TOWARDS A FEMINIST HACKATHON: THE "MAKE THE BREAST PUMP NOT SUCK!" HACKATHON

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In this paper we articulate a vision for incorporating a feminist design perspective into hackathons by presenting an in-depth case study of the "Make the Breast Pump Not Suck!" Hackathon at the MIT Media Lab in 2014. In recent years, there have been a proliferation of hackathons for social impact. Skeptics point out numerous shortcomings with hackathons, including poor problem-selection, diversity and inclusion issues around who participates, the exploitation of unpaid labor, limited impact, and the dangers of positing purely technological solutions to sociotechnical issues. In this paper we propose that incorporating a feminist design perspective can help mitigate some of these critiques. We articulate one vision for what a feminist hackathon looks like by leveraging our distinct backgrounds in Critical Making, Human-Centered Design and Interventionist Art Practice in tandem with Feminist Human Computer Interaction. We describe how we applied this vision to making the breast pump not suck. The focal object—the breast pump—is a sociotechnical design object and pain point at the intersection of social norms, historical and structural inequality, technological (un)innovation and flawed policy. We outline the breast pump hackathon's structure and our methods for evaluating its impact. Finally, we detail our findings from the hackathon in relation to our six proposed tenets of a feminist hackathon and offer a discussion of critical considerations and strategies to strengthen social impact hackathons by incorporating a feminist design perspective.

Keywords:

Feminist design, Feminist Hackathon, MIT Media Lab, Breast Pumps

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Hackathons

A hackathon is typically a 24 to 48 hour long event, where programmers, designers and others assemble, join teams, and work on a challenge. Hackathons have been a long-running community practice in open source groups, hackerspaces, and companies. People participate to learn, signal their belonging to the group, and often to make something new. Many communities hold hackathons as one component of their larger initiatives (Brugh and Matias, 2014).

Hackathon origins are often traced back to early personal computer culture, and specifically to the Homebrew Computer Club in the 1970s. The invitation language to join the Homebrewers sounds remarkably like the informal social promises made in contemporary hackathons: "Exchange information, swap ideas, talk shop, help work on a project, whatever…" (Adafruit 2015). While cooperative technical gatherings have long been common, it wasn't until 1999 that the term "hackathon" first appeared. The term was coined by OpenBSD hackers to describe an event in June of that year in Calgary, Alberta[1] and for an event held by Sun Microsystems a few weeks later (Aviram 1999). Yahoo and Facebook helped popularize the hackathon as a competition, both to invent new projects and identify talented programmers.

"Hackathon" can now mean very different things, each of which has been embraced by the social change sector: an open source cooperative development session, a competition to start new businesses, or a competition that showcases programming and design skills. You can find hackathons on water[2], air quality (Meyer Maria 2012), corruption[3], poverty[4], health (Bhandari and Hayward n.d.), government and civics (D'Ignazio 2013), and homelessness (Wolf 2014); as well as general-purpose "social good" events (Geeks Without Bounds est. 2010, Random Hacks of Kindness est. 2009, SocialCoding4Good est. 2010.[5])

The explosion of the hackathon as a working method raises questions for those who organize, sponsor, and attend them. Wishnie (2014) argues that hackathons encourage unrealistic expectations for what programmers can create in short periods of time, and notes that hackathons rarely produce technology that can be sustained after their creation. DeTar (2013) suggests that the brief time span of hackathons forces superficial solutions to complex problems while Porway (2013) suggests that hackathons are more likely to tackle challenges programmers face in their own lives, rather than the most pressing challenges. Gregg and DiSalvo (2013) argue that hackathons reduce complex social problems into oversimplified but solvable technical ones, a process Sasaki (2012) identifies as a form of Morozov's "solutionism" (Morozov 2014), where problems that do not have a technical solution do not get discussed. While these critiques of the hackathon form are valid, hackathons have also become a possible path to influence powerful institutions.

In addition, it is worth examining the dominant narrative of the hackathon and the way it plays out in the cultural imaginary. In their analysis of 640 articles about hackathons in the popular press, as well as interviews with 15 hackathon organizers and participants, Brugh and Matias (2014) discovered a mismatch between media narratives and the actual experiences of people involved in hackathon communities. In particular, the popular press overemphasized winners, perpetuated a solutionism narrative, promoted the 'startup,' as the most useful byproduct, and focused on only the event and not the lead-up or subsequent efforts. Missing from media narratives, but central to the interviews with hackathon organizers and participants, were discussions about hackathons as learning spaces and opportunities for people to engage with institutions.

Towards a Feminist Hackathon

Rather than abandoning the hackathon as a social form, this paper examines ways to mitigate these critiques through incorporating a feminist design perspective. In this section we outline a feminist approach to hackathons that is informed by our distinct backgrounds in Critical Making, Human-Centered Design, and Interventionist Media Art. While these applied research, art, and design domains do not have an explicit feminist commitment, we show through the case study of the "Make the Breast Pump Not Suck!" hackathon how their methods can be leveraged in support of a Feminist HCI agenda.

Human-Computer Interaction (HCI) researches the intersections and interfaces between people and digital technologies. HCI is an applied field concerned with the design, development, use and evaluation of interactive technology. In her 2010 paper "Feminist HCI: Taking Stock and Outlining an Agenda for Design", Shaowen Bardzell presents six qualities of feminist interaction design (pluralism, participation, advocacy, ecology, embodiment, and self-disclosure) that we use to form the basis for our vision of a feminist hackathon.

The backgrounds of the organizers in three fields also underpin this vision. Inspired by constructionist pedagogies (Papert 1980), Critical Making is a perspective that advocates for hands-on making as an avenue for critical reflection on sociotechnical issues (Ratto 2011) and values the process of making over the products of making. In the field of Human Centered Design, designers adopt an empathic stance and interact with stakeholders at every stage of the design process, with the goal of adapting and changing technologies to match the realities faced by humans (Simonsen & Robertson 2012). And Interventionist Media Art consists of tactics that engage and focus audience attention on issues of social and political relevance in unexpected ways and/or unexpected situations through traditional and participatory media channels (Thompson 2004).

Offering a vision of a feminist hackathon is not intended to exclude other definitions, but rather formulates one vision amongst many possible. We hope you will imagine alternate visions for a feminist hackathon drawing from other fields and practices.

A feminist hackathon thinks ecologically about the problem space and fosters technical and non-technical solutions.

A feminist hackathon favors learning over invention in order to introduce a more holistic understanding of a problem space that specifically includes and values the perspectives of marginal users and subject matter experts.

A feminist hackathon prioritizes listening over ideating to acknowledge that while the designer's position is powerful, her perspective is partial. Structured listening creates an inclusive environment and values non-specialist ways of knowing.

A feminist hackathon sees the production of new social relations (stakeholder conversations) as a more effective path to change than the production of objects (rewarding winners).

