Making Cultures: Empowerment, Participation, and Democracy – or Not?

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Abstract
Making has transformed from a fringe and hobbyist practice into a professionalizing field and an emerging industry. Enthusiasts laud its potential to democratize technology, improve the workforce, empower consumers, encourage citizen science, and contribute to the global economy. Yet critics counter that in the West, making often remains a hobby for the privileged and seems to be increasingly co-opted by corporate interests. This panel brings together HCI scholars and practitioners active in making, handwork, DIY, crafts, and tool design to examine and debate the visions that come from maker cultures.

Author Keywords
Making, hacking, design, maker culture, peer production, future visions, empowerment, participation, materiality, DIY, sociotechnical systems.

ACM Classification Keywords
K.4.0. Computers in Society: general.

Background to the Panel
HCI has paid increasing attention to cultures of making variously engaged in practices of peer production, open hardware, reuse, and un-black-boxing technology. From amateur engineering collectives to broader social movements, these worlds present alternative approaches towards design and use. Over the last half decade, a growing number of researchers in HCI have

explored making cultures as a novel form of engagement with diverse materials including electronics as much as fabrics, wood, plastic, and paper. The HCI community has also explored making and hacking culture as a new form of community formation around everyday expertise and open sharing and in terms of its impact for design, sustainability, and education. In this work, DIY making is often described as open to anyone, a practice that broadens participation by empowering everyone: makers and users, rich and poor, men and women, young and old. Advocates of DIY promise to turn passive consumers into active participants in state affairs and the market economy as well as revamp a broken educational system through hands-on learning, as visible broadly in the writings of tech publications and blogs such as MAKE and WIRED Magazine. Similarly, hacking and repair practices are often celebrated as a more authentic engagement with technology and a return to old "cherished" and "more physical" materials,

Despite these powerful narratives of openness and individual empowerment, an emerging body of more critical scholarship [6][7][11] finds that DIY making in practice often falls short of these ideals. Many of the maker communities that are examined in this work are more exclusive in practice than their vision portrays: those who participate are mostly from the middle and upper classes, and the presence of women and other minority populations remains low [1]. Additionally, the increasing presence of American corporations in cooperative maker spaces in the United States also shapes making practices and tool/material access [8]. This panel will engage critically with both the realities and the utopian undercurrents of making practice and research. We will bring together scholars and practitioners of DIY making representing a range of perspectives to enable a stimulating discussion inclusive of diverse viewpoints [1][3][8][10][11][12].

Motivation

Cultures of making are already a massive phenomenon and are on the rise for the foreseeable future. The number of hackerspaces recognized on the hackerspaces.org website went from 500 to over 1000 between 2010 and 2013[1]. In addition to these grassroots communities, hardware incubator programs are on the rise, including but not limited to Bolt, Highway1, HAXLR8R, and Lemnos Labs, all of which opened in the last year or two. A growing number of hardware startups coming out of these incubator programs and hackerspaces draw significant economic investment. For instance, MakerBot, the first open source 3D-printer which was invented in the hackerspace NYCResistor in New York City, was recently bought by the established 3D printing company Stratasys for several hundred million USD. Events like the Make Magazine's Maker Faire, first held in the San Francisco Bay Area in 2006, have steadily grown in size and now include events in cities around the world. Even the US government has rallied behind the promise of these communities by sponsoring a National Civic Day of Hacking in June 2013.

Many of the goals and values of these communities and events are in close alignment with those of HCI [8]. This includes the democratization not just of technology use, but of technology innovation, achieved through commitments to democratic participation and a strong emphasis on pedagogy. This "maker" approach towards

[1] http://hackerspaces.org/wiki/List_of_ALL_Hacker_Spaces

innovation has received increasing attention beyond the research world as well. For instance, a series of government and military agencies in North America, Asia, and South America are supporting maker education, and a growing number of hardware incubator programs are investing in a new generation of hardware start-ups. Right now, there is relatively little engagement between HCI scholars and practitioners with these other spheres of DIY making. What could HCI's role be in a world of making cultures that has extended far beyond academia and grassroots communities such as hackerspaces?

In recognition of the new SIGCHI Spotlight on "Making Cultures" [1] as well as research hailing from human-computer interaction and science and technology studies concerned with maker communities ([3][8][9][10][11][12]), this panel's goal is to explore how the field of HCI can critically examine the current state of making cultures. In particular, we will discuss what lies beyond a pervasive imagination of making as a site of individual empowerment and freedom, democratization, and innovation growth.

- What accounts for the massive popularity of making today?
- Who is drawn in to the making movement, who is excluded or stays away, and why?
- Does DIY making disrupt or extend existing systems of power and divisions of labor, and in what ways?
- Will makers contribute to society in ways not yet anticipated?
- Will making be co-opted by mainstream consumer society and lose its edge?
- What practices are considered to be more vs. less legitimate examples of making, e.g., 3D printing vs. quilting? Why? Who gets to make these decisions?

