect more information but also because the quantity of feedback was seen as an indicator of interest. Neha shared how they would have liked more comments from others in their group. However, they knew from first hand experience how busy their peers were throughout the incubator, and as a result they noted that more feedback from their peers was not always feasible. Over the years, as the incubator developed to include a formal mentorship program, mentors were included within the Peerdea group to provide quick feedback and mitigate inactivity concerns.

A second challenge to providing effective peer support on Peerdea a lack of shared domain expertise across users. Even though entrepreneurs shared their pursuits of creative entrepreneurship, location in Pittsburgh, PA, and participation in Prototype' incubator; they had diverse entrepreneurial domains such as queer-affirming massage therapy, gardening, poetry publishing, inclusive children's toys, and more. While this diversity helped to provide certain kinds of feedback (high-level feedback, or feedback from a potential customer's perspective) and mitigated potential competition within the incubator groups, sometimes entrepreneurs needed feedback from those who had a deeper understanding of the particulars of their domain. For instance, when Violet posted a request for feedback on a flyer for a new plastic collection site, Neha needed further information before they could feel comfortable to respond: *"I honestly would have liked to see more, in terms of her initial phasing, like 'Where is there a location now? What else can I learn about plastic? What do these numbers mean?' I just don't know that much about plastic, unfortunately."* Neha's lack of knowledge around plastic type and Pittsburgh, PA's handling of plastic recycling left them in need of further clarification before providing feedback. Facing a similar predicament, Talia considered one resolution to help her viewers to provide more accurate and helpful responses, even though none of them were creative writers like herself. Talia, who wanted to solidify the price points for a set of services she was soon to roll out shared: *"I think it's a good [thing] to say 'Other coaches charge this: ___.' I could put that as part of my [post], so people can get a sense of what is out there because people might not know."*

Finally, asking for early-stage feedback is usually associated with addressing potentially serious issues created in further iterations, and ultimately reducing expensive changes down the line [82], Yet, Prototype's entrepreneurs shared their experience of asking for early-stage feedback as sometimes stalling. Holly shared: *"I've been guilty of just like wanting to move ahead and just like pick a thing, even if the thing is wrong. Like even if the direction is wrong, just like move in that direction. So you're not staying static."* She went on to reflect on a conversation she had with Violet as stated: *"Violet was communicating this idea that if you're asking for feedback too much, then you're not really making progress"*. Ultimately, for creative entrepreneurs, it was important to align activities on Peerdea with core business activities and keep forward momentum.

4.3 The Role of a Community Mediator in Co-Designing Peerdea

In this section, we describe the key ways the founder of Prototype played a critical role mediating the relationship between community stakeholders and researchers, particularly given the context of co-designing a platform where participants' livelihoods where implicated in the process. First, the co-founder acted as a mediator by conducting the necessary translation work between research paradigms and diverse community participation. For example, when describing Peerdea to participants, they removed all academic jargon researchers left in the platform's description.

Instead, they boiled down the platform to describe in a few words: a mix of the encrypted messaging application Signal and the social media platform Instagram. Another way in which Prototype's founder facilitated mediation and relationship and trust building was by presenting channels for entrepreneurs to express confusion or dissatisfaction (e.g., informal discussions while co-located within Prototype, as well as more formally through an exit survey after the incubator). Entrepreneurs reported to them that it was unclear why there were audio recordings during the workshops, as this did not seem in alignment with the incubator's mission: to provide actionable information that entrepreneurs can use to start or improve their business. Therefore, we stopped audio recordings during workshops, and the Prototype founder took lead on introducing Peerdea to the entrepreneurs; researchers were present for on-demand tech support (for Peerdea and more general business tech support; See Section 3.6.)

In addition, some entrepreneurs shared with the founder that they wanted more mentorship and guidance on how to use Peerdea. Therefore, as the incubator format progressed, the founder suggested the research team provide quick touch points with entrepreneurs throughout the incubator, checking in but not necessarily conducting an entire workshop. Others preferred to not use Peerdea (citing screen fatigue from being mobile-first entrepreneurs), and their reassurance to them that this was in fact perfectly fine further helped to clarify the researchers' intentions around user adoption versus appropriation (as described in Section 3.6.1). However, there were times when they sought to encourage the entrepreneurs to use the platform more frequently. Therefore, the founder (1) modeled this behavior by posting in Peerdea (such as the board's monthly goal for the makerspace, alongside asking others to share their goals) and (2) implemented a mentorship program and asked the mentors respond to posts on Peerdea.

