From Needs to Strengths: Operationalizing an Assets-Based Design of Technology

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ABSTRACT

Guided by a human-centered design focus on users' needs, Computer-Supported Collaborative Work (CSCW) research and practice have increasingly explored how to address the multiple inequities affecting historically marginalized groups. A growing body of CSCW and Human-Computer Interaction (HCI) research, building upon education and community development literature, argues that centering on needs dismisses marginalized users' capacity for driving change. Needs-based views often lead to designs for the "here and now," further marginalizing populations and perpetuating stereotypes. In contrast, an assets-based approach that puts users' knowledge, strengths, and capacities—*assets*—at the core of design can better promote sustained impact. Translating assets into meaningful designs that interact with intersecting systems of oppression, however, raises critical questions: *What are assets? Whose assets are privileged? What ethical considerations surface when facilitating assets-based reflections? How can an assets-based design tackle systems-level problems?* In this workshop, we will bring together researchers and industry actors to explore the implications of assets-based perspectives across domains, including Education, Information and Communication Technologies and Development (ICTD), and Participatory Design (PD). Specifically, we will work to develop guidelines and methodologies for CSCW researchers and designers to identify when and how to pursue an assets-based approach, navigating issues of power to translate assets into design effectively.

CCS CONCEPTS

• **Human-centered computing** → **Field studies**; *HCI theory, concepts and models*; **Collaborative and social computing design and evaluation methods**.

KEYWORDS

Assets-based approaches, strengths, human-centered design, community-based, underserved populations, equity and inclusion, sustained impact

Organizers

Our team consists of scholars and industry leaders working in and across the fields of CSCW, Education, HCI, PD, and ICTD. We each share the commitment of exploring an assets-based perspective towards the design of technologies that leverage the strengths of historically marginalized groups and are sensitive to the complexities raised by intersecting axes of identity, such as class, gender, race, and culture [4, 6]. Given the different academic communities we operate in, we each bring unique experiences in moving from needs to assets ranging from research, design, and deployment. We come together to learn from our experience and collectively build critical lessons on how to use assets effectively for sustainable social transformation.

Tamara Clegg is an associate professor in the College of Information Studies at the University of Maryland with a joint appointment in Education. Her work focuses on developing technology to support life-relevant learning where learners engage in science to achieve personally meaningful goals.
Jessa Dickinson is a Ph.D. student at DePaul University. Her work explores assets-based approaches to co-designing systems and tools with communities that experience oppression. She focuses on how race, political trust, and power impact research collaborations and designed systems.
Betsy DiSalvo is an Associate Professor at Georgia Tech. She leads the Culture and Technology (CAT) Lab, where they study how culture intersects with technology use, production and learning.
Sheena Erete is an Associate Professor in the College of Computing and Digital Media at DePaul University. Her research explores the design and evaluation of technologies to support community-led efforts that leverage local assets and capacities to address issues such as violence, health, education, and civic engagement.
Aakash Gautam is a Ph.D. student at Virginia Tech. His research work explores ways to build upon existing strengths to support trafficking survivors and anti-trafficking organizations in Nepal.
Azra Ismail is a Ph.D. student at Georgia Tech, where she studies the intersections between data, health, and gender in urban India. Her research focuses on women frontline health workers who operate on the margins of the government healthcare system, and examines how technology might recognize and legitimize their knowledges and underpaid care work.

INTRODUCTION

To address issues of equity and inclusion, a growing amount of work in CSCW, ICTD, and PD explores the design of technology-based interventions that sustainably respond to situations where financial, emotional, and social resources are scarce [1, 2, 19, 35]. Diverse panels and workshops discussing design with groups traditionally marginalized [9, 10, 31, 33] in domains like healthcare [7], ageing [28], civic engagement and digital civics [8], and support for labor [11] attest to this interest. However, ensuring sustained impact of technology design in the face of intersecting axes of oppression [4–6] and their resulting inequities remains a significant challenge for the CSCW and HCI communities.

Informed by research on community development and education [14, 22, 23, 25, 30, 34], various HCI scholars argue that one underlying reason for falling short of securing a lasting impact is a prevalent needs-finding and needs-solving view of design [3, 8, 13, 26, 33]. Prioritizing user needs, these scholars argue, promotes dependency and robs agency from change-makers, thereby hindering sustained change. Instead, they emphasize an *assets-based approach* to research and design that focuses on identifying the *assets* that users already have (e.g., existing knowledge, strengths, and capacities) rather than working from what they lack, and thus, need.

