

# Reappropriating Hackathons: The Production Work of the CHI4Good Day of Service

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## ABSTRACT

The popularity of hackathons has increased as technology pervades more facets of our lives. Originally designed for programmers, hackathons are now being appropriated by new stakeholders across diverse sectors. Yet with this evolution in hackathons, we no longer adequately understand what is produced and, thereby, the value of these events. We conducted an interview study with 22 stakeholders—participants, representatives of nonprofit organizations, and organizers—of the CHI4Good Day of Service to understand what is produced through philanthropic hackathons. Whereas traditional hackathons are oriented around the production of code or prototypes, our analysis of interview data suggests that the production work of philanthropic hackathons also includes technical capacity and expertise, expanded social networks, an exposure to design process, affective experiences, and an opportunity for participants to shape their identities against a cross-sectoral, interdisciplinary backdrop. We conclude by reflecting on implications for the CHI community in carrying out philanthropic events styled after hackathons.

## Author Keywords

Hackathon; Social-issue; Civic; Material Production; Social Networks; Design Process

## ACM Classification Keywords

H.5.3. [Information Interfaces and Presentation]: Group and Organization Interfaces—Collaborative Computing

## INTRODUCTION

Hackathons bring together participants from different backgrounds to address a problem through the creation of a computational intervention over the course of a day or two. Historically, hackathons have been recognized as a site for the development of prototypes in the form of code or other physical artifacts. More recently, however, diverse stakeholders across sectors have begun appropriating

hackathons to address their own challenges, resulting in hackathons newly-dubbed as “civic” [3] or “social-issue” hackathons [7]. These new styles of hackathons have been described as “addressing social conditions and their consequences” [3] and marketed as “coding for change<sup>1</sup>”. With this evolution in hackathons, however, it is no longer clear what the hackathon genre produces.

As these new styles of hackathons increase in popularity, it has become clear that the production work of these events extends beyond that of the distinct digital artifact of code or a prototype [3, 5, 6, 7, 8]. Irani notes that sometimes no artifact is produced at all [6]. And indeed, Gregg has criticized hackathons for their lack of deep engagement with social issues, shifting quickly from often-complex issues to a simplified, technical solution. Her criticism draws from the cultural exaltation of the Silicon Valley entrepreneur as a more valuable citizen, bypassing administrative bureaucracy and skipping right to action [5]. It is even more important, then, to understand what other forms of value might be produced through the work of philanthropic hackathons. If hackathons can be restructured to further facilitate and produce a broader spectrum of valuable outcomes in this context, we might better support the goals of nonprofit and civic organizations alongside the philanthropic goals of programmers, designers, and user experience researchers. To this end, this research seeks to provide a more comprehensive understanding of what is produced as a result of applying a hackathon-style event in a philanthropic context. Broadening our understanding of production work to include both the tangible and intangible outcomes of philanthropic hackathons provides a unique lens through which we can begin to understand what these experiences produce for the diversity of stakeholders.

Our research seeks to understand what is produced when the genre of a hackathon is appropriated in philanthropic contexts. Through interviews with 22 stakeholders of the CHI4Good Day of Service, we learn that in addition to artifacts, philanthropic hackathons produce technical expertise, expanded social networks, an exposure to design process, affective experiences, and an opportunity for participants to shape their identity against a cross-sectoral,

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<sup>1</sup> <https://www.whitehouse.gov/blog/2016/06/03/open-data-and-innovation-national-day-civic-hacking-2016>

interdisciplinary backdrop. By understanding these alternative outcomes, we help position the HCI community to better plan and set expectations for Day of Service events styled after hackathons.

## RELATED LITERATURE

Hackathons allegedly originated in Silicon Valley during the late 1990's as internal prototyping and problem-solving events for large technology companies [7]. Most hackathons last one to two days and are characterized by the formation of small groups to address a particular challenge through the production of a digital or physical prototype [3, 4, 5, 6, 7, 8, 10]. In some cases, hackathon organizers incentivize participants by presenting a prize to the team that implements the most innovative solution [7].

In recent years, hackathons have been appropriated by governments, international institutions, and nonprofits to address societal or “social-issue” challenges with pro-bono work [3, 5, 6, 7]. These philanthropic hackathons are generally understood by researchers as more complex forms of the conventional hackathon. Multiple researchers have independently observed that philanthropic hackathons accomplish more than the physical outcomes typically associated with traditional hackathons, suggesting that these events also provide a venue for knowledge exchange, public relations opportunities, and citizen engagement [3, 5, 6, 7]. The emergent understanding that philanthropic hackathons engender new forms of production work prompts the question: *what is the breadth of production work for the diversity of stakeholders when traditional hackathons are appropriated in a philanthropic context?*

## RESEARCH METHODS

### Research Context

The CHI4Good Day of Service was promoted as a volunteer opportunity for individuals attending the 2016 ACM SIGCHI Conference on Human Factors in Computing Systems to “enable CHI attendees to leverage their skills to make an impact.”<sup>2</sup> Held for eight hours on the Saturday preceding the conference, three conference co-chairs and a consultant event organizer brought together 34 non-profit organizations from the Bay Area and approximately 100 volunteers for a hackathon-style event hosted at the Convention Center in San Jose, California.

