Democratizing the Maker Movement

A Case Study of One Public Library System's Makerspace Program

The maker movement has found a home in public libraries. Field leaders including public libraries in Chicago, Chattanooga, Houston, Louisville, and Toronto have built robust makerspaces, developed maker programming for a diverse range of patrons, connected community experts with library users for the purpose of sharing information, and fostered communities of practice.[1] Characterized by open exploration, intrinsic interest, and creative ideation, the maker movement can be broadly defined as participation in the creative production of physical and digital artifacts in people's day-to-day lives. The maker movement employs a do-it-yourself orientation toward a range of disciplines, including robotics, woodworking, textiles, and electronics. But the maker ethos also includes a do-it-with-others approach, valuing collaboration, distributed expertise, and open workspaces. To many in the library profession, the values ingrained in the maker movement seem to be shared with the aims and goals of public libraries. However, critiques of the maker movement raise questions about current iterations of makerspaces across settings. This article highlights critiques and responses regarding the "democratic" nature of the maker movement, and in particular, the article analyzes ways librarians involved in a prominent public library maker program discursively construct making and maker programming in relation to the maker movement more generally.

In the United States, public libraries were founded on ideals of education, enlightenment, and self-improvement to foster an informed citizenry who could be trusted to vote in a democracy.[2] Yet, as scholars like Michael Harris have shown, these ideals were entangled with goals of enculturation. Public libraries aimed to "Americanize" immigrants and educate the poor into the ways of the enlightened male.[3] Democratization in the foundational missions of public libraries aimed to bring people into the social and political sphere of democracy and to expand access to the literature believed to be valuable.

The history of public libraries is also fraught with public/private tensions as the institutional mission of access and public purpose is woven through private interests predicated on the need for funding and support. For example, philanthropists like Andrew Carnegie contributed $41,033,850 to the construction of 1,679 library buildings in the United States.[4] Endemic to the development of public libraries is a continual process of justifying their worth to private donors, popular agendas, and trends in government funding.

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Yet, in *Democratic Ideals and the American Public Library,* Hafner and Sterling-Folker argue that increasing commercialization of libraries undermines democratic ideals.[5] As the mission of the public libraries becomes ever-more entangled with contemporary market-based logics predicated on the individual entrepreneur, library theorists have expressed concern regarding the ways this entanglement stands in conflict with what they see as the noncommercial purpose of public libraries.[6] Today, discussions about public library makerspaces are embedded in these conflicting agendas, for example, in arguments that position makerspaces as a means to ensure library relevance to funders and the community.[7]

Underlying much of the public library mission is the rhetoric of access. For instance, the library system in the study discussed in this article aims to provide "free and equitable access to cultural and educational experiences," and the Richland Public Library has integrated their 3D printers and maker programming under the motto "Access Freely."[8] Access undergirds long-standing discussions and shifts in librarians' work towards a focus on outreach, community engagement, and public programming. This includes an emphasis on social justice and services supporting information literacies.[9] Towards this end there has been significant growth in library programs and cross-institutional partnerships to meet programmatic demands.[10] Moreover, providing access to technologies—in alignment with expanding notions of literacy that exist outside of printed text[11]—has been integrated into the mission of public libraries.[12] Therefore, the call for library makerspaces has come to represent access to educational and technological opportunities in alignment with the long-standing mission of the public library.[13]

The ethos and definitions of the current maker movement are largely influenced by popular books and media that feature making in connection to a revolution in new technologies where the tools of production are celebrated as accessible to all.[14] Claims of democratizing in the maker movement refer to the user becoming an active agent in relation to tools or technologies. Further, maker movement rhetoric oscillates between democratization as providing access to a broader community versus democratizing as increasing engagement with the social and political processes of democracy. Making is often described as inherently human and therefore universally accessible: "All of us are makers. We're born Makers."[15] Further, key authors Anderson, Dougherty, and Hatch encourage proliferation, arguing that the world will be improved by having more making, makerspaces, and makers.[16] Making, according to these mainstream writers, might lead to greater distribution of decision-making in technological progress and creation. Concomitantly, making is closely linked with the values of free-market capitalism and suggested as an individualistic wealth-generating endeavor. Access is defined broadly in this literature, and there is a wide array of claims regarding what this access, and the ensuing actions, can achieve.