A feminist hackathon intentionally architects media attention in order to advocate for the issue.

A feminist hackathon nurtures and sustains communities of practice after the fact.

In the remainder of the paper we describe how we applied this vision to the "Make the Breast Pump Not Suck" Hackathon at the MIT Media Lab in 2014, how we assessed its impact, and what critical concerns and questions this case raises for the design of future feminist hackathons.

Introducing the Breast Pump

"Hi! I wanted to cry out HOORAY when I read that you were tackling breast pumps!! I'm a working mother of an 8 month old and have been in the medical device industry for some time. When I first saw a breast pump I was wondering if it was a joke."

"Promoting awareness makes you look pretentious, so I slither into a storage closet and pump 4 x day. Makes me feel like I'm stealing from my company and coworkers rather than helping my babies. Haul my lunch bag home with milk and freezer packs every day. Pumping is an art and a science. Took me books, blogs, LC's, friends, controlled experiments, and I'm still learning proper methods. Thank you for listening."

"Encourage and assist mom and baby to breastfeed exclusively, no pump is going to ever be better than the real deal!"

"6 to 12 months of paid maternity leave."

—   Four of the 1165 user stories and ideas for improving the breast pump

Breast pumps are machines that help mothers[6] extract breast milk when they are not with their baby, as in the case of a parent working outside the home, or when a parent is with their baby but cannot breastfeed them. A mother might also extract milk to share with an adopted child or to bring to a milk bank[7]. Breast pumps can be life-saving for babies born prematurely who are being cared for in a neonatal intensive care unit (NICU). Premature babies are too young to latch on to the breast and their immature digestive systems cannot handle any nutrition other than mother's milk. Breast pumps typically use vacuum and compression to trigger the mother's let-down mechanism, which makes the milk flow from the breast. Breast milk is collected in a bottle and can be fed to a baby through a bottle, dropper, tube, or cup.

The benefits of breastmilk to individual and public health are considerable. Breastfed babies have fewer incidences of short-term illness and lower risk of asthma, allergies, and obesity. Breastfeeding moms have lower risks for reproductive cancers. Leith Greenslade of the United Nations calls it the biggest missed opportunity in child survival because it is estimated that breastfeeding within the first hour of birth has the potential to reduce newborn deaths by up to 20% of the total 2.8 million annual newborn deaths (Greenslade 2014). The World Health Organization (WHO) recommends breastfeeding for at least the first two years of a child's life (WHO 2015). National policy recommendations are in place in many countries (AAP 2015, NHS 2015).

And yet, breastfeeding is hard: it's hard to initiate the breastfeeding relationship and it is also hard to maintain it if social norms and family leave policy do not support it. Sociologist Linda Blum argues that conversations about motherhood and breastfeeding are not private matters, but play out publicly the setting of obligations of the maternal body to the larger social body, casting some mothers as inferior if they do not breastfeed (Blum 2000). Parental leave policy has not caught up with women entering the workforce either in emerging economies nor in the US context. Indeed, the US has the highest number of pumping women but is considered a "Maternal Health Backwater" along with Liberia, Papua New Guinea, and Swaziland for being one of the only four countries in the world that do not grant paid parental leave on the birth of a new child (Bernard 2013). Though forty percent of mothers are now the breadwinners for their family in the US (Wang et al., 2013), they often return to a workplace that may not be supportive of breastfeeding (Tsai 2014), may not grant time to pump, may not have a space other than a bathroom or closet to pump, may not have a place to refrigerate pumped milk, and may not have colleagues that understand or appreciate what is going on.

Beyond the social, cultural, and policy context, there are other structural forces at play in relationship to breastfeeding and pumping. Innovation in maternal health lags behind other sectors (Herrick et al 2014; Ching Yu et al 2006; Fisk & Atun 2008; Peterson et al 2012; Freedman et al 1993), partially because we simply do not have the scientific understanding of pregnancy, lactation, and the postpartum period to produce relevant innovations (Hinde 2015).
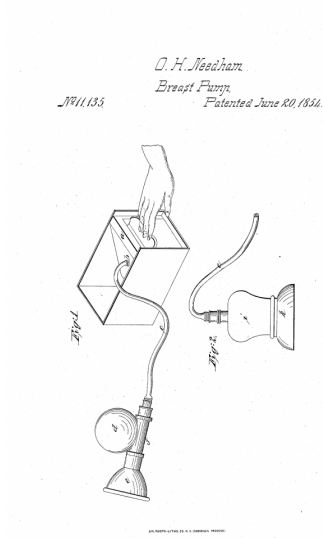
US Patent #US11135 A, Orwell H. Needham, 1854

Medela Symphony Pump, 2015

All of these aspects come into play when considering the breast pump as a sociotechnical design object and may account for the fact that the object itself has not significantly changed in design since a patent was filed for it in 1854.

Event Structure and Background
Our small working group is composed of seven people who identify as designers, engineers, and artists[8]—most of whom are, or were becoming, parents. Most of the organizing team is affiliated with the MIT Media Lab, either as students or researchers. MIT is an elite engineering institution and the MIT Media Lab is known as a center of technology design and a prominent voice in discourse about the future (MIT Media Lab 2012).

Initially our group met in small, informal meetings. We decided to host a small hackathon, targeting other new parents among our peer group. One goal for this small hackathon, held May 21-22, 2014, was to put us in conversation with midwives, lactation specialists, and medical researchers to help inform our early designs. After this event, we posted an account on the MIT Media Lab blog (D'Ignazio 2014), citing our group's email address in case readers wanted to offer suggestions for how to improve the breast pump. The post was widely shared across social media, and we received hundreds of emails with ideas for redesign, personal stories, affirmations of support for the premise of the project, and messages asserting that we should shift our focus to policy or education rather than pumps. This outpouring of interest led us to believe that there was a need for a more public and critical conversation that we could help catalyze. In response, we started planning a second, larger hackathon.

The "Make the Breast Pump Not Suck!" hackathon was held on September 20-21, 2014, in Cambridge, Massachusetts at the MIT Media Lab. Participants at the event were asked to register within one of 6 categories: breast pump users, engineers, designers, healthcare experts, educators, and media. The event itself—including meals and materials—was free for participants. We did not charge entrance fees. We used

an online registration system to manage attendance. Our venue had limited capacity of 150 people and the event reached capacity. We elected to have a separate category for breast pump users in order to ensure there would be adequate representation of end users who brought other skills and interests to bear on the design process. In addition to registrants, we worked with sponsors to fund two scholarships for attendees who could represent the experiences of low-income breast pump users. While the event was free to attend, the scholarships were intended to support travel, lodging, and paid time off work for the recipients. The two women who applied for and received these scholarships, a NICU nurse and a bartender who pumps exclusively, became resident advocates for the low-income perspective and generously advised almost every team at the hackathon.