### Data Collection & Analysis

Researchers conducted semi-structured interviews using an interview protocol customized to the role of the participant. Each protocol explored the following areas: motivations for participating or not participating, preparation work before the event, and perceptions of the event's “success” as operationalized by each participant. A total of 22 individuals—representative of the diversity of the event's stakeholders—participated in the research:

- 4 event organizers, referenced with an anonymous participant number O1–O4;
- 5 representatives of nonprofit organizations who attended the event (N1–N5);
- 1 representative of a nonprofit organization who applied to participate but was never matched with a volunteer group (AN1);
- 8 volunteers who attended the event (V1–V8);
- 3 volunteers who originally RSVP'd but did not attend the event (AV1–AV3); and
- 1 individual who purposefully chose not to participate in the event (C1).

A researcher interviewed all organizers during the event or within the following month. Nonprofit representatives were interviewed during the event's breaks, with two of the five also participating in follow-up interviews three months later. Researchers received contact information for AN1 through event organizers; she was interviewed two months following the event. All volunteers, whether they attended or not, were recruited through a series of emails sent by event organizers after the event. Interviews with individuals in attendance lasted 33 minutes, on average, and interviews with individuals who did not attend lasted an average of 18 minutes.

Researchers transcribed and inductively coded all interviewers. In moving back and forth between the research literature and this initial coding, researchers developed a guiding question that drove subsequent rounds of analysis: “What was produced (or not produced) in this experience for this individual?” Relevant sections of transcripts were printed and clustered during collaborative analysis sessions to identify the variety of outputs and their context.

## RESULTS: WHAT IS PRODUCED?

### Artifacts

Similar to a traditional hackathon, most participants noted contributing to a digital artifact that was handed over to the nonprofits after the Day of Service concluded. While a few of these artifacts were prototypes (e.g., a digitized “re-entry” guide for those exiting the American prison system), they were the minority of digital artifacts created during the Day of Service. More frequently, teams implemented small improvements for the nonprofits' existing websites or they produced wireframes and visual mockups. In some cases, the artifact was actually a draft document detailing important “next steps” for the nonprofits. As V6 explained:

*[We] summarized this in the PowerPoint presentation...and include[d] other things like examples of other great nonprofit websites, some things about payment services and tools to collect donations, and articles on good design for nonprofit websites as well as hosting options especially targeted to nonprofits, so at the end we didn't code anything. (V6)*

<sup>2</sup> <https://chi2016.acm.org/wp/day-of-service/>

Yet, despite the broad-based interest in producing digital artifacts, participants reported mismatches in expectations and needs, particularly between volunteers and nonprofit representatives. One nonprofit representative explained:

*...we're moving to WordPress but it doesn't seem like something a lot of these volunteers use. They prefer... Bootstrap, probably, or... HTML. So there's platforms that seem more user friendly but... pure technical people don't want to use [them]... (N1)*

### Technical Expertise

Almost all nonprofit representatives interviewed discussed being unsure of what skills or tools would be needed to accomplish the project they had proposed for the event. Most agreed that participation in the event led to a better understanding of their baseline project needs, an awareness of existing technologies that might satisfy these needs, and their organization's potential capacity to fulfill these needs. N5 discusses the production of technical expertise:

*I now know more than I did this morning...like how much will it cost me to by a Google App engine. I have leads of places where either I can get it for free or somebody will pay for it. (N5)*

The lack of technical expertise among nonprofit representatives going into the event was a central theme among all stakeholder groups. In a minority of cases, participants suggested that technical expertise may not yet have been produced for nonprofits in ways that would cultivate long-term impact.

*... for a nonprofit that's done at least two or three of these [events], after about three, they're over it because they realize they really are investing more money in coming to these than they're getting out of them. (O2)*

### Design Process Experience

Most projects proposed for the event were ill-suited for either the timeline of the day or the expertise of the volunteers. Many projects, then, required restructuring or adaptation; in some cases, the entire proposal was scrapped by volunteers. One nonprofit representative suggested that the lack of a streamlined process for defining not only technical needs, but also for monitoring the progress of the project might contribute to the discontinuity: "...sometimes it comes down to an individual in a nonprofit taking the initiative...there aren't any best practices." (N1)

Yet as teams restructured project proposals or, in some cases, developed totally new ones, there was a discernable shift towards user-centered design methods to reshape the plans. In one project team, the user-centered design processes used during the event influenced changes in the organization:

*I think the framework of user experience has been helpful... pushing how to get people to change their minds about the role of technology. I stress that*

*internally within our organization because I think we're having to change the mindset of what that is for folks internally. My [Day of Service] team is a strategic partner [now]... (N3)*

### Social Networks

Individuals in all stakeholder groups were motivated to attend the event by the potential to produce larger social networks. Participants reported developing new ties between nonprofit organizations and volunteers, among volunteers, between organizers and nonprofit organizations, and between organizers and volunteers. Participants found different kinds of ties more or less valuable based on perceived need at a personal or organizational level. AV9, for example, valued the opportunity to meet other volunteers:

*I thought it would be an amazing networking opportunity...just to kind of meet people who do similar things and also people who just care about different things... (AV9)*

Participants believed that these new network ties would lead to possible job or volunteer opportunities, new volunteers for their organization, or increased understanding of the value of individuals with different disciplinary backgrounds. O4 discusses one instance in which this outcome was produced: "One [nonprofit] is now going to hire a [UX] designer, that will be employee two or three for [them]..." (O4)

### Affect

Affect emerged as a more abstract product of the Day of Service—an unexpected but significant theme across stakeholder groups. Both volunteers and nonprofit representatives alluded to emotional changes throughout the day brought about by social interactions, event logistics, and perceptions of progress (or the lack thereof). Terms like "energy," "fun," and "good feeling" were used to describe positive affect while "awkward," "uncomfortable," and "frustration" were used to describe negative affect. Many individuals mentioned that their intention to participate in the event was largely motivated by the idea that some sort of positive affect would be produced:

*... it was a social thing that beforehand a lot of my friends said that they were all going to volunteer, as well. I was like 'this is going to be great, we're going to work on different projects but we're all going to go there together and it's going to be a blast.' (AV2)*

### Hackathon Identity

The work of navigating the diverse backgrounds and varied levels expertise of team members within each hackathon team afforded an opportunity for individuals to explore and construct their hackathon identity, much in the same way that Arrow and McGrath find that processes created in small group settings are fundamental to establishing the identity of the group as well as the individuals within the

group [2]. By understanding the goals, motivations, and other information about team members, participants worked out their identity with respect to the role they might play and what they might contribute to the project at hand:

*The first project was interesting... I thought that I had a lot to contribute to it. The second one... I was familiar with the process of identifying the appropriate web design but I haven't a lot of experience with that in a long time. I was kind of learning on the way... (V2)*

Numerous participants noted that skill matching with projects was of particular importance to the production of their hackathon identity. Additionally, unlike typical hackathons, volunteers at the Day of Service were able to rotate through the event based on personal preference or schedule. Some volunteers took part in a project for no more than two hours while others stayed for the entire eight-hour period. Participants commented that the fluid group composition created a context for the continual renegotiation of one's hackathon identity:

*The new person... came in kind of fresh and not knowing what was going on so her role kind of turned out to be usability participant... (V1)*

As the production of one's hackathon identity played out over the course of the day, the diversity within teams—both disciplinarily and reflecting varied levels of expertise—created significant tensions. Some participants described difficulty merging the ideas of different team members due to differences in disciplinary approaches and expectations. V3 describes how identities within her team were constructed in response to a hierarchy of expertise:

*I worked with a woman that is a manager [at a software company] so it was like I'm a student and she has all this experience and I think with that dynamic she felt that she had the final say in a lot of things. (V3)*

## DISCUSSION

Results of this research, systematically explore what is produced for the diversity of stakeholders involved in these events, suggest that the products of philanthropic hackathons are not limited to prototypes or even other tangible artifacts but include the production of a diversity of more abstract and immaterial items, as well. Irani suggests that hackathons may favor “quick and forceful action” over “the slow construction of coalition across difference” [6]. Gregg and Toyama raise similar concerns about whether hackathon-style events may move too quickly from complex social issues to overly simplistic technical solutions [4, 9]. A more robust understanding of the non-technical products of philanthropic hackathons, then, stands to be an important step towards mitigating these important concerns. We turn, then, to consider how we might better design philanthropic hackathons to help form and foster meaningful connections among the stakeholders of the event and to encourage teams to engage more deeply with

social issues, moving less quickly, if at all, to technical solutions.

## Design Implications for Philanthropic Hackathons

By foregrounding and providing scaffolding to better support the diversity of what is produced by hackathons—beyond digital artifacts—we speculate that the hackathon genre might be productively restructured to benefit the breadth of stakeholders. Based on our empirical data, we suggest several implications for the redesign of philanthropic hackathons. Organizers might better support technical capacity building and expertise by offering repurposeable templates or design patterns (e.g., for setting up databases, creating websites, or developing mobile applications) (see also [8]). Organizers might better support the expansion of social networks by connecting participants before the hackathon to start building connections and after the hackathon to support potential follow-up communication and collaboration. To support an exposure to design process, organizers might offer nonprofit representatives step-by-step guidance through a flexible design process, producing user needs' assessments and workflows prior to attendance at the event (see also [8]). As affect has been found to accompany creative activity [1], organizers might support the expression of both positive and negative affect through opportunities for active reflection throughout the day. Lastly, to support occasions for shaping identities for collaboration, organizers might propose distinct roles and responsibilities for participants to achieve shared goals.

## CONCLUSION

As HCI researchers, we are committed to understanding new ways to practice, develop, and improve methods in HCI. In this research, we have developed a richer understanding of how philanthropic hackathons go beyond creating digital artifacts—to support technical expertise, design process, social networks, affect, and identity. Understanding the value in the breadth of what is produced by philanthropic hackathons will enable us to rethink the design of these events and will, we hope, spark a conversation about how the HCI community can best reappropriate hackathons for societal good.

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