5   DISCUSSION

In this section, we first consider how Peerdea provided peer support which leveraged—and, in turn, supplemented—the in-person relationship and trust building which occurred within Prototype (RQ1). We detail how Peerdea, rather than attempting to overpower or replace in-person interactions, leveraged the relationship and trust building within Prototype by extending Prototype's community of practice. In turn, Peerdea contributed to bolstering the community of practice by providing a supplemental channel of support. Next, we reflect on what kinds of peer support may be achievable online among entrepreneurs Peerdea centered the relationship and trust building which occur more readily in person among entrepreneurs (RQ2). Finally, when considering kinds of relationship building between researchers and community members are required in order to facilitate software co-design—especially when participants' livelihoods are implicated (RQ3)—we elevate the role of a community mediator in community-collaborative approaches to computing research.

5.1   Grounding Technological Innovation within Prototype's Community of Practice

First, by extending Prototype's community of practice [87], Peerdea leveraged the relationship and trust building which occurs more readily in-person for entrepreneurs As a conceptual framework, we found that communities of practice provided the necessary structure for how to frame technological intervention as a way to strengthen a community of practice by aligning with rather than overpowering Prototype's ethos. In Schwen and Hara's critical reflection of the role of technology in communities of practice, they argued that the most successful communities of practice were those that deprioritized the role technology played in mediating members' interactions [70]. Through this deprioritization, Peerdea provided a supplement to the existing relationship and trust building which occurred within Prototype. And, in turn, Peerdea contributed to bolstering the community of practice by providing a supplemental channel of support, rather than attempting to replace in-person interactions (a common occurrence in sociotechnical

design for entrepreneurs [19]). By extending Prototype's existing community of practice through a co-design approach, this surfaced modes of technological intervention which would be disadvantageous, less appropriate, or potentially harmful for entrepreneurs. In this way, we situate Peerdea as synergistic, bolstering online and offline peer support as going *beyond being there* [40], while emphasizing that being *there* is important, too.

Because Prototype is a feminist makerspace, it is of critical importance to further situate Peerdea's extension of Prototype's community of practice within the context of feminist makerspace literature in HCI [10]. We consider how this work contributes to the critical issues of inclusion and access centered by feminist makerspaces [31, 35]. Importantly, we found that to make a social platform more inclusive of creative entrepreneurs required careful considerations of tensions between visibility and refuge. On the one hand, creative entrepreneurs needed to be able to showcase their work to get quick feedback and hold each other accountable to business goals, even when they could not physically be within the makerspace. But on the other hand, to do so required refuge from pressures for self-presentation and lack of control over who sees what and when which are more typical in prominent social platforms [50]. One way that entrepreneurs found refuge was to lean into Peerdea's small groups (less than 25 users), alongside Peerdea's clarifications of intent (recall participants' points the solace found in that everyone was present to give and receive feedback), and control access to their work in this way. Further, we found that large-scale innovation was not needed to make a social platform more inclusive of creative entrepreneurs' unique for reputational and intellectual property protection. Instead, reconfigurations of existing social technology interface designs were adequate (e.g., removing algorithmic mediation, ensuring small and private groups, supporting diverse media sharing, ensuring group mediation, providing optional scaffolds for asking for and giving feedback, etc). Such findings were uncovered by repeatedly centering the lived experiences of those Peerdea aimed to serve [3]. This, in part, seems counterintuitive to the ways in which social technologies have been presented to creative entrepreneurs as valuable: end-all be-all vehicles to grow audiences of potential consumers and ultimately increased sales [50]. However, through our collaboration with a feminist makerspace, our analysis of how entrepreneurs gathered together and around a social platform in different ways emphasized the importance of showcasing care and pursuing mutual well-being in sociotechnical design [83]. In addition, we found that for Peerdea to successfully support feedback exchange required other forms of social support alongside, such as sharing of other business experiences more generally [9].