Typically using participatory or ethnographic methodological perspectives, assets-based work in HCI-related spaces has explored the presence and potential of various forms of strengths, from institutional resources within large-scale systems [16], to intangibles such as funds of knowledge [24, 27], care [21], solidarity [18], cultural values [32], social networks [3], and local expertise [8, 20, 26]. The problem areas for leveraging assets have also been highly diverse, including the support to immigrant parents across contexts [3, 27, 32], assisting refugee resettlement [17, 26], and exploring reintegration paths for sex-trafficking survivors [13].

While designing from users' "haves" can promote agency, autonomy, and thereby realizing a sustained impact, incorporating assets in the design of technology-enhanced interventions is not simple [1, 20, 33]. Core to leveraging assets in design is attaining a rich understanding of the relationship between individuals, their assets, and their wider environment, all of which demand a shift in value and praxis [32]. Working from assets requires researchers and designers to reflect on how they position themselves in facilitating participants' discussions about assets and how designers and participants can collaboratively build on the named assets in the design process [12, 15, 32]. Furthermore, ethical considerations around whose assets to prioritize in design and whether the appreciative focus on assets has the potential to propagate structural inequities need an in-depth examination [13].

This workshop aims at bringing together researchers and designers with diverse expertise using assets-based approaches across CSCW problem areas such as education, health, community as well

Organizers

Neha Kumar is an assistant professor at Georgia Tech, where she conducts research at the intersection of human-centered computing and global development.

Lucy Pei is a Ph.D student in Informatics at the University of California, Irvine. She has worked on assets-based design as a response and critique to needs-based technology interventions that often fail to deliver lasting results to communities Her fieldwork has focused on refugee resettlement in the US.

Nithya Sambasivan is a staff researcher at Google Research and leads the HCI group at Google Research India. Her long-standing concerns in research are at the intersection of equity for people of colour and emerging technologies; recently turning to explore AI, human agency and marginalized communities.

Emily Roden is the founder and CEO of ReadyRosie, a comprehensive family engagement system co-created with families and educators, and working with over 6500 schools across the country in developing impactful family engagement plans.

Wendy Roldan is Ph.D. candidate in the department of Human Centered Design & Engineering at the University of Washington. Her research explores the design of equitable learning environments in HCI and engineering education contexts across informal and formal spaces.

Marisol Wong-Villacres is a Ph.D. candidate in Human-Centered Computing at Georgia Tech. Informed by cultural theories, learning science, as well as ethnographic and participatory methods, she explores an assets-based design of technologies that support Hispanic immigrant parents as they participate in their children's education.

Jason Yip is an assistant professor at The Information School and adjunct assistant professor in Human Centered Design & Engineering in University of Washington. His research examines how technologies can support parents and children learning together.

[1] https://assetsbaseddesign.wordpress.com/

[2] https://tinyurl.com/y99qakvn

[3] https://tinyurl.com/y8466tay

as international development to collectively reflect on how to tackle such issues. By providing a space for participants to discuss their experiences, perspectives, and methods to operationalize assets towards the design of technology, this workshop's goal is twofold. First, to produce online artifacts with workshop participants that can offer guidance on appropriate practices for identifying assets and leveraging those in design, while attending to potential issues of power. Second, to foster a community of researchers and designers continuously informing the field of CSCW on assets-based perspectives that support social transformation.

WORKSHOP THEMES

By providing a space to share a breadth of assets-based research and design experiences, the workshop will enable us to document and develop high-level guidelines for an assets-based design with groups affected by intersecting inequities and oppression. Specifically, we aim at exploring three interconnected themes around operationalizing assets-based design:

- **Unpacking the Process of Identifying Assets.** The goal of this theme is to discuss ethical considerations, perspectives, and methods for reflecting on who decides if and when to take an assets-based approach, what are assets, and how to identify them.
- **Understanding Assets and Issues of Power.** This theme addresses the need for reflecting on how to emphasize participants' voices in terms of whose assets are considered, how assets relate to participants' goals, and how assets can be used for imagining new futures.
- **Translating Assets to Design.** Through this theme we seek to envision how to proceed in highly complex situations involving the assets and problems of many different actors (e.g., when attending to systemic inequalities that may not be addressable by design or when designing with assets to impact large-scale systems).

WORKSHOP LOGISTICS

Online Spaces

For this workshop, we will heavily rely on four online spaces.