Participants were asked to wear at least one colored sticker that signified their identities or expertises to others. Most participants wore stickers of multiple colors, signifying that they were, for example, both an engineer and a breast pump user. This was to enable quick match-making for teams, as well as a visual check for adequate team diversity.

The hackathon was held in a large open atrium with 10 large circular tables surrounded by chairs. Booths from sponsor companies—health technology companies and manufacturers of breast pumps and breast pump accessories as well as baby care products—were arranged around the perimeter of the room.

The main area of the breast pump hackathon. Photo by Mason Marino.

The event began with opening remarks that described the importance of breastfeeding, common pain points for users of breast pumps, and the sociopolitical context for such a device to be so widely used in the United States. After the opening remarks, there were six "inspirational talks," given by the judges for the event. These brief talks (5-7 minutes) described current research on the recent discovery of stem cells in breast milk, the context of maternal care in low-resource environments, and advice on how to turn an early-stage hardware prototype into a product.

After the talks, participants were invited to brainstorm potential ideas, write or draw them on a large piece of paper, and come up to the front of the room to give "lightning pitches." Twenty nine people gave pitches of 1 minute each. Over lunch, participants were asked to talk to people with whom they shared common ideas in order to form teams.

Once participants chose their teams, the time was largely unstructured. Some teams moved to different parts of the building to work, though the majority stayed in the central atrium, where the materials table and a 3D-printer were located. All meals and snacks were also served in this common area. This balanced both a desire for quiet, focused work space as well as the serendipity of shared space and overheard conversation.

Adjacent to the main space was a children's play area, with a diaper changing station and many toys. In this space was also a private lactation room, though participants were also encouraged to nurse freely wherever they wished. The lactation area and restrooms were outfitted with nursing and baby care products. These amenities were included at the event to make it easier and more appealing for nursing mothers and families to participate in the event. We encouraged participants to bring a partner or friend to care for their children on site. As a result, there were many babies, both in the arms of their caretakers, or crawling on the floors between spaces, a perpetual reminder of why the event was taking place.

Between the children's area and the main space was a wall of breast pump user stories. Our organizing team printed emails received after the initial blog post about the project, and hung them on the wall. Participants who arrived early were encouraged to read the stories and color code words or phrases within them according to themes including usability, policy, public spaces, medicalization, complexity, among others. Teams were told that part of the criteria for the final judging would entail incorporating these user stories into their design rationale.
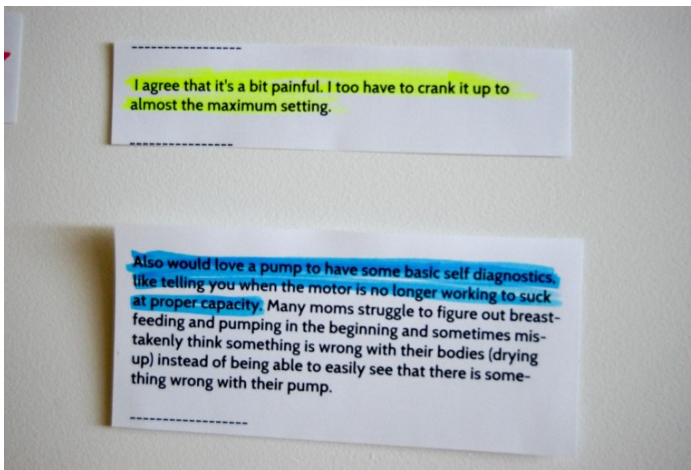
More than 1000 users from around the world sent us their ideas to improve the pump. These hung on a wall at the hackathon, color-coded by category. Photo by Andrew Whitacre.

At the end of day one, each team described their progress, which for that day included ideation and sketching as well as initial construction of prototypes by some groups. These presentations helped to keep teams on track, setting reasonable expectations for themselves. The event officially closed at 8pm that evening, though teams were invited to continue working in the space as long as they wanted.

The next morning, after a short welcome speech, teams continued their work. Event organizers and volunteers moved between teams to help source materials, develop ideas further, and identify and resolve impediments to team progress. We had eight to twelve subject matter experts, including the two people who received scholarships to represent the perspective of low-income breast pump users, work as roving consultants, educating teams about breast anatomy, the experience of pumping and the science of lactation.

In the afternoon, teams were asked to create documentation for their work and upload this work to the web[9]. In addition to this documentation, each team gave a 5-minute public pitch at the end of the event. Judges, an all-women team composed of speakers from the inspirational talks and representatives from sponsoring companies, listened to the pitches and gave each team feedback. There were nine teams who presented prototypes. These projects included a bra that acted as a set of "helping hands" to manually express breastmilk by compression, a virtual reality simulation system to try out different pumps, a pump that more accurately mimicked the sucking of a baby, a toolbelt that allowed the user to discreetly pump and store milk, and a smartphone-driven pump that also provided community and advice to women while they were pumping.

Finally, the judges left the room to deliberate, and returned for the awards ceremony. In addition to first, second, and third place, the judging committee offered an award for "Outstanding User-Centered Design," as well as a "Pioneer Award," for a participant who had worked on a novel breast pump for two years prior to attending the event. A supplement to the first place prize was a trip for two team members to pitch their ideas to Silicon Valley investors. After judging, teams mingled, celebrated, and shared ideas for future work.

After the event, we shifted our focus to maintaining, connecting, and nurturing the community that had formed around the hackathon. This included making connections between participants at the event and outside groups who were interested in their work, following up on each team's progress, working with MIT classes and students who wanted to implement some of the ideas developed at the hackathon, and moderating a public Facebook group.

Methods
Because we did not know in advance of the hackathon what the outcomes would be, nor what the most active and influential media channels might be, we cast a broad net with our methods.

In this we are operating in the tradition of design research (Collins et al 2004, Laurel 2003) in which design-based interventions are theoretically informed, conducted in contextual, real world settings and designers use mixed and multiple methods in order to assess impact and iteratively refine their design (Collins et al 2004).

In order to evaluate the design of the hackathon, including whether it lived up to the vision of a feminist hackathon that we articulated above, we conducted a variety of qualitative and quantitative inquiries. The methods we employed included an online survey, unstructured interviews, a media frame analysis, tracking participation across social media, and a qualitative analysis of user-submitted ideas sent to us via e-mail. We used a variety of methods to try to get at both the material and discursive dimensions of the hackathon, i.e. the experience of the participants before, during and after the event, as well as the experience of the hackathon through media channels.

Immediately following the event, we contacted registered participants via e-mail and invited them to participate in a four-question survey that focused on what participants liked about the event, what they would change for future events, and if the hackathon would impact their

life or work going forward. We received twenty responses.