Importantly, even subtle changes in interfaces led to new kinds of peer support being achievable online among entrepreneurs. For instance, the creative entrepreneurs who used Peerdea sought feedback on unpolished work alongside completed products, as well as feedback on service ideas (where there was no visual artifact to show alongside). Such feedback-seeking behaviors are rare in large online communities, as these communities have repeatedly failed to support formative feedback endeavors given pressures for self-presentation, reputational and intellectual property concerns [49, 50, 54]. But creative entrepreneurs' use of Peerdea moved beyond feedback exchange towards sharing near-term goals or requesting co-working in pursuit of accountability (e.g., using the Peerdea polling interface to find times to meet in-person), status updates or general check-ins, and sharing encouraging words.

5.2 Elevating the Role of Community Mediator in Community-Collaborative Approaches to Computing Research

In community-collaborative approaches in computing, earning trust and building relationships between community stakeholders and researchers are essential [58]. Many of our practices to building trust resembled successful strategies reported in prior work such as learning about the histories of community stakeholders, showing commitment to community values, adequate financial compensation of community partners, transparency of research practices and

funding sources, providing wrap-around support for participation such as childcare and food, and disclosing information about researchers to mirror participants' disclosure [34, 58, 84]. However, throughout the course of our three and a half year collaboration with Prototype, as we iteratively developed Peerdea, we observed how Prototype's founder contributed to the community-researcher network building in critical ways: relaying entrepreneurs' confusion about the relationship between the researchers and makerspace to the researchers while simultaneously providing clarifying remarks to the entrepreneurs, conducting translation work to remove academic jargon, challenging and championing researchers' commitment to community values, signaling trustworthiness of researchers to community partners, and more. We reflect on the unique positioning of Prototype's founder, situated in between the researchers and other community stakeholders while also being a community and research team member themself, and how they took on a role of *mediation* between community members and researchers. While prior work in community-collaborative approaches in human-computer interaction have mentioned how community members have facilitated or led certain parts of the community collaborations (e.g., [34, 36, 84]), it is our aim to elevate and detail this role and its importance within the context of this research collaboration, as way to make this labor more visible [39].

In elevating this role, we describe the role as a "mediator", rather than "facilitator" or "liaison". This is because of what we collectively observed to be an active role, where both the researchers and community members benefited from Prototype's founder involvement throughout. We further distinguish this role from local centers which mediate relationships between universities and local community partners as such centers act more as liaison, rather than taking an active role in the research process (for example, the [Removed for anonymity] acts a liaison between the research team's university and local non-profits). For community stakeholders, the founder's mediating role was someone who actively vetted the research team and was a reliable signal of the trustworthiness of the research team. For instance, throughout the multi-year collaboration, the founder had repeatedly vetted the research team by participating in workshops themself, observing the researchers as they interacted with entrepreneurs, and following through to see how researchers' practices changed over time based on their feedback. They then provided signals of trustworthiness, such as when they introduced the first author to the incubator groups and discussed how long they had known each other, in what capacity, and what they saw as the direct value the research team brought to the community space. In particular, we consider the unique context of co-designing with creative entrepreneurs, where community stakeholders' livelihood are implicated in the process; a community-research mediator Taken together, by elevating the role of a community mediator it is our goal to make its importance salient, in terms of relationship building between researchers and community members. Ultimately this visibility could be leveraged in various ways, such as when justifying fair community compensation when researchers submit budgets for academic funding of community partnerships.

6 LIMITATIONS

There are several limitations of this work. One limitation of this work is that makerspaces, like other place-based communities, are not always available, such as for entrepreneurs who live in rural communities or who lack access to reliable transportation. Another limitation is that we created an application within the specific context of Prototype's makerspace, embodying the ethos and aligning with the mission of Prototype. In this paper, we did not yet explore whether other place-based communities would also be interested in deploying Peerdea within their groups. However, receiving feedback throughout ones' design process is a critical need which spans most forms of creative entrepreneurship. Therefore, future work could explore deploying Peerdea in other makerspaces, and even customizing the platform to fit local needs. To facilitate this future work we, together with our community partner, have open-sourced Peerdea's source code available at: [Anonymized for Submission].