- A website[1] which contains an overview of the workshop, its goals, expected outcomes, and the list of organizers. The website will also include a call for participation and serve as a repository of materials, including accepted submissions, suggested readings, and post-workshop reports. All updates regarding the workshop will be made available through the website.
- A Slack group[2] for coordinating pre-workshop activities with workshop participants.
- A Miro board[3] for engaging participants in the creation of a living document containing a corpus of resources (e.g., notes, questions, suggested readings) centralized in one place.

- A video-conference platform, either Zoom or BlueJeans, for enabling participants to meet over short pre-workshop coffee hours as well as during a 4-hour synchronous session for all participants.

Recruiting Participants

We seek 20-25 participants who are interested in assets-based research and design or inspired by an idea of assets, examining issues around diverse forms of non-dominant cultural capital, the enactment of care and solidarity, funds of knowledge, or political participation. We believe that this work would be of interest to researchers and practitioners involved in PD, ICTD, HCI, education, and healthcare.

We will promote our call for participation via traditional channels (e.g., Facebook groups, Twitter, mailing lists, etc.). Participants interested to attend the workshop will submit a two-page position paper that describes their research work (past or present), including the populations with whom they have or are working, participants' positionality, and reflections on how their work engages or problematizes assets-based approaches. We also want to include participants who have not yet been involved in assets-based approaches and welcome their position papers to include a reflection on the potential and/or limitations of this approach.

Finally, once position papers have been accepted, participants will be expected to read through the accepted papers as well as a list of recommended readings on assets-based work prior to attending the workshop. This will be vital to engaging in in-depth discussions during the event.

WORKSHOP STRUCTURE

Considering the potential distribution of the participants across time zones, and inspired by lessons from remote events during the pandemic [29], we will divide the workshop into three stages. Pre-workshop, we will engage participants in asynchronous tasks that can facilitate activities during the workshop. These asynchronous tasks will be intentionally designed by co-organizers to prompt critical reflection. For the workshop, we will conduct a four-hour meeting to discuss implications around the workshop themes. The end goal will be to produce a living board in Miro with questions for researchers and designers to consider when engaging in assets-based design. Lastly, post-workshop, we will continue reaching out to participants over our Slack space, to identify how we work to translate the ideas from the living board into concrete deliverables that can impact the wider community.

Pre-workshop

To pave the path for reflection and discussions during the synchronous session, we will facilitate an online community in Slack and an online board in Miro. Over Slack, we will invite participants to introduce themselves and their research in a Miro board, including their own assets and struggles, the populations they work with, and the topics they want to explore during the workshop. We will

also share accepted position papers categorized around the workshop themes and ask participants to read the submissions, adding questions and comments. We hope discussion among authors of position papers will spark new collaborations, inspire future projects, and raise critical questions around asset-based approaches. We will create micro-activities for participants to brainstorm ideas individually and then collaboratively discuss their ideas with others virtually. Through this time, we will host a variety of short coffee hours for giving participants the opportunity to socialize as they engage in pre-workshop activities. The goal for the short coffee hours will be to encourage active discussions among smaller groups of people.

Workshop Session

We plan the following structure for this four-hour synchronous online session (for a detail schedule see Table 1):

- **Introductions: Thinking about Assets and Goals.** After introducing the workshop and the plan for the day, we will ask participants to use the Miro board for introducing themselves. Next, to lead from our participants' interests, we will have participants review the Miro board with their submissions and comments and, from there, form groups based on the proposed workshop themes.
- **Breakout Groups: Reflecting on the Implications of Assets-Based Design.** Each group will focus on one of the previously-defined themes and work with at least one facilitator from the co-organizing team on a Miro board, sharing problems, methods, reflections, provocations, and desirable future directions for assets-based design. While our intention is for participants to lead the group discussion, facilitators will elicit participants' reflection on the double-binds in assets-based design. For example, when discussing assets and issues of power, the facilitator might prompt participants with questions such as: *How can assets-based design make a material difference without hiding systemic issues behind solutionism?*, and *How does using the term 'low-resource' affect how designers and participants view an assets-based design?*
- **Discussion: Reflecting on Guidelines for Assets-Based Design.** We will bring the groups together to present their boards and discuss their reflections with the rest of the workshop. As groups present, we will encourage participants to post questions, ideas, concepts, and suggested resources in a final Miro board. This will be used as a living document for researchers and designers to reflect upon before, during, and after engaging in assets-based design.