In addition to the online survey, we reached out to four individual participants with whom we developed relationships at the hackathon to conduct unstructured interviews. These interviews helped us understand their experiences during and after the event. Additionally, we interviewed representatives from five sponsor companies to understand the impact the event had on their internal approaches to innovation and connecting with end-users. These interviews were conducted in-person when possible, or through telephone and Skype. Through these interviews, and through informal email and Facebook check-ins, we also tracked how teams worked together after the hackathon, what relationships formed and dissolved, and how projects proceeded.

The hackathon was covered by more than 80 press outlets. As one of our goals was to garner media attention to highlight an often-ignored issue, we were curious about what frames the media would use to discuss the hackathon and whether our talking points were part of the focus of the story. To better understand patterns across coverage, we tracked each piece of media produced about the hackathon and coded the frames used to describe the event, including focus, intended audience, and sentiment. We also compiled and analyzed an archive of 754 tweets about the event.

Prior to the event, we created a Facebook group[10]. This group currently has 1,853 members and is composed of both hackathon participants and individuals who are interested in issues related to innovation, breastfeeding and pumping. Members of the group frequently share articles related to personal experiences, public policy and technological innovation. We logged these posts and coded them according to topic (Glaser & Strauss 1967).

Lastly, we qualitatively analyzed the 1,165 emails we received from pumping mothers prior to, during and following the event. These emails were coded using a thematic approach (Glaser & Strauss 1967).

Findings

In this section we detail our findings about the "Make the Breast Pump Not Suck" Hackathon in relation to each tenet of our vision for a feminist hackathon.

A feminist hackathon thinks ecologically about the problem space and fosters technical and non-technical solutions.

Bardzell uses the concept of "ecology" to refer to a technological artifact's position in a system of sociotechnical relations (2010). By using a systems approach in problem selection and framing, hackathons can lay the groundwork for participants to think holistically about the technical, social, political and ethical dimensions of a problem space and to foster the design of non-technical or only-partially-technical solutions. While the breast pump hackathon took the object as a starting point, we tried multiple avenues to open up the design space into the realms of education, family leave policy, global health and scientific research (specifically, the lack thereof). We mentioned these domains in all of our blog posts and published communications about the event. We articulated these concerns at the opening of the hackathon and repeatedly during the event to all participants. We invited at least one subject matter expert in all four domains (though our policy expert ultimately could not attend). And we have attempted to continue to broaden the scope of the design challenge by publishing news about policy and scientific research to the Facebook group.

Despite these efforts, the projects and ideas generated at the hackathon remained mostly focused on innovating the technical and mechanical aspects of the breast pump. Participants proposed software apps, new hardware prototypes and pumping accessories. Notable exceptions which broadened their concern to the experience and environment of pumping included Bundle, a warm and huggable object that covered the pump, PumpIO, which included ways for the pumping experience to be less isolating and more informative through just-in-time educational consultations, and MilkPod, who proposed an alternate architecture for pumping environments. We may have primed responses by frequently directing teams to the hundreds of user ideas on the wall for guidance, the majority of which were focused on the pump object[11] so it may not be a surprise that participants listened, and focused on innovating the object and the experience of it rather than its broader social or political ecology[12].

Our lesson here is that it is not enough for the organizers to state that they welcome non-technical and/or more broad-based considerations of the problem space. They must find ways to actively cultivate those broader projects. Although we ourselves could imagine any number of systemic or sociopolitical projects such as alternate family leave policies, proposals for on-site daycare, proposals for universal access to lactation consulting, funding incentives for research into the postpartum period, et al., why didn't these kinds of projects unfold? We speculate that this had to do with who the participants were (majority identified with design or development), where the hackathon took place (MIT as a technical institution) and what the typical expectations are for a hackathon (assumption of fast-iteration in software development). We did not have a "policy" category for participants to identify with. It also begs the question of what it might mean to "hack" policy, law or education—this is something that challenges conventional expectations of a hackathon, although there are some powerful examples like the annual Aaron Swartz hackathon (Higgins 2013).

A feminist hackathon favors learning over invention in order to introduce a more holistic understanding of a problem space that specifically includes and values the perspectives of marginal users and subject matter experts.

A hackathon can be used as a transformative pedagogical space—a listening- and learning-by-doing space—that introduces the concerns of what Bardzell (2010) calls the "marginal user". While traditional HCI has attempted to create "universal usability", Feminist HCI leverages feminist standpoint theory to specifically engage with user perspectives that are left out of a design regime dominated by Western universalism, including perspectives from women, communities of color, children, low-resource contexts, and the Global South. Because these perspectives are marginal and often overlooked, designers need bridging learning experiences to appreciate the concerns, constraints and opportunities afforded by them.

The breast pump hackathon created an informal learning situation for participants, including designers & developers, parents, midwives and doctors, lactation consultants, public health researchers, scientists, sponsors, and investors. Learning took place through a variety of formats. It included structured opportunities such as short talks by subject matter experts and the screening of "Breastmilk: The Movie[13]" during a break. The short talks were a source of knowledge transfer and inspiration for many. In one of the talks, a lactation consultant described the age-old use of manual compression, and how it could successfully produce a sufficient volume of milk. One of the teams, Helping Hands, based the entire concept of their project on this insight.

The majority of learning opportunities, however, occurred through collaborative making and discussion. During the time that teams were working, subject matter experts (a mix of professionals and breast pump users from various domains) roved throughout the event, consulted with teams, and gave them critical feedback. This feedback was most important for the few teams without a nursing mother—often, engineering solutions had to be redirected to match the realities of anatomy or the context of breastfeeding.

Even some of the roving experts were able to learn from the experiences of participants. In a post-event survey, one of the experts remarked: "As a lactation consultant it is helpful to hear thoughts from pump-users about their pumps and pumping." After the hackathon, one of the scholarship recipient experts remarked to us that she was now looking at everything in her everyday life with an eye towards redesigning it. In addition to the experts and volunteers, the event also had an impact on representatives from the sponsor companies, one of which stated that they would "adopt some of the hackathon process into [their] events to try to evoke new inspiration and idea sharing."

We also hoped the event would be an opportunity for participants to learn more about human-centered design and its associated methods. One participant described the event as a chance to practice skills like "empathetic listening, problem identification, ideation, and general interviewing," which in turn helped them "learn a ton about parenthood and the stresses of family life."

While we intentionally designed the hackathon for formal and informal learning to take place, it is unclear whether the breast pump hackathon truly favored learning more than invention. We still had a traditional "competition" model of hackathon where people made prototypes, were judged and received prizes. Prizes, particularly the Grand Prize which offered a trip to pitch to investors in Silicon Valley, potentially contributed to an overall focus on building objects rather than developing social or policy solutions. It would be unlikely for investors to respond to a solution without a technological component. If we conceive of a hackathon as a large teach-in[14] through making, perhaps there is an opportunity to think about demonstrations of learning at hackathons instead of demonstrations of technical invention?