7 CONCLUSION

In this paper, we described a partnership with a local feminist makerspace, called Prototype, on a three and a half year collaboration to co-design a peer support platform. We took up a community-based collaborative design approach [34] to develop a platform called Peerdea. Peerdea scaffolded asynchronous and online peer support including peer feedback and information exchange, goal setting and accountability, and general encouragement—all of which occurred within small groups of entrepreneurs (i.e., cohorts of entrepreneurs participating in Prototype's annual incubator). By centering the unique needs of creative entrepreneurs, Peerdea leveraged the relationship and trust building which occurs more readily during in-person gatherings among entrepreneurs [43, 44], such as incubator workshops and co-working hours within the makerspace. We found that rather than attempting to replace social interactions within the makerspace—a common pitfall of sociotechnical design in entrepreneurship [19]— it was crucial to align Peerdea's design with Prototype's community of practice. In this way, we situate Peerdea as synergistic, bolstering online and offline peer support to go *beyond being there* [40], while emphasizing that being *there* is important, too.

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REFERENCES

[1] Alice Audrezet, Gwarlann de Kerviler, and Julie Guidry Moulard. 2020. Authenticity under threat: When social media influencers need to go beyond self-presentation. *Journal of business research* 117 (2020), 557–569.

[2] Seyram Avle, Julie Hui, Silvia Lindtner, and Tawanna Dillahunt. 2019. Additional labors of the entrepreneurial self. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–24.

[3] Shaowen Bardzell. 2010. Feminist HCI: taking stock and outlining an agenda for design. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 1301–1310.

[4] Paul Belleflamme, Thomas Lambert, and Armin Schwienbacher. 2014. Crowdfunding: Tapping the right crowd. *Journal of business venturing* 29, 5 (2014), 585–609.

[5] Gabrielle Benabdallah, Sam Bourgault, Nadya Peek, and Jennifer Jacobs. 2021. Remote learners, home makers: How digital fabrication was taught online during a pandemic. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–14.

[6] Nathan Bos, Judy Olson, Darren Gergle, Gary Olson, and Zach Wright. 2002. Effects of four computer-mediated communications channels on trust development. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 135–140.

[7] Bill Buxton. 2010. *Sketching user experiences: getting the design right and the right design*. Morgan Kaufmann, Printed in Canada.

[8] Julie Campbell, Cecilia Aragon, Katie Davis, Sarah Evans, Abigail Evans, and David Randall. 2016. Thousands of positive reviews: Distributed mentoring in online fan communities. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*. 691–704.

[9] Tara Capel, Bernd Ploderer, and Margot Brereton. 2020. The wooden quilt: Carving out personal narratives in a women-only makerspace. In *Proceedings of the 2020 ACM Designing Interactive Systems Conference*. 1059–1071.

[10] Tara Capel, Bernd Ploderer, Margot Brereton, and Meg O'Connor Solly. 2021. The Making of Women: Creating Trajectories for Women's Participation in Makerspaces. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–38.

[11] Colleen Casey. 2014. Critical connections: The importance of community-based organizations and social capital to credit access for low-wealth entrepreneurs. *Urban Affairs Review* 50, 3 (2014), 366–390.

[12] Kathy Charmaz and Linda Liska Belgrave. 2007. Grounded theory. *The Blackwell encyclopedia of sociology* (2007).

[13] Ruijia Cheng, Ziwen Zeng, Maysnow Liu, and Steven Dow. 2020. Critique Me: Exploring How Creators Publicly Request Feedback in an Online Critique Community. *Proceedings of the ACM on Human-Computer Interaction* 4, CSCW2 (2020), 1–24.

[14] Samantha Close. 2016. The political economy of creative entrepreneurship on digital platforms: Case study of Etsy. com. In *2016 49th Hawaii International Conference on System Sciences (HICSS)*. IEEE, 1901–1908.

[15]   Ned Cooper, Tiffanie Horne, Gillian R Hayes, Courtney Heldreth, Michal Lahav, Jess Holbrook, and Lauren Wilcox. 2022. A Systematic Review and Thematic Analysis of Community-Collaborative Approaches to Computing Research. In *CHI Conference on Human Factors in Computing Systems*. 1–18.