Despite mainstream narratives of openness, a body of critical scholarship argues that the current maker movement is not as democratizing as advocates claim.[17] Many makerspaces began as member-only spaces with monthly fees that enabled groups of people to purchase and maintain expensive technologies for building, hacking, and designing.[18] Aside from the micro-level barriers of entry, material, and membership fees, there are concerns about the ways in which making has become an economic machine. The corporatization of organizations that promote making, for example for-profit companies like Etsy and Make, are seen to be reconstructing hobbyists and avid technologists as those with entrepreneurial ambitions. According to some authors, a focus on economics may undermine goals of inclusion, as organizations work towards making a profit and participants vie for a piece of the increasingly crowded DIY marketplace.[19] Authors also argue that corporate influence threatens material access and the open and cooperative potential of making. For example, *Make Magazine* uses advertising which implicitly suggests that to be a maker is to purchase certain products, thus aligning more with consumerism than inclusion.[20] Even if we assume near-ubiquitous access to tools and technologies, other critics claim that the maker movement tends towards digital capitalism, focusing on technological transformations and devaluing work *with* people through an over emphasis on production and making things "you can put in a box and sell."[21]

A further concern connected with the economic focus of making is an overemphasis on job creation. As the definitions and goals of mainstream authors like Andersen and Hatch are applied directly to public libraries, many scholars both inside and outside the United States conflate educational and economic goals, referring to education as a tool to produce an economically productive workforce and society.[22] A wide array of important voices from both public and private sectors, from Silicon Valley to the White House, have celebrated the work of the maker movement for its potential to give youth access to job training to prepare them for the STEM workforce.[23] However, others argue that training more engineers and computer scientists should not be the main reason for promoting makerspaces and that a shift is needed from a "jobs culture" to a "culture of literacy."[24] As Ames and Rosner argue, if makerspaces are driven by economic goals or cultural assumptions regarding "the kind of 'user' they aim to create," the goals of democratization may be overshadowed, excluding those who hold other aspirations or interests (p. 358).[25]

In addition to these critiques regarding the economic aspects of the maker movement, researchers have raised concerns that the movement may be culturally exclusive and gendered. Critical scholars see the maker movement as a means of enculturation through the lens of twenty-first century skills.[26] Research has examined who participates in makerspaces, who is depicted as makers in popular media coverage, and what kinds of activities are recognized as worthwhile.[27] Findings indicate that popular media depict a narrow range of makers and that a homogenous demographic populates many makerspaces, namely white,

middle class, and often male. For example, Vossoughi et al. interpret a TED talk by maker movement leader Dougherty to highlight the way in which the media depicts making as a "uniquely American activity" premised on technological innovation that contributes to economic growth.[28] Homogenous depictions of makers may leave out those who do not see themselves in the identities and practices being depicted. Further, authors Debbie Chachra and Shannon Barniskis have noted that traditionally female domains, such as crafting and other low-tech activities have often been excluded in current iterations of makerspaces.[29] In addition to critiques of exclusivity in the maker movement and in makerspaces, making activities themselves have been criticized for being broadly defined but narrowly portrayed, focusing on robotics, electronics, and vehicles.[30] In line with findings related to demographics of makerspaces, these technologically-oriented making activities may unintentionally exclude those interested or engaged in other types of making but who do not identify as "technology people."[31]

Because public libraries have a robust history of providing free access to resources needed by community members, they are seen as holding great potential to maximize the democratizing goals of the maker movement.[32] Professional literature by and for librarians outlines public library makerspaces as addressing access in myriad ways: access to knowledge, resources, and technologies; facilitation of community partnerships; and provision of materials and tools that are otherwise unavailable.[33] By framing makerspaces in these terms, authors align the maker movement in public libraries with goals of public libraries regarding education and access to information and resources. On the other hand, public library makerspaces are often described as a way of promoting economic goals, such as bridging information divides and supporting STEM skills and job readiness.[34] For many authors, a desired outcome of makerspaces in libraries is entrepreneurship, in other words, creating a product for the marketplace. Barniskis suggests that librarians' potentially contradictory discourse between noneconomic and economic aims of library makerspaces may represent a struggle between "inclusive discourse" and "what they believe funders want to hear."[35]