A feminist hackathon prioritizes listening over ideating to acknowledge that while the designer's position is powerful, her perspective is partial. Structured listening creates an inclusive environment and values non-specialist ways of knowing.

The feminist design quality of "pluralism" concerns "foregrounding questions of cultural difference, encouraging a constructive engagement with diversity, and embracing the margins both to be more inclusive and to benefit from the marginal as resources for design solutions" (Bardzell 2010). Pluralism is consistent with participatory design approaches such as Human Centered Design which value lived experience and non-expert ways of knowing. At the breast pump hackathon, we attempted to create numerous opportunities for structured listening, including making it inclusive to new parents, babies and young children. We introduced the hundreds of ideas from breast pump users as an exhibit of large cards on the wall and tied the hackathon judging criteria to demonstrating an understanding of user needs.

Based on the thematic analysis of the over 1000 user stories we received, the design challenges that surfaced are as follows:

(1) Education & Resources: Women often lack education and resources to try different pump models, flange sizes and to get proper fit. Electric pumps are expensive. Some insurers only cover inexpensive, poor quality pumps. Women without insurance often cannot afford a pump.

(2) Difficulty: Milk let-down, which depends on the oxytocin naturally produced by babies cooing and crying, and on relaxation, is difficult with a hard, plastic device. Pumping is an inorganic, medicalized, generally unpleasant process, often taking place in a stressful, time-crunched environment.

(3) Too Many Parts / Not Enough Parts: Pumps come with lots of parts that need to be cleaned and sanitized between feedings. If you leave a part at home, the pump doesn't work. And yet, most do not come with accessories that make them hands-free so that women could be doing something other than holding cold plastic cups to their breasts for the 15 minutes it takes to pump.

(4) Degrading: Pumping is loud and mechanical, and has a generally medical and degrading feel; the mother is in a closed-off room, plugged into the wall, struggling to adjust and multitask, all while feeling rather like a cow being milked.

(5) Social Norms: Breasts are sexualized (Hursta 2013). Breast pumping is treated like a hidden and embarrassing medical condition. Pumped breast milk is considered a waste product rather than as a food product.

The tension that we experienced with both listening and learning is the time constraint of the hackathon. How can participants get a deeper understanding of user- or community-driven concerns as well as prior work in the space? Should hackathons spend a day or more on listening and learning prior to pitching ideas? Aspiration[15], a firm that connects social justice organizations with technology refers to this as "lingering in the problem space." Many people, particularly those who had used breast pumps, arrived with ideas already formed and participants pitched ideas in the morning of the first day of the hackathon. In some cases, this led to classic hackathon issues like prototyping the ability to measure soluble fat in breastmilk just because it is possible to measure rather than because mothers want that information. One commenter on Facebook who received 289 likes said, "Tracking fat content implies it is something a mom should concern herself with when she needn't. Moms who are pumping tend to be nervous enough about what they're producing as it is."[16]

And while all projects demonstrated connections with the user stories in their final presentations, some of the most frequently mentioned and specific pain points like being able to lean back, making the parts easier to clean or reducing the noise of the motor did not get addressed. In one interview, a member of the winning team who had participated in the event because he was working on a noise-dampening accessory stated that he felt that his idea was "too low-tech" and "simple" to be worthy of the team's attention at the hackathon. It is clear that a hackathon, particularly one at MIT, creates expectations for bold, complex and ambitious ideas. This leads us to believe that there may need to be alternate incentives or more expectation-setting up front so that modest, useful, user-responsive ideas can see the light of day.

A feminist hackathon sees the production of new social relations (stakeholder conversations) as a more effective path to change than the production of objects (rewarding winners).

While media portrayal of hackathons tends to focus on winning designs (Brugh & Matias 2014) and their possibilities for being brought to market we posit that a feminist hackathon has a different theory of change informed by the feminist design qualities of participation and advocacy (Bardzell 2010). The hackathon has the potential to be a unique convening space where people from different stakeholder positions and levels of privilege can meet, learn together, and form bonds of affinity. Our hackathon did produce objects and prototypes, some of which have continued to be developed. Three of the winning teams merged around the compression pump project and went on to win the prestigious MIT 100K Accelerator business competition (MITSloan 2015) and then to launch a Kickstarter to fund the next stage of their project[17]. MIT students continued work in three separate classes, building a software driven pump, a smartphone interface and an invention to reuse and share pumps.

However, the prototypes and the new collaborations that underlie these projects are fragile. The team that won the MIT 100K has since dissolved, though the project continues with one member at the helm. Students are working on class projects that may or may not live on after a semester. One interviewee expressed that although a subset of his team continued working together for a couple weeks after the hackathon, nobody was ready to quit their day job. Another participant said she did her best to sustain the team's energy post-hackathon but felt that a return to "everyday life" was inevitable especially given that most attendees were parents. While the prospect of the breast pump hackathon bringing new products to market is unlikely without more resources and support for teams to work together, this is not the only path towards effecting change in this problem space. Hackathons, particularly those focused around social impact, produce new social relations and communities of interest. In the case of the breast pump hackathon, it was a committed community of frustrated breast pump users, maternal and global health advocates, lactation consultants, public health researchers, hardware and software developers, and designers, most with some kind of personal connection to the breast pump or to the field of maternal health.

We have been trying to maintain, connect, and nurture that community through the Facebook group, a low-traffic email list, personal emails and check-ins, and "matchmaking" between members. For example, we introduced one member of the Pump.IO team, to one of the judges whose company is developing an improved breast pump. This meeting later resulted in him joining their board. We connected another judge and speaker to a sponsor company who then connected her to another San Francisco-based company innovating in the same space. We connected an executive from the regional milk bank with a sponsor company so that they could figure out why the company's plastic bags were leaking when the milk bank defrosted them. Other connections were made without explicit brokering. For example, two judges connected by participating on the judging panel and have been mutually beneficial to each other regarding the investing landscape in maternal health technologies. One of the scholarship recipients who works with low-income pumping women has followed up with several sponsor companies to communicate the need for more affordable pumps, pump recycling programs and donation programs, and her concerns have been well-received due to their co-presence at the hackathon.

These kinds of stakeholder conversations (developer to maternal health company, lactation consultant to accessory maker, NICU nurse to breast pump maker) would not have been possible without the hackathon acting as a convening space. Indeed, many participants remarked positively on the presence of people from diverse sectors talking to each other for the first time. One participant who identifies as a designer and engineer told us that they appreciated "The high number of engineers and direct users of breast pumps (and many who were both). It really helped to have tons of users there who would tell you exactly what was wrong with the design and could walk you through their experiences step by step." People participating as sponsors also saw the benefits of these conversations. One sponsor noted, "The biggest

difference was the constituency of the people coming to the hackathon…the participants were very different. You had nurses, people with MDs, lactation consultants, engineers, design people. It's much more real. People are coming together to solve a real problem."