[16]   Sasha Costanza-Chock. 2020. *Design justice: Community-led practices to build the worlds we need.* The MIT Press.

[17]   Robert C Denicola. 1982. Applied art and industrial design: a suggested approach to copyright in useful articles. *Minn. l. reV.* 67 (1982), 707.

[18]   Catherine D'ignazio and Lauren F Klein. 2020. *Data feminism.* MIT press.

[19]   Tawanna R Dillahunt, Vaishnav Kameswaran, Desiree McLain, Minnie Lester, Delores Orr, and Kentaro Toyama. 2018. Entrepreneurship and the socio-technical chasm in a lean economy. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–14.

[20]   Tawanna R Dillahunt, Xinyi Wang, Earnest Wheeler, Hao Fei Cheng, Brent Hecht, and Haiyi Zhu. 2017. The sharing economy in computing: A systematic literature review. *Proceedings of the ACM on Human-Computer Interaction* 1, CSCW (2017), 1–26.

[21]   Paul Dourish. 2003. The appropriation of interactive technologies: Some lessons from placeless documents. *Computer Supported Cooperative Work (CSCW)* 12, 4 (2003), 465–490.

[22]   Marc Doussard, Greg Schrock, Laura Wolf-Powers, Max Eisenburger, and Stephen Marotta. 2018. Manufacturing without the firm: Challenges for the maker movement in three US cities. *Environment and Planning A: Economy and Space* 50, 3 (2018), 651–670.

[23]   Stanford d.school. XXXX. I Like, I Wish, What If - d.school Method Cards. http://dschool-old.stanford.edu/wp-content/themes/dschool/method-cards/i-like-i-wish-what-if.pdf. Accessed: 2022-01-14.

[24]   Ron Eglash. 2004. Appropriating technology: An introduction. *Appropriating technology: Vernacular science and social power* (2004), 1–28.

[25]   Nicole Ellison, Rebecca Gray, Jessica Vitak, Cliff Lampe, and Andrew Fiore. 2013. Calling all Facebook friends: Exploring requests for help on Facebook. In *Proceedings of the International AAAI Conference on Web and Social Media*, Vol. 7. 155–164.

[26]   Thomas Erickson and Wendy A Kellogg. 2000. Social translucence: an approach to designing systems that support social processes. *ACM transactions on computer-human interaction (TOCHI)* 7, 1 (2000), 59–83.

[27]   Etsy.com. 2021. Etys 2021 Impact Report. https://storage.googleapis.com/etsy-extfiles-prod/Press/reports/2021_Etsy_Transparency_Report.pdf?ref=news. Accessed: 2023-01-09.

[28]   Eureka Foong, Steven P Dow, Brian P Bailey, and Elizabeth M Gerber. 2017. Online feedback exchange: A framework for understanding the socio-psychological factors. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, Sheridan Communications, Denver, Colorado, 4454–4467.

[29]   Kauffman Foundation. 2020. How Does COVID-19 Affect Challenges Facing Entrepreneurs? Trends by Business Age. https://www.kauffman.org/entrepreneurship/reports/how-covid-19-affects-challenges-facing-entrepreneurs-by-business-age/. Accessed: 2023-01-11.

[30]   Sarah Fox, Jill Dimond, Lilly Irani, Tad Hirsch, Michael Muller, and Shaowen Bardzell. 2017. Social Justice and Design: Power and oppression in collaborative systems. In *Companion of the 2017 acm conference on computer supported cooperative work and social computing*. 117–122.

[31]   Sarah Fox, Rachel Rose Ulgado, and Daniela Rosner. 2015. Hacking culture, not devices: Access and recognition in feminist hackerspaces. In *Proceedings of the 18th ACM conference on Computer supported cooperative work & social computing*. 56–68.

[32]   Raghu Garud and Peter Karnøe. 2003. Bricolage versus breakthrough: distributed and embedded agency in technology entrepreneurship. *Research policy* 32, 2 (2003), 277–300.