While there is a wealth of professional literature describing the establishment of makerspaces in public libraries, empirical research concerning library makerspaces too often appropriates the market-based rationales of the maker movement, subsuming the democratic values of the public library into the values of a narrow technological vision of job preparation and entrepreneurship.[36] We are left wondering whether public library makerspaces perpetuate a limited conceptualization of makers and making, or if public libraries offer an opportunity to expand the conceptualization of the maker identity and what constitutes making, enabling the maker movement to live up to its democratizing potential. In this article, we analyze interviews with public librarians involved in maker programming to investigate their understandings of the maker movement. The focus of this article is on the following research questions: How do librarians understand the maker movement in the context of their libraries' values and operations? What specific frameworks do librarians employ to describe their maker-focused programing?

BACKGROUND ON THE BUBBLER AT MADISON PUBLIC LIBRARY

To conduct an in-depth investigation about makerspaces in public libraries, we chose to focus on one library system, Madison Public Library (MPL) in Madison, Wisconsin. MPL's maker-focused program, the Bubbler, runs across all nine of its neighborhood libraries as well as various outreach locations. At the time of this study, the Bubbler involved twenty-one library staff (thirteen librarians, six library assistants, one manager, and one media specialist). For this research project, focusing on one library system allowed us to gain an understanding of the different structures involved in developing and running maker programing. Justifications in documents written about the Bubbler, such as grant applications and publicity materials, align with some of the rationales discussed in the literature review above, including access to technology and shifting people from being consumers to being producers.[37] Yet MPL's makerspace is unique in that it is arts-based (rather than STEM-based) and designed from the motto "people not stuff"—community-building drives the programming and design of the Bubbler more than the acquisition of high-tech materials.

The Bubbler was launched in 2013 and includes programmed events (e.g., make-and-take workshops, participatory experiences such as videogame design, themed evening parties that include various forms of making), an artist-in-residence program, gallery spaces, and programs for specific groups outside the library (e.g., schools, the juvenile detention center). At the time of this study, three library staff positions were dedicated to the Bubbler (a teen services librarian, a media specialist, and an artist/manager). These three staff were experienced in their fields and held higher education degrees. In addition, at the time of the study, the program involved two Bubbler representatives in each library (eighteen representatives). Fourteen Bubbler representatives had MLIS degrees, and all were experienced librarians or library assistants, although none had previously been involved in running a designated library makerspace program. Twelve of the representatives were expected to include Bubbler programming as part of their existing job as children or teen services librarians; the other six representatives were adult services or reference librarians and negotiated time for Bubbler programming. Central Library, located in the downtown area, had a dedicated Bubbler room and a media production laboratory and it also housed portable equipment such as screen printing materials, a circuit board kit, animation studios, iPads, and a series of mobile maker kits which were used across the library system.

Madison is a medium-sized city (population approximately 235,000) with a large state university and with race/

ethnicity classifications consisting of 79 percent white, 7 percent African American, 7 percent Asian, and 7 percent Latino. In recent years, there has been a greater effort to highlight and address inequalities between minority ethnicities and their non-Hispanic white counterparts.[38] MPL has been part of these efforts, providing a variety of services to meet the specific needs and interests of underserved populations. In these discussions, the Bubbler is positioned as one way that MPL is addressing the needs of underserved populations, particularly the focus on moving Bubbler programming into neighborhood libraries and other community spaces.[39] Many resources have also been dedicated to off-site programs through partnerships targeted towards the particular needs of court-involved youth.[40] The goals of social justice and community outreach drive these maker programs, in contrast to many mainstream maker programs that exist without the support of outreach specialists, municipal funding and infrastructure, and long stranding institutional partners.

METHODOLOGY

The data analyzed in this article are part of a larger project that was conducted over three years from 2015 to 2017 and was funded by the Institute of Museum and Library Services. We worked with all twenty-one staff members involved in the Bubbler, observed examples of maker programs happening across the system, had monthly meetings with three dedicated Bubbler personnel, and interviewed a range of makerspace participants from across the system. We employed design-based research and ethnographic data collection methods with a focus on programmatic sustainability.[41] Much of the empirical research on the maker movement focuses on individual makers, makerspaces, or making activities.[42] Looking across one library system enabled us to focus on the perspectives of librarians, patrons, and artists and to trace the development of a system-wide makerspace, identifying key features that afford a system-wide approach and the learning therein.[43] For this article, we look closely at discourse from interviews with librarians to study how Bubbler staff across MPL conceptualize the maker movement within public libraries and in relation to their position as librarians.