And while individual teams may not be well-equipped to make change in the space, the sponsoring companies present at the event are. One sponsor from a well-known breast pump maker noted that she appreciated the attention that was being drawn to the topic, "It's really important and exciting for our industry." We asked sponsors in follow-up interviews how they had talked about their experiences within their organization and any impact they saw for their work. One sponsor who is also an investor noted that she had been in touch with one of the participants who ran a company for preemies, helped connect a team to some business resources and had initiated relationships with two of the judges. Another sponsor from a pump company described how she had taken the themes that emerged from the user stories back to the designers at her company to explore how they might incorporate that feedback. She felt that the hackathon was an important networking opportunity for her both personally and professionally. And, inspired in part by the breast pump hackathon, Leith Greenslade of the UN has started a monthly phone call to connect researchers & technologists working in a global health context on breastfeeding supportive technologies.

Though Wishnie (2014) observes that social impact hackathons fail to produce sustainable products out of their limited time frame and asserts that participants should commit up front to finishing the job, we respectfully offer a different theory of change. Instead of change effected through objects, change may be effected by creating and nurturing new social relations. This serves the purpose of "distribut[ing] the authority and responsibility for such decisions across a polyvocal dialogue among stakeholders" (Bardzell 2010)

A feminist hackathon intentionally architects media attention in order to advocate for the issue.

There many people who experience hackathons through news reports, blogs, tweets, Facebook posts and more. Here we offer that tactical messaging through the media may serve the feminist quality of advocacy "to empower people in isolated communities to participate in discourses, markets, and institutions previously out of reach" (Bardzell 2010). From its inception we considered the discursive aspect of the hackathon as an intentional site of design. We named the event the "Make the Breast Pump Not Suck!" hackathon as a way of acknowledging that the pump sucks literally and figuratively and to inject humor into subject matter that is typically considered private and taboo. We tried to use the media, including the blog posts that we authored about the project (D'Ignazio 2014, D'Ignazio 2015), as a way to advocate for the talking points that we wanted to see circulate in the media. These included drawing conversations back to family leave policy in the US, leveraging the MIT context to legitimize the breast pump as an object of design and scientific research, and the notion that technological innovation is distributed unequally and there is a gendered dimension to that inequity. We also tried to use the media to encourage further affiliation with the project by mentioning the collection of user ideas and the Facebook group as ways to get involved.

The "Make the Breast Pump Not Suck!" hackathon received a lot of press attention—83 individual articles, blog posts, and radio episodes and counting. There was a story in Elle Magazine in June 2015[18]. It was named one of the top 20 reasons to love Boston by Boston Magazine[19]. It got written up in Forbes[20], the New Yorker[21], CNN[22] and Fast Company[23]. It was discussed on the BBC World News[24], NPR[25], CBC[26], and WNYC[27]. It was featured on the front page of MIT's student newspaper and as the lead news story on the www.mit.edu portal. It went viral on social media[28],[29] where users applauded the effort, offered their ideas, criticized the winners and debated about whether breast pumps should or should not suck by definition. The NPR podcast The Longest Shortest Time produced a 30-minute story about the hackathon[30] through the perspective of a childless man and crowdsourced breast pump sounds from their listeners. And outlets like Boston.com produced video narratives of the experience[31].

In the media frame analysis we did following the hackathon, several themes emerged. One theme, consistent with Brugh & Matias' research, is that the media focused on winners. The many articles that came out the week following the hackathon focused attention on the winners of the hackathon, describing their projects and how much money they won. These catalyzed shares, comments, and conversation across social media. For example, one article published on NPR's Facebook page, "Winning Ideas In Contest On 'How To Make The Breast Pump Not Suck'"[32], was liked 8139 times, shared 2017 times and received over a hundred comments. It is important to note here that the objects and the winners take center stage over the ecosystem in the media narrative.

The other themes that emerged in our analysis are more consistent with talking points that we tried to emphasize. Our position at an elite institution at a lab recognized for innovation was something we acknowledged publicly in interviews and sought to explicitly leverage in the service of legitimizing the topic of breastfeeding and pumping. More than half of the published news pieces included "MIT" in the title of the article. Likewise, 472 tweets of an archive of 754 total tweets about the hackathon made mention of MIT. The hackathon was often referred to as the "MIT Breast Pump Hackathon." In some cases, the framing around the institution of MIT was regarded with incredulity because MIT was perceived as "male-dominated"[33] or with hope because MIT has high status in the tech and engineering world[34].

As William Gibson's famous quote states, "The future is already here—it's just not very evenly distributed" (The Science in Science Fiction 1999). This was a key talking point that we organizers learned at our first hackathon, discussed in advance of the second and brought up frequently in interviews. We wrote about it in our first blog post (D'Ignazio 2014) and stated it as a goal on the hackathon's web page[35]. A number of media stories picked up on the idea that innovation in the space of maternal and neonatal health lags behind other areas[36] [37]. Perhaps trying to make opportunistic use of search engine optimization, sites like Quartz published articles titled, "How come there's an iPhone 6 but breast pumps are stuck in 1.0?"[38]. As a media intervention, we considered this a significant success in legitimizing the topic and

instigating a public conversation about the design and innovation of breast pumps. It begs the question, so often elided in the elite circles that produce the future, about who innovation is for in the first place.

The only talking point we had crafted that did not circulate in the media was the consideration of family leave policy. One or two of the more in-depth articles mentioned it[39] [40], but this was not picked up in a significant way by most reporters, perhaps because it broadened the focus beyond the object and the event. It was, however, often picked up in the comments on some articles[41]. We speculate that it is equally as hard to get the media to think ecologically about a problem space as it is for hackathon participants.

A feminist hackathon nurtures and sustains communities of practice after the fact.

While hackathons are predicated on and value disruption (of markets and industries) here we assert the value of what comes after the media splash. The media coverage did serve to garner interest, participation and affiliation with the event. We were not fully prepared for the sheer amount of press attention the project received prior to the event nor for the way in which that led to interest from diverse, global audiences. We tried to include and converse with as many of these people as possible but it was simply not possible to engage them all. After the hackathon, our community building work shifted to maintaining ties with those who reached out to us, supporting teams with forward momentum, cataloguing their accomplishments and connecting them with others. We were unprepared to be the central nodes in this newly produced network but this is what happened.

We directed most interested people to join the Facebook group and that remains the primary way that we have nurtured and sustained post-hackathon communities. Since the hackathon there have been 155 posts on the Facebook group[42]. People, including ourselves, are using the group to gather user perspectives, run surveys, seek collaborators for projects, recruit participants to other hackathon opportunities and post technical innovations in maternal health. The group is still very active, with an average of twenty posts per month. Behind the scenes, our organizing group has also been very active connecting researchers with breast pump users, articulating problems to classes of students, matchmaking potential collaborators and documenting post-hackathon progress.