[33]   Michael D Greenberg, Matthew W Easterday, and Elizabeth M Gerber. 2015. Critiki: A scaffolded approach to gathering design feedback from paid crowdworkers. In *Proceedings of the 2015 ACM SIGCHI Conference on Creativity and Cognition*. 235–244.

[34]   Christina Harrington, Sheena Erete, and Anne Marie Piper. 2019. Deconstructing community-based collaborative design: Towards more equitable participatory design engagements. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–25.

[35]   Sonali Hedditch and Dhaval Vyas. 2021. A gendered perspective on making from an autoethnography in makerspaces. In *Designing interactive systems conference 2021*. 1887–1901.

[36]   Sonali Hedditch and Dhaval Vyas. 2023. Design Justice in Practice: Community-led Design of an Online Maker Space for Refugee and Migrant Women. *Proceedings of the ACM on Human-Computer Interaction* 7, GROUP (2023), 1–39.

[37]   Ha Hoang and Bostjan Antoncic. 2003. Network-based research in entrepreneurship: A critical review. *Journal of business venturing* 18, 2 (2003), 165–187.

[38]   H Hoang and N Young. 2000. Social embeddedness and entrepreneurial opportunity recognition. *Fontainebleau Cedex, INSEAD* (2000).

[39]   Arlie Russell Hochschild. 2016. *Invisible labor: Hidden work in the contemporary world.* Univ of California Press.

[40]   Jim Hollan and Scott Stornetta. 1992. Beyond being there. In *Proceedings of the SIGCHI conference on Human factors in computing systems*. 119–125.

[41]   Noura Howell, Audrey Desjardins, and Sarah Fox. 2021. Cracks in the success narrative: Rethinking failure in design research through a retrospective trioethnography. *ACM Transactions on Computer-Human Interaction (TOCHI)* 28, 6 (2021), 1–31.

[42]   Julie Hui. 2016. Online Help-Seeking in Communities of Novice Innovators. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. 218–222.

[43]   Julie Hui, Nefer Ra Barber, Wendy Casey, Suzanne Cleage, Danny C Dolley, Frances Worthy, Kentaro Toyama, and Tawanna R Dillahunt. 2020. Community collectives: Low-tech social support for digitally-engaged entrepreneurship. In *Proceedings of the 2020 CHI conference on human factors in computing systems*. 1–15.

[44]   Julie Hui, Kentaro Toyama, Joyojeet Pal, and Tawanna Dillahunt. 2018. Making a living my way: Necessity-driven entrepreneurship in resource-constrained communities. *Proceedings of the ACM on Human-Computer Interaction* 2, CSCW (2018), 1–24.

[45] Julie S Hui and Elizabeth M Gerber. 2017. Developing makerspaces as sites of entrepreneurship. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. 2023–2038.

[46] Julie S Hui, Elizabeth M Gerber, and Darren Gergle. 2014. Understanding and leveraging social networks for crowdfunding: opportunities and challenges. In *Proceedings of the 2014 conference on Designing interactive systems*. 677–680.

[47] Sirkka L Jarvenpaa, Kathleen Knoll, and Dorothy E Leidner. 1998. Is anybody out there? Antecedents of trust in global virtual teams. *Journal of management information systems* 14, 4 (1998), 29–64.

[48] Mukti Khaire. 2017. *Culture and commerce: The value of entrepreneurship in creative industries*. Stanford University Press.

[49] Joy Kim, Maneesh Agrawala, and Michael S Bernstein. 2017. Mosaic: designing online creative communities for sharing works-in-progress. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. ACM, Sheridan Communications, Portland, Oregon, 246–258.

[50] Yasmine Kotturi, Allie Blaising, Sarah E Fox, and Chinmay Kulkarni. 2021. The Unique Challenges for Creative Small Businesses Seeking Feedback on Social Media. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–27.

[51] Yasmine Kotturi, Herman T Johnson, Michael Skirpan, Sarah E Fox, Jeffrey P Bigham, and Amy Pavel. 2022. Tech Help Desk: Support for Local Entrepreneurs Addressing the Long Tail of Computing Challenges. In *CHI Conference on Human Factors in Computing Systems*. 1–15.

[52] Yubo Kou and Colin M Gray. 2017. Supporting distributed critique through interpretation and sense-making in an online creative community. *Proceedings of the ACM on Human-Computer Interaction* 1, CSCW (2017), 1–18.