Our research framework is broadly interpretivist: *truth* is viewed as constructed and negotiable, the many forms of knowledge of both the research participants and researchers play formative roles in the process, and interpretations are shared. In research based on this epistemology, cultivating dialogue between the participant and researcher is of utmost importance.[44] Thus, for the set of interviews discussed in this article, the interviewer (coauthor Lakind) organized an informal meeting with each interviewee prior to the interview to build rapport and for the interviewees to better understand the research project. These hour-long conversations were scheduled in the months leading up to the interviews and provided an informal exercise in building trust, comfort, and dialogue between the researchers and participants. This also ensured that in the months between the initial conversations and the interviews, the researchers and participants knew each other and could continue those conversations informally when they saw each other at maker programs and meetings. As a team, the researchers created a semi-structured interview protocol based on the preliminary conversations with the Bubbler librarians as well as literature around public libraries and the maker movement.

The data set analyzed in this article consists of twenty-three semi-structured individual interviews with the twenty-one library staff members involved in the Bubbler program as well as two neighborhood library managers. Coauthor Lakind conducted the interviews approximately eighteen months after the Bubbler program was officially launched. The interviews were aimed at understanding how Bubbler programs were being implemented across the MPL system, different perceptions about the Bubbler, and perceptions of the maker movement in relation to public libraries more generally. We used discourse analysis techniques to identify "interpretative repertoires" that interviewees employed in their discussion of Bubbler.[45] We started the analysis process with an initial review of the transcribed interviews: we read the data and noted repetitions, similarities, differences, and absences across the twenty-three interviews.[46] After this initial review of the transcriptions, we discussed preliminary thematic categories and how these aligned with or challenged literature in the field. We then reread data with these preliminary categories in mind and broke categories down into subcategories in order to develop a preliminary list of codes. With this preliminary coding scheme, coauthors Lakind and Willett coded a sample of interview transcripts separately, and then codes and coding were compared, discussed, and revised. This process was repeated until Lakind and Willett reached a consensus on how codes were understood and applied, and then Lakind and Willett coded transcripts individually, using NVivo to organize and code the data (see the final set of codes in the appendix). During the coding, additional themes were identified and later written up in other articles analyzing librarian perspectives on learning,[47] boundary work,[48] and art-making.[49] For the current article, the process of analysis involved rereading coded data to identify themes that ran across different codes and particularly responded to research questions about librarians' understandings and framing of the maker movement in public libraries. Across the codes, we identified three prevalent frameworks employed by librarians: (1) access to making, (2) facilitation of programming, and (3) connecting to community. Each of these analytical themes is discussed in turn in the following section.

FINDINGS

The literature review on makerspaces provides a context for the three analytical themes that follow, drawing attention to

ideas concerning democratization of the maker movement. Similar to the professional librarianship literature referenced in the literature review, there was a strong trend for the interviewees to describe Bubbler programming as aligning with the goals of public libraries. By referring to these goals, many interviewees made an important distinction between *other* makerspaces (commercial and noncommercial) and MPL's iteration of makerspaces. In finding the right fit for a makerspace program in a public library system, it is clear in this data set that existing models of makerspaces are being altered and expanded in order to align with ideals of public libraries, thus providing potentially more democratic spaces for making in communities.

Libraries Provide Free and Inclusive Access to Making

Access was a dominant theme across all interviews. Many interviewees described the Bubbler as offering free access to resources, including access to people who share their expertise, cultural knowledge, and so on, and access to materials (e.g., books, art supplies, software, recording equipment). As discussed in the literature review above, this focus aligns with the potential to democratize makerspaces by increasing accessibility to a larger and more diverse population. Free access marks a notable difference between the Bubbler and many other makerspaces that charge a fee for participation, such as museums and member-only spaces. In comparison with other makerspaces, the Bubbler was frequently positioned as more accessible, and many interviewees refer to the no-cost element. One interviewee described the Bubbler as "the hippie cousin of the makerspace movement" because of the free "community-based" aspect. In describing the Bubbler as a "hippie" and a somewhat distant relative of mainstream makerspaces, this interviewee establishes a view of the Bubbler as alternative in style and structure because of its model of access, in contrast with other makerspaces which are geared toward a more specific and narrow range of participants.