We had not planned in advance this work of nurturing and sustaining post-hackathon communities, however, it became clear that it was essential. It was far more work than we had imagined and was carried out amidst our other responsibilities. We address this question of labor and hackathons in the Discussion section.
Discussion

"Two Basic Systems: Development and Maintenance. The sourball of every revolution: after the revolution, who's going to pick up the garbage on Monday morning?"
– *Mierle Laderman Ukeles, Manifesto for Maintenance Art, 1969*

In this section we discuss four topics in order to reflect critically on our findings and speculate about the role of feminist HCI in designing future social impact hackathons.

On Labor, Impact, Nurturing. If all a hackathon needs is a space and some pizza, then one of its attractions is that it can be produced on the cheap and, indeed, has ended up as a low-cost pipeline for institutions to crowdsource product ideas, promote an API or recruit technical talent. We proffer that if a hackathon aspires to have social impact beyond its weekend this assumption should be re-conceived. As Gregg and DiSalvo (2013) point out, the hackathon event itself creates a situation of precarious work conditions by harvesting the free labor of citizens. That is what also typically makes the hackathon inaccessible to groups who do not have the spare time and labor to donate to knowledge work because they are parenting or working for pay on the weekends. At our own hackathon, we recognized that many nursing mothers and families would not be able to devote an entire weekend to the event, and encouraged them to come only as much as they were able.

Additionally, the breast pump hackathon demonstrated to us the unexpected importance of context and community building as the crucial relational labor, conducted behind the scenes, that continues to glue the project together. As with most maintenance work, this kind of activity is often forgotten, overlooked and underpaid. We ourselves did not consider it in advance of it happening to us. As artist Mierle Laderman Ukeles states, "Two Basic Systems: Development and Maintenance. The sourball of every revolution: after the revolution, who's going to pick up the garbage on Monday morning?" (Ukeles 1969) While the revolutionary spirit of hackathons is PR-worthy for a weekend, the calculus of post-hackathon labor and criteria for success need recalibration.

A more intentional design could include a 6-12 month ramp-up plan and ramp-down plan, with goals for how to gradually embed prototypes, projects and people into larger institutions and networks outside of the hackathon so that they would have a greater chance of success. Such a plan might also include (1) lightweight incentives for maintaining forward momentum. For example, we learned that MGH Global gives out a cash prize to the team who has made the most forward progress one month after their hackathon. And (2) deliberate ways, perhaps with social media or networked technologies, to enable lateral connections across the community produced by the hackathon without needing to go through the organizers. This could be as simple as producing a "Hackathon Directory," Facebook group or email list where participants can find each other in a structured way.

Counterbalance the pressure to disrupt, transform, and create anew. The celebratory, heroic and intense atmosphere of the hackathon lends itself to bold and creative thinking. Despite our vision for a feminist hackathon, it was difficult to counteract the expectations and atmosphere of a hackathon event to create new things from scratch. For example, most of the teams at the breast pump hackathon took the title quite literally and took on redesigning the entire breast pump in various ways—to operate more like an infant, to use compression rather than suction or to be a smart, wearable system. On the one hand, speculative thinking outside of current constraints (market, manufacturing, social norms) is a desirable thing. On the other hand, the competitive pressure to develop something new and ambitious may prevent smaller, more feasible solutions—like one participant's noise muffling accessory which he regarded as "too low-tech" to warrant attention—from being prototyped. Additionally, the atmosphere may also discourage teams from building on existing work because it may be seen as unoriginal. Hence the problem of hacks either unknowingly "reinventing the wheel" or tackling false problems that do not necessarily need solving, such as measuring the fat content of a mother's breast milk. To mitigate this, we think it would be worthwhile to host events that explicitly set collective goals to further prior work such as code sprints in the open source software community or Wikipedia edit-a-thons[43]. Another tactic in the absence of a collective project would be to experiment with incentives to build on existing work, such as tying judging criteria or prizes explicitly to furthering prior research. At hackathons organized by Geeks Without Bounds, prizes go to "continuation, documentation and fiddly bits"[44]. The breast pump hackathon did not do this in relation to prior work but had success with creating incentives in relation to Human-Centered Design. One thing to note is that requiring teams to extend prior work increases the responsibility of the hackathon organizers to provide ways for participants to become educated in a short period of time, whether that is through handouts, exhibits, presentations or subject matter experts who can guide them at early stages.

Which marginal user? Bardzell's helpful concept of the marginal user suggests a worthwhile focus on intersectionality, the theory of how different types of discrimination interact (Crenshaw 1991). Rather than elide the question of audience by claiming that "it's for everybody", we encourage hackathon designers to make intentional choices about which marginal user/s the event seeks to support and work hard to get those voices to the table. For example, in the case of the breast pump hackathon, the audiences we targeted were primarily new parents, breast pump users, and designers and developers already at MIT[45]. Acknowledging that this would be a fairly elite, majority white and privileged group of people, we designed scholarships to listen to the concerns of low-income pump users. Were the scholarships sufficient? Probably not—no teams designed projects specifically for the low-income breast pump user, though they did learn about their concerns through the experts that represented these perspectives. Breastfeeding and pumping, like any other potential hackathon issue (including OpenBSD, hunger or city transportation) have class, income, race, ability, and education dimensions (Celi AC et al., 2005). They have a particular geography (Bonuck et al., 2005). As Bardzell (2010) notes, design disciplines often have universal aspirations that standardize systems around the needs of the dominant majority and eclipse marginal perspectives. Designers must remember that claiming that an object, event or system is for "everybody" generally translates to it being for "urban upper class abled tech-savvy white males". Not choosing an audience is choosing this default audience. Specificity in who—which communities and people a hackathon seeks to serve and noting which are being left out—should be a paramount concern.

A feminist hackathon is for any hackathon. We assert that any hackathon, whether the topic is OpenBSD or breast pumps, can benefit from intentionally incorporating a feminist design perspective. A feminist hackathon is one that aspires to see the problem space more holistically, listen to marginal perspectives, include more people, and make longer-lasting change in the world by sustaining communities. All hackathons stand to benefit from this approach. That said, a feminist approach is particularly appropriate for social impact hackathons which focus on the people, places and problems that are often overlooked in other sectors. This is where it becomes particularly important to bring in the voices of marginal users and to navigate power and privilege differences between participants.

Conclusion

In this paper we have offered one possible vision for a feminist hackathon, put that vision into practice and evaluated our experiment using an array of design research methods. We consider this to be a "generative contribution" (Bardzell 2010), e.g. "the use of feminist approaches explicitly in decision-making and design process to generate new design insights and influence the design process tangibly". Here we hope to demonstrate feminism in action rather than to critique instances of oppression after the fact.