[53] R.E. Kraut and P. Resnick. 2011. *Evidence-based social design: Mining the social sciences to build online communities*. MIT Press.

[54] Sneha R Krishna Kumaran. 2019. Fostering Feedback Seeking Behavior in Novice Designers. In *Proceedings of the 2019 on Creativity and Cognition*. ACM, 653–658.

[55] Sneha R Krishna Kumaran, Yue Yin, and Brian P Bailey. 2021. Plan Early, Revise More: Effects of Goal Setting and Perceived Role of the Feedback Provider on Feedback Seeking Behavior. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–22.

[56] Kristine Kuhn, Tera Galloway, and Maureen Collins-Williams. 2016. Near, far, and online: Small business owners' advice-seeking from peers. *Journal of Small Business and Enterprise Development* 23, 1 (2016), 189–206.

[57] Kristine M Kuhn and Tera L Galloway. 2015. With a little help from my competitors: Peer networking among artisan entrepreneurs. *Entrepreneurship Theory and Practice* 39, 3 (2015), 571–600.

[58] Christopher A Le Dantec and Sarah Fox. 2015. Strangers at the gate: Gaining access, building rapport, and co-constructing community-based research. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing*. 1348–1358.

[59] Andrés Lucero. 2015. Using affinity diagrams to evaluate interactive prototypes. In *Human-Computer Interaction–INTERACT 2015: 15th IFIP TC 13 International Conference, Bamberg, Germany, September 14-18, 2015, Proceedings, Part II 15*. Springer, 231–248.

[60] Kurt Luther, Amy Pavel, Wei Wu, Jari-lee Tolentino, Maneesh Agrawala, Björn Hartmann, and Steven P Dow. 2014. CrowdCrit: crowdsourcing and aggregating visual design critique. In *Proceedings of the companion publication of the 17th ACM conference on Computer supported cooperative work & social computing*. 21–24.

[61] Xiao Ma, Justin Cheng, Shankar Iyer, and Mor Naaman. 2019. When Do People Trust Their Social Groups?. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. ACM, Sheridan Communications, Glasgow, United Kingdom, 67.

[62] Cayley MacArthur. 2021. Making Spaces: Mapping Opportunities for Improved Equity in Makerspaces and Virtual Reality. (2021).

[63] Patricia Ryan Madson. 2010. *Improv wisdom: Don't prepare, just show up*. Harmony.

[64] Ann Markusen. 2013. Artists work everywhere. *Work and Occupations* 40, 4 (2013), 481–495.

[65] Jennifer Marlow and Laura Dabbish. 2014. From rookie to all-star: professional development in a graphic design social networking site. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. 922–933.

[66] Nadya Peek, Jennifer Jacobs, Wendy Ju, Neil Gershenfeld, and Tom Igoe. 2021. Making at a distance: teaching hands-on courses during the pandemic. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–5.

[67] Ioana Crina Pop-Cohuţ. 2019. ONLINE PLATFORMS AND THE STIMULATION OF CREATIVE ENTREPRENEURSHIP–THE ROLE OF CREATIVITY AND THE PERCEPTION ABOUT WORK AND SELF-EMPLOYMENT. *LIMEN 2019* (2019), 113.

[68] Daniela K Rosner and Sarah E Fox. 2016. Legacies of craft and the centrality of failure in a mother-operated hackerspace. *new media & society* 18, 4 (2016), 558–580.

[69] Ari Schlesinger, W Keith Edwards, and Rebecca E Grinter. 2017. Intersectional HCI: Engaging identity through gender, race, and class. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. 5412–5427.

[70] Thomas M Schwen and Noriko Hara. 2003. Community of practice: A metaphor for online design? *The Information Society* 19, 3 (2003), 257–270.

[71] Scott Shane and Daniel Cable. 1998. *Social relationships and the financing of new ventures*. Technical Report. Working paper.

[72] Scott Andrew Shane. 2003. *A general theory of entrepreneurship: The individual-opportunity nexus*. Edward Elgar Publishing.