In analyzing different ways that interviewees discussed access, we found that some Bubbler staff framed accessibility in terms of geography, with the nine libraries strategically located in neighborhoods to be proximal to as many patrons as possible. Another way of framing accessibility was in terms of not making anyone feel excluded: "a welcoming space and a safe space," as one interviewee described libraries. Along these lines, one interviewee said, "I definitely have a sense that the [Bubbler] umbrella encompasses the whole community." This interviewee was referring specifically to including different ages, as was common across the interviews. Other librarians commented on Bubbler programs being suitable for people with different access to and experiences with tools: "That's something that I really love about the [Bubbler], that it seems really accessible and it seems like it's often . . . using materials that everyone might have at home." Rather than having access to expensive technologies, such as 3D printers, the emphasis is on using basic and accessible materials so as to inspire people to make things on their own, towards their own purposes, aesthetics, and desires.

A focus on access aligns with the goal of public libraries to act as a resource for bridging divides. Interestingly, rather than providing programs that aim to "skill people up," interviewees described Bubbler programs in terms of exposure to new experiences, tools, making activities, and people in the community. As one interviewee commented, "You know, we talk about the achievement gap, but there's also this big experience gap, and that's really where the library can come in and help." Across the data set, interviewees described the Bubbler as providing experiences; as one interviewee described, "trying to give windows into different worlds." The emphasis on providing introductions to new ideas and experiences is clear in these excerpts:

> [Bubbler] hopefully gives more people the background knowledge that is going to excite them toward some sort of learning, or life-long learning, or some sort of hobby that they have always wanted, but they never knew that they wanted.

> What I'm most interested is giving people kind of experiences where they start to see or understand the world differently around them.

As these excerpts indicate, Bubbler programming is not focused on addressing job readiness or bridging skill divides related to employment. This provides a response to critiques of other iterations of makerspaces, as discussed in the literature review, and contrasts with other maker programs that are justified in terms of developing technological skills for the purposes of employment or economic gain. According to our interviewees, Bubbler participation is about gaining exposure and experiences rather than job skills.

Librarians Facilitate Maker Programs

Interviewees predominantly described the Bubbler in terms of its programs rather than spaces, and one interviewee called the Bubbler a "system-wide arts-based program." This focus on programming was framed by many interviewees as "a more appropriate model" for making/makerspaces in public libraries than "a room with equipment," partly because libraries cannot all remodel and include newly dedicated makerspaces. One interviewee said her view of makerspaces changed as she became more involved in Bubbler programming:

> I definitely think of [making] as something that is more approachable. Before it seemed like something like, oh wow, that's way too high tech for us. We couldn't afford that. We don't have people who are willing to devote that kind of time to it. Now it seems like it's for anybody.

This interviewee is focusing on the role of the librarian in maker programming, saying "anybody" can do Bubbler programming. In describing the approachability of makerspaces, she references skills, time, and costs—elements that made maker programming seem unapproachable before she became involved in the Bubbler. Further, some interviewees argued that low-tech maker programs, as well as being more sustainable in terms of costs of materials, align with other library services that provide information patrons can employ outside the library. Emphasizing the continuity between the goals of libraries, the traditional role of librarians, and the presence of making (broadly construed) in library spaces, one interviewee went so far as to say that the entire library is a makerspace and that the Bubbler is certain scheduled events that connect patrons to particular resources (including people and materials).