In our view, a feminist hackathon thinks ecologically about the problem space, favors learning over invention, prioritizes listening over ideating, values the production of new social relations over the production of objects, architects media attention for advocacy and nurtures communities of practice after the event. We use the "Make the Breast Pump Not Suck!" hackathon that we organized in September 2014 as an in-depth case study to explore the practical constraints of making this vision a reality and note what we learned in the process. Using a feminist design perspective, here defined as stemming from Feminist HCI and being informed by the fields of Critical Making, Human Centered Design and Interventionist Art Practice, it is possible to address some of the common critiques of the hackathon. We believe the hackathon, particularly when informed by a feminist design perspective, is a viable form to gather collective energy around a problem, stage stakeholder conversations, build community and influence individuals, communities and institutions in positive ways.

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[1] http://www.openbsd.org/hackathons.html
[2] http://water.worldbank.org/node/84165
[3] http://15iacc.org/get-involved/iacc-hackathon/
[4] http://www.hackathonwatch.com/h/the-international-development-hackathon-2014
[5] http://rhok.org, http://gwob.org, http://socialcoding4good.org
[6]   Throughout this paper we use the terms "mom" and "mother" expansively to include all gender-variant lactating parents.
[7] Milk banks provide breastmilk to premature babies and others with illnesses. There are 17 milk banks in the US where mothers can donate their excess milk.
[8] The organizing group was Tal Achituv, Catherine D'Ignazio, Alexis Hope, Taylor Levy, Alexandra Metral, David Raymond and Che-Wei Wang with the advisory support of Willow Brugh and Ethan Zuckerman.
[9] http://breastpumphackathon.challengepost.com/
[10] https://www.facebook.com/groups/hackthebreastpump/
[11] Of the hundreds of user experiences about breast pumping analyzed, the top categories of comments included: the noise of the pump, the discomfort of the flanges, and the lack of mobility while pumping. Less than half of the comments focused on secondary factors such as: personal distress while pumping, challenges with multitasking childcare while pumping, lack of access or awareness of educational resources and pump features, desires for policy change, and a need for a more relaxing pumping process to promote increased milk letdown.
[12] Though a number of users did articulate environmental concerns such as this, "All pumps should be closed systems so that we can pass them on to other moms safely. We're told not to use someone else's pump. But what good is that? We are going to have a lot of pumps sitting in city dumps. Lots of Mommas re-use their friends pumps anyways… despite the risk."
[13] http://breastmilkthemovie.com/
[14] Teach-ins emerged as a social form in the mid-1960s in conjunction with opposition to the Vietnam War. Teach-ins use expert lectures, Q&A sessions and workshops to educate a large group of people in a short amount of time. Learning is oriented towards participation and action.
[15] https://aspirationtech.org/
[16] https://www.facebook.com/NPR/posts/10152864553696756
[17] https://www.kickstarter.com/projects/199848383/radically-new-type-of-discreetly-wearable-breast-p
[18] http://www.elle.com/beauty/health-fitness/news/a28693/better-breast-pumps/
[19] http://www.bostonmagazine.com/news/article/2014/11/25/reasons-to-love-boston-in-2014/2/
[20] http://www.forbes.com/sites/annabahney/2014/09/19/how-to-build-a-better-breast-pump/
[21] http://www.newyorker.com/tech/elements/hacking-breast-pump
[22] http://www.cnn.com/2014/09/25/tech/innovation/breast-pump-hackathon/index.html
[23] http://www.fastcompany.com/3036052/healthware/why-i-went-from-queasy-to-hopeful-at-mits-breast-pump-hackathon
[24] https://soundcloud.com/bbc-world-service/newshour-hacking-the-breast-pump-at-mit
[25] http://commonhealth.wbur.org/2014/09/make-breastpump-not-suck
[26] http://www.cbc.ca/radio/spark/spark-260-1.2848378/hacking-maternal-health-1.2848383
[27] http://www.wnyc.org/story/lets-build-better-breast-pump/
[28] https://www.facebook.com/NPR/posts/10152864553696756
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[31] http://www.boston.com/health/2014/09/20/hackers-have-blast-making-breast-pumps-not-suck/CZm6iCa6aSv66kNYMgLDEO/story.html
[32] https://www.facebook.com/NPR/posts/10152864553696756
[33] http://www.fastcompany.com/3036052/healthware/why-i-went-from-queasy-to-hopeful-at-mits-breast-pump-hackathon
[34] http://www.self.com/flash/technology/2014/09/new-moms-rejoice-mit-hosting-hackathon-build-better-breast-pump/
[35] http://breastpump.media.mit.edu/
[36] http://www.newyorker.com/tech/elements/hacking-breast-pump
[37] http://blog.thebump.com/2014/09/22/breast-pumping-toolbelt-wins-mit-competition/
[38] http://qz.com/264116/finally-a-hackathon-for-something-that-seriously-needs-fixing-breast-pumps/
[39] http://www.newyorker.com/tech/elements/hacking-breast-pump
[40] http://www.fastcompany.com/3036052/healthware/why-i-went-from-queasy-to-hopeful-at-mits-breast-pump-hackathon
[41] http://commonhealth.wbur.org/2014/09/make-breastpump-not-suck
[42] Numbers reflect posts as of May 8th, 2015. We grouped the topics most frequently posted about into five categories: Personal Sharing of questions and advice (45 posts), Ways to get involved (16 posts), Tech Innovation (7 posts), Policy (5 posts), General News (3 posts).
[43] https://en.wikipedia.org/wiki/Edit-a-thon
[44] "Fiddly bits" refers to small, unexciting but potentially important maintenance issues for a system. Author Brugh, a frequent facilitator of

GWOB hackathons, often tells attendees, "Your brain gives you dopamine for doing the new and shiny. These prizes are to help you do the things you don't want to do."

[45] One of our original goals was to shift the culture at the Media Lab by creating an event where faculty, students and staff could learn about the needs of pumping moms, new families and babies in a format (hackathon) that felt culturally familiar and allowed for creative action. Anecdotally, we can say that we witnessed a significant shift in student acceptance and engagement with the topic over the course of the project and we saw many more babies in the arms of their mothers and fathers at the Media Lab afterwards. We also noticed a difference in the willingness of staff to speak out about the issue. One staff member recounted a story to us that her manager made her take down shades that covered her office windows so that she could pump just a couple years ago. But due to staff organizing and advocacy around lack of lactation space over the past nine months, the Media Lab recently purchased a Mamava portable lactation environment and now has dedicated lactation space. Perhaps we have shifted lab culture to make it slightly more permissible to be a parent in addition to being a student or staff member.