[73] M Six Silberman, Lisa Nathan, Bran Knowles, Roy Bendor, Adrian Clear, Maria Håkansson, Tawanna Dillahunt, and Jennifer Mankoff. 2014. Next steps for sustainable HCI. *interactions* 21, 5 (2014), 66–69.

[74] Robert P Singh, Gerald E Hills, GT Lumpkin, and Ralph C Hybels. 1999. The entrepreneurial opportunity recognition process: Examining the role of self-perceived alertness and social networks.. In *Academy of management proceedings*, Vol. 1999. Academy of Management Briarcliff Manor, NY 10510, G1–G6.

[75] Etienne St-Jean and Josée Audet. 2012. The role of mentoring in the learning development of the novice entrepreneur. *International entrepreneurship and management journal* 8, 1 (2012), 119–140.

[76] Toby E Stuart, Ha Hoang, and Ralph C Hybels. 1999. Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative science quarterly* 44, 2 (1999), 315–349.

[77] Udayan Tandon, Vera Khovanskaya, Enrique Arcilla, Mikaiil Haji Hussein, Peter Zschiesche, and Lilly Irani. 2022. Hostile Ecologies: Navigating the Barriers to Community-Led Innovation. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (2022), 1–26.

[78] Nick Taylor, Ursula Hurley, and Philip Connolly. 2016. Making community: the wider role of makerspaces in public life. In *Proceedings of the 2016 CHI Conference on human factors in Computing systems*. 1415–1425.

[79] Time. 2018. Target quietly removes a t-shirt from its website after being accused of 'stealing the art of a gay Mexican artist'. https://www.businessinsider.com/target-accused-of-stealing-design-stops-selling-shirt-2018-5. Accessed: 2022-01-08.

[80] Time. 2020. Urban Outfitters accused of ripping off Indigenous artist Mitjili Napurrula. https://thebrag.com/urban-outfitters-mitjili-napurrula-plagiarism/. Accessed: 2022-01-08.

[81] Time. 2021. 'It's a David and Goliath Situation': A Viral TikTok Accusing Converse of Stealing a Sneaker Look Sheds Light on How Hard It Can Be to Protect Design. https://time.com/6051059/converse-national-parks-tiktok-cecilia-monge-design-controversy/. Accessed: 2022-01-08.

[82] Maryam Tohidi, William Buxton, Ronald Baecker, and Abigail Sellen. 2006. Getting the right design and the design right. In *Proceedings of the SIGCHI conference on Human Factors in computing systems*. ACM, Sheridan Communications, Montréal, Canada, 1243–1252.

[83] Austin L Toombs, Shaowen Bardzell, and Jeffrey Bardzell. 2015. The proper care and feeding of hackerspaces: Care ethics and cultures of making. In *Proceedings of the 33rd annual ACM conference on human factors in computing systems*. 629–638.

[84] Jasper Tran O'Leary, Sara Zewde, Jennifer Mankoff, and Daniela K Rosner. 2019. Who gets to future? Race, representation, and design methods in Africatown. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–13.

[85] James Vincent. 2023. AI art tools Stable Diffusion and Midjourney targeted with copyright lawsuit. https://www.theverge.com/2023/1/16/23557098/generative-ai-art-copyright-legal-lawsuit-stable-diffusion-midjourney-deviantart. Accessed: 2023-07-14.

[86] Molly McLure Wasko and Samer Faraj. 2005. Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS quarterly* (2005), 35–57.

[87] Etienne Wenger. 1999. *Communities of practice: Learning, meaning, and identity*. Cambridge university press.

[88] Daniela Werthes, René Mauer, and Malte Brettel. 2017. Cultural and creative entrepreneurs: understanding the role of entrepreneurial identity. *International Journal of Entrepreneurial Behavior & Research* (2017).

[89] JM Wilson, SG Straus, and WJ McEvily. 2006. All in due time: The development of trust in electronic and face-to-face groups. *Organizational Behavior and Human Decision Processes* 99, 1 (2006), 16–33.

[90] Anbang Xu and Brian Bailey. 2012. What do you think? A case study of benefit, expectation, and interaction in a large online critique community. In *Proceedings of the acm 2012 conference on computer supported cooperative work*. 295–304.