Across the dataset, interviewees focused on programming that relied on social resources (i.e., people). In line with the motto "people not stuff," the Bubbler's programmatic design emphasized many materials, processes, and purposes represented by a diverse range of artists and patrons. Frequently, librarians described facilitating Bubbler programming through their social resources by bringing in people to share their expertise. Most interviewees described Bubbler programs as those involving "outside experts." Both terms, "outside" and "expert", were framed in particular ways. In terms of guests coming from outside, the emphasis was on outside the library but in the community. As described below, community experts included various people and organizations from across the county, and the emphasis was on developing further community connections through these outside experts. In the interviews, a common discursive move was to make particular distinctions between Bubbler programs and other library programs: whereas Bubbler programs involved outside experts, other programs were designed and implemented by expert librarians who have different expertise and knowledge than Bubbler artists and presenters. Interviews from librarians in Youth Services, in particular, mentioned being adept in working with children and families in connection with literacy learning, for example, and this was cited as an expertise which they offered through other programs. Some of these interviewees mentioned helping to design and run Bubbler programs with artists, particularly programs involving children and teens. These programs were described as drawing on librarians' and artists' different areas of expertise, and some interviewees mentioned learning from guest artists and being able to implement new programs as a result.

Some interviewees said that finding artists or guests from the community is a more efficient and effective way to program. For example, one manager described it as more effective to hire someone who regularly uses these materials rather than to have a librarian spend hours learning a particular art form. One librarian described how he did a henna program and stayed up nights reading, trying to make dyes, and attempting to become the expert:

> Whereas I learned when I hired somebody to come in . . . [the participants] got a lot more out of it: they would be introduced to somebody new in the community, they could connect with them, ask them in-depth questions about why they wore henna at their wedding. . . . And that person also made a connection with a bunch of kids, and that's when I started really enjoying my job was [when I was] facilitating those connections more than being the person who tried to act as the expert.

In this excerpt, the librarian indicates the valuable shift that he made in his role as a librarian from someone who tried to gain necessary skills in order to run every activity to someone who used his skills to make connections with people in the community who were experts in specific areas. As in this example, guest artists were described as having a deeper understanding of particular practices and processes than librarians who might offer a program outside their area of expertise. Further, the role of the librarian as a facilitator who makes connections aligns with the mission of public libraries as spaces where people access knowledge. Positioning librarians as facilitators focuses on their expertise in developing partnerships and working with diverse populations to access information.

Libraries Provide Community Connections for Makers

A core aim of public libraries is to serve the needs of the local community, and unsurprisingly, perhaps, most interviewees discussed the Bubbler in these terms. Importantly, this focus on local community offers the potential to create more diversity in terms of programming, experts, and participants in makerspaces, potentially expanding current iterations of the maker movement. Recurrently, many interviewees described the Bubbler as specific to the needs of different libraries across the city library system. Although interviewees had divergent perspectives from one another regarding the diverse ways that Bubbler programming was happening, one commonality was the aim to connect experts from the wider community with libraries, librarians, and library patrons (both existing and new patrons). One librarian commented that one goal of the Bubbler might be to develop the library as "a hub of creativity" for the community.

Throughout the interviews, different Bubbler staff mentioned a variety of community connections that were part of Bubbler programs: times when librarians had an existing program theme and sought experts from related organizations (Polish Heritage Club, Dane County Beekeepers Association, Madison Area Chapter of the Embroiderer's Guild of America, Capital Area Carvers), times when librarians went to the local community looking for partners (schools and university, local shops, artists, authors, media professionals), and times when organizations or people approached the library about offering programs. Many of the interviewees

said that the system-wide aspect of the Bubbler helped to expand librarians' social networks as they shared contacts and ideas for connecting to the community. Further, as the Bubbler developed, more portable programs were implemented that involved experts from the community offering similar programs in different libraries. Equipment also travelled to libraries where librarians were able to offer programs using the equipment, sometimes after working with one of the experts. For example, a Bubbler artist-in-residence who was a screen printer designed and created portable screen printing machines. These were used by librarians who wanted to screen print even after the artist was gone. Similarly, one librarian described how he gained expertise through work with an artist-in-residence, and subsequently when going into different outreach settings with portable equipment, the librarian was able to train other facilitators in the different settings who could then be the experts within those settings. This illustrates ways the artist-in-residence was able to initiate a train-the-trainer model by integrating knowledge and ideas into the library programming. In sum, the connections described by the interviewees include librarians seeking and being sought by specific partners, librarians connecting experts to different libraries, and experts and librarians providing training for each other through connections.