A panel at CHI2014 devoted to a critical investigation of making practices and their relation to cultural production can also reveal how HCI can productively engage with making cultures, for instance through both technological know-how and critical reflection.

Several of the panel organizers are also co-chairing the CHI2014 "Making Cultures" Spotlight [1]. This panel will create synergy with that Spotlight by showcasing a number of important voices and perspectives in research on makers in HCI, while critically exploring the key themes that the making culture research community in HCI has identified.

Structure of the Panel

The goal of our panel (1 moderator + 4 panelists) is to both provide an overview of current critical reflections on the visions that surround making cultures and to open up space for debate.

With this in mind, the moderator will begin the panel with a brief (5 minutes) overview of the history and current state of making cultures in and beyond HCI. Then, the four panelists will each present a 5 minute-long provocation derived from claims in research and popular media about the benefits/detriments of DIY/making, their consequences for society, and what HCI's stake is. For instance, one such provocation could entail discussing Chris Anderson's book publication

"Makers" and its claims of maker tools enabling the next industrial revolution. These provocations will be shared with the other participants ahead of time, so that they can develop their responses. After each provocation, the rest of the panel will offer a response, and then the audience will be invited to participate in the debate for up to 5 minutes before moving to the next provocation.

All together, these presentations and interactive debates will take up to 65 minutes, leaving 15 minutes for an open-ended Q&A session with the audience. At this point, the audience will be invited to ask questions. If no questions are immediately present, the panelists will be invited to ask each other questions regarding their presentations and/or asked to respond to one of these general discussion questions listed above.

- How are maker projects and makers legitimated? Who gets to make these decisions?
- In which ways does DIY making extend existing systems of power and divisions of labor?
- What should HCI's roles be in contemporary making cultures?
- How does DIY making and hacking affect HCI practice?
- What are the possible synergies between critical making, critical technical practice and commercial explorations in making cultures?
- How can we better include making approaches into HCI education beyond just its deep engagement with physical materials and hardware?

Panelists

Each of the participants is active in the CHI community and has published work that examines different aspects of the cultures of making. They also have experience organizing panels at CHI and other SIGCHI conferences as well as participating in them as panelists.

Morgan G. Ames is a postdoctoral scholar at the Intel Science and Technology Center for Social Computing at UC Irvine. Morgan's current research focuses on the role of mythology in the design and use of technology, with a focus on hacking and making communities. In her current research, she draws on training in anthropology, communication, and computer science to research the social meanings of the One Laptop Per Child project, tracing its social history at MIT and assessing its deployments across the Americas.

Jeffrey Bardzell is an Associate Professor of HCI/Design at Indiana University. He brings a humanist perspective to HCI and is best known for bringing critical perspectives into HCI, e.g., in his research on interaction criticism, aesthetics, and critical design. His interest in maker culture extends his prior research on the co-emergence of tools, communities of practice, and aesthetic vocabularies in amateur creative communities, ranging from traditional craft communities to online multimedia authoring communities.

Shaowen Bardzell is an Associate Professor in the School of Informatics and Computing and the Affiliated Faculty of the Kinsey Institute at Indiana University. Bardzell leverages her background in the humanities to study technology in use, with an emphasis on participatory, intimate, and embodied experiences. One

thread of her recent work has focused on how making and criticality intersect, especially in the context of national and cultural identity, local material resources, and community activism.

Silvia Lindtner is a postdoctoral fellow at the ISTC-Social at UC Irvine and at Fudan University, Shanghai. She researches, writes and teaches about DIY maker culture, with a particular focus on its intersections with manufacturing, labor, and industry development in China. Drawing on her background in interaction design and media studies, she merges ethnographic methods with approaches in design, STS and DIY making. This allows her to provide deep insights into emerging cultures of technology production. Lindtner has led a series of interdisciplinary workshops that investigate the relationship between DIY making and manufacturing, future thinking, copycat, and innovation (for details see: www.hackedmatter.com).

David Mellis is a PhD student at the MIT Media Lab, where he researches tools and techniques for helping people to make the technology in their daily lives. David is also a co-founder of the Arduino electronics prototyping platform.

Daniela Rosner is an Assistant Professor in Human Centered Design & Engineering at the University of Washington where she co-directs the Tactile and Tactical Design Lab (TAT Lab). Her research examines the relationship between sociocultural practices and developments in engineering by combining ethnographic fieldwork with design interventions. To date, her investigations have focused on handcrafts, such as knitting, and electronics repair, two areas that reveal surprising relations to design and engineering innovation. Rosner has led multiple workshops that explore the interplay between traditional craft and computing and co-organized the one of the first workshops on DIY practice within the human-computer interaction community.

Audience and Logistics

Given that papers in this general topic area have garnered significant attention at CHI over the past several years, we anticipate an audience of 100-200 for this panel. The structure of the panel is intended to be informative to those unfamiliar with the making cultures movement while also be enticing to those with a strong background in the area. Our preference would be for a larger hall for the panel; however, there will be no elaborate set-up needed and a stage is not necessary. The standard video projection equipment that is available for talks will be sufficient.

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