In addition to bringing more diverse artists into the program, some of the interviewees pointed to successful programming that involved partnering with organizations as a way of reaching more diverse groups of participants. These interviewees referred to Bubbler programs that involve groups of underserved children and teens coming to a library, or programs in which a Bubbler artist and librarian worked with children and teens in a different neighborhood setting. As one interviewee described:

> Even the library walls can be a boundary for some people . . . that's why . . . some of our time is in the library, some of our time is outside the library to access populations that might not get into the building, might not step foot into the building . . . if we really want the Bubbler stuff to reach newer library goers, [we] probably need to just do a little more out in the library or out of the library.

Again, this interviewee frames hopes for the future of the Bubbler as aligning with existing aims of public libraries, in this case, connecting with different populations through outreach work.

Although connections were seen as a major factor in the success of the Bubbler program, for numerous reasons, experts from outside the library were connecting primarily through a few people in the MPL system, as this interviewee indicates:

> I think that that's the only reason it's working in Madison. Because [the manager] has all of these really fantastic connections with people . . . [the manager] is like a super connector. He's really good at figuring out who people are, what their strengths are, and how those might fit in with the Bubbler mission.

Developing new connections takes time, and given the limited amount of time most librarians are given for program development, the number of new connections to local neighborhoods was limited. Therefore, social capital was a key factor in who was being hired to facilitate. When Bubbler programming started (approximately eighteen months before these interviews), many programs were offered primarily through known connections. This limited the connections to include only certain social circles, particularly without extra effort from librarians, most of whom were not given extra time to develop Bubbler programs. As the Bubbler became known throughout the Madison area, more people and organizations were asking to be part of Bubbler programs, thus expanding the pool, and the Bubbler developed and promoted an application system for their artist-in-residence and gallery programs. Further, the program hired two media artists who trained in MPL's media lab and developed connections through the Bubbler. The library system also hired new positions which included community engagement as at least 50 percent of their job specifications as well as a full-time Bubbler assistant. This indicates MPL recognized the need for dedicated time and expertise to develop community connections, and this also indicates the desire for the system to turn outward to engage new populations.[50] In sum, the focus on community connections offers the potential to create more diversity in maker programming and to move toward goals of democratization; however, in line with theories concerning social capital, community connections can be limited to existing social circles without extra time and effort to spread social capital to more isolated communities.

DISCUSSION AND CONCLUSION

Similar to professional literature on the maker movement in public libraries, the Bubbler was perceived as a new way to achieve traditional public library values. As one interviewee said: "Libraries nowadays are really shifting in the way they present themselves. But really what we've always been doing is just finding ways to connect people with information and resources." To describe the Bubbler, some of the interviewees referred to the programming as "new," "cool," "exciting," and "cutting-edge." However, this created a tension: framing Bubbler programs as new and exciting by default implied that other programming was not new or exciting. Many interviewees in this study negotiated a commitment to makerspaces by oscillating between describing making as something new and referring to making as a long-standing part of library programming; for example, the Bubbler may have sparked greater participation in various making activities, but knitting circles and craft tables have been around

for a long time. When speaking about the role of maker programs in public libraries, interviewees commonly refer to the history of public libraries, as in the above excerpt, to frame making as the latest iteration of "connect[ing] people with information and resources," thus keeping libraries relevant to modern information needs. The role of programming, and librarians as facilitators in makerspace programming, is key to making these connections.

As analyzed in the findings section, a guiding aim that framed the Bubbler, as well as the mission of MPL, was access. Librarians who programmed Bubbler events frequently expressed the belief that tools, materials, processes, and people ought to be democratized, in other words, shared with as many people as possible. While maker movement rhetoric promises access and community building, these promises are not always delivered, as indicated by critiques cited in the literature review at the start of this article. As the maker movement becomes integrated into public libraries, it is important to consider which aspects of the maker movement are in alignment with the mission of public libraries. In many of the interviews conducted at MPL, market-based values prominent in maker movement rhetoric, were less prevalent. However, other library makerspaces might adopt these market-based values and see them in alignment with the aims of their public library, as is appropriate for different contexts. An interpretation of access based on ideals of outreach and social justice is an undergirding principle for MPL. Perhaps libraries that invest resources towards this vision are well positioned to reach populations who are likely underserved by spaces that promise access to cultures of production. This echoes Jenkins et al.'s identification of the participation gap in modern technology use;[51] underserved communities may or may not lack access to tools—however, more frequently, they lack the experiences and social contacts that leverage technologies for production-oriented aims. Thus, it is worth conducting more research to determine if the situation illustrated by data analyzed in this article extends across sites, suggesting that public library makerspaces might be better at achieving these democratizing aims than other makerspaces which may promise access but often cannot deliver.

This study highlights both pragmatic and ethos-related reasons that library makerspaces have the potential to provide greater access and to contribute toward more democratic maker cultures. Pragmatically, public libraries are free, whereas many makerspaces outside of public libraries charge a fee for entry either in the form of an admission or a monthly membership.[52] In addition, public libraries are designed to be geographically proximal to a city's communities. Finally, outreach programming has long been a function of public libraries, and new forms of outreach are being implemented across the country. The design of portable maker kits allows librarians to bring the tools and expertise to patrons, rather than the other way around. From an ethos perspective, the programming model illustrated by the Bubbler embraces a low-tech version of making that is not focused on technologies or individual tools but rather is about community-building through access to experts, ideas, and materials. Many of the librarians we interviewed expressed hope that patrons will benefit from exposure to various ways they can design their world. In this way, the data from this study supports the notion that developing makers as identities of participation is an equally important area of focus as specific makerspaces or maker activities.[53]

From this, ideas emerge regarding libraries' contributions towards the democratization of the maker movement:

1. People are more important than tools. Specifically, the Bubbler is about affording access to experts/artists/makers who patrons would otherwise not interact with and providing a platform for those experts/artists/makers. This offers the potential to create more diversity in makerspaces in terms of projects as well as people.
2. Becoming a maker happens regardless of the high-tech nature of the tools. While new technologies are a happy accident of the maker movement in libraries, this case study features librarians not focused on ensuring that each library gets its own 3D printer. Rather, they are interested in bringing maker-focused programming that takes advantage of external, local experts, using whatever tools they use.
3. The aim of public libraries regarding access to information—specifically to connect people with information, resources, and people—remains consistent with maker-focused programming. As the maker movement is integrated into libraries' practices, this case study presents the voices of twenty-three library staff who do not seem to experience cognitive dissonance as it relates to their mission of access and the democratization of information. The findings from this study suggest that librarians frequently draw on their traditional roles as facilitators and connectors to create a good fit for makerspaces in public libraries.

This group of librarians sees the values of the public library in alignment with the democratic values espoused by the maker movement, suggesting that libraries might be able to democratize the maker movement better than other sites less equipped to provide free and accessible programming and less able to sustain partnerships for purposes of outreach rather than commercialization. Importantly, there are many librarians who are experts when considering issues of access, partnerships, and community engagement. While makerspaces, including those in libraries, may struggle to meet ideals concerning democratization of making, this iteration provides an example of the ways in which public libraries can achieve a more democratic vision of the maker movement as they seek to design and implement maker programming through their ideals of public service, outreach, and accessibility.

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APPENDIX. FINAL CODES FOR INITIAL INTERVIEW TRANSCRIPT ANALYSIS

1. Demographics of Bubbler participants
2. What Bubbler is NOT
   a. comparison with making/maker movement
   b. comparison with other Youth Service programs
   c. uncertainties, tensions
3. Type/style/mode of program
   a. what: fine art, artsy, nontraditional, cool, new, cutting edge, STEM (or not)
   b. who: facilitators as experts, guests, outside network, vetted
   c. how: hands on, participatory, product, in depth, quality, unique, one-off
   d. Bubbler mentality, attitude, philosophy
   e. branding of Bubbler
4. Community connections
   a. needs of local community (grassroots, ethnic diversity of artists)
   b. connecting to community resources (people/partners, knowledge, tools, space)
5. Learning and teaching
   a. what: new skills, processes, tools, literacies, literacy connections
   b. how: modes/styles (e.g., exploratory, collaborative, interest-based), communities of practice (including shared knowledge)
   c. goals of participants
   d. teaching: mentoring, training, modeling, goals of facilitators
6. Impact of Bubbler
   a. community needs
   b. life; life-long learning
7. Making and public libraries
   a. continuities
   b. change
8. Making, maker movement
   a. creative
   b. open-ended, flexible/fluid
   c. experiential, physical, transform objects, put things together
   d. access to materials/tools