Post-workshop

We aim to initiate a conversation with wider members of the CSCW community about assets-based approaches. To do so, we will share the living Miro board over various channels and encourage the

Table 1: Online Workshop Activities

Activity	Duration
Introductions: Thinking About Our Assets and Goal(s)	1 hour
Break	10 mins
Breakout Groups: Reflecting on the Implications of Assets-Based Design	1 hour 20 mins
Collective Discussion: Reflecting on Guidelines for Assets-Based Design	1 hour 30 mins

broader CSCW community to add questions, comments, and edits. Informed by the conversations that emerge during this process, we will organize with participants in our Slack channel to discuss how to collaborate for creating tangible recommendations, guidelines, and implications for researchers leveraging assets-based approaches. Examples of these tangible outcomes that could emerge from our workshop include a set of guidelines for understanding issues of power or to help with asset-based design. Finally, we commit to creating a blog post (e.g. a Medium post or an Interactions article) that we will share widely with the CSCW community following our workshop which includes key takeaways, questions emerged, and action-inspired ideas for moving forward.

REFERENCES

[1] Fiona Brooks and Sally Kendall. 2013. Making sense of assets: what can an assets based approach offer public health?

[2] George Hope Chidziwisano, Susan Wyche, and Erick Oduor. 2020. GridAlert: Using a Sensor-Based Technology to Monitor Power Blackouts in Kenyan Homes. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–13.

[3] Alexander Cho, Roxana G Herrera, Luis Chaidez, and Adilene Uriostegui. 2019. The" Comadre" Project: An Asset-Based Design Approach to Connecting Low-Income Latinx Families to Out-of-School Learning Opportunities. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–14.

[4] Patricia Hill Collins. 1990. Black feminist thought in the matrix of domination. *Black feminist thought: Knowledge, consciousness, and the politics of empowerment* 138 (1990), 221–238.

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

[6] Kimberle Crenshaw. 1990. Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stan. L. Rev.* 43 (1990), 1241.

[7] Michael A Devito, Ashley Marie Walker, Jeremy Birnholtz, Kathryn Ringland, Kathryn Macapagal, Ashley Kraus, Sean Munson, Calvin Liang, and Herman Saksono. 2019. Social Technologies for Digital Wellbeing Among Marginalized Communities. In *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing*. 449–454.

[8] Jessa Dickinson, Mark Díaz, Christopher A Le Dantec, and Sheena Erete. 2019. " The cavalry ain't coming in to save us" Supporting Capacities and Relationships through Civic Tech. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–21.

[9] Tawanna R Dillahunt, Sheena Erete, Roxana Galusca, Aarti Israni, Denise Nacu, and Phoebe Sengers. 2017. Reflections on design methods for underserved communities. In *Companion of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. 409–413.

[10] Sheena Erete, Aarti Israni, and Tawanna Dillahunt. 2018. An intersectional approach to designing in the margins. *Interactions* 25, 3 (2018), 66–69.

[11] Sarah E Fox, Vera Khovanskaya, Clara Crivellaro, Niloufar Salehi, Lynn Dombrowski, Chinmay Kulkarni, Lilly Irani, and Jodi Forlizzi. 2020. Worker-Centered Design: Expanding HCI Methods for Supporting Labor. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–8.

[12] Aakash Gautam and Deborah Tatar. 2020. p for political: Participation Without Agency Is Not Enough. In *Proceedings of the 16th Participatory Design Conference 2020 - Participation(s) Otherwise - Volume 2 (PDC '20)*. 45–49.

[13] Aakash Gautam, Deborah Tatar, and Steve Harrison. 2020. Crafting, Communality, and Computing: Building on Existing Strengths To Support a Vulnerable Population. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing*

Systems. 1–14.

[14] Shaun R Harper. 2010. An anti-deficit achievement framework for research on students of color in STEM. *New Directions for Institutional Research* 2010, 148 (2010), 63–74.

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

[16] Julie Hui, Nefer Ra Barber, Wendy Casey, Suzanne Cleage, Danny C Dolley, Frances Worthy, Kentaro Toyama, and Tawanna R Dillahunt. 2020. Community Collectives: Low-tech Social Support for Digitally-Engaged Entrepreneurship. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–15.

[17] Azalea Irani, Kriti Nelavelli, Kristin Hare, Paula Bondal, and Neha Kumar. 2018. Refuge Tech: An Assets-Based Approach to Refugee Resettlement. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–6.

[18] Azra Ismail and Neha Kumar. 2018. Engaging solidarity in data collection practices for community health. *Proceedings of the ACM on Human-Computer Interaction* 2, CSCW (2018), 1–24.

[19] Rikke Bjerg Jensen, Lizzie Coles-Kemp, and Reem Talhouk. 2020. When the Civic Turn turns Digital: Designing Safe and Secure Refugee Resettlement. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–14.

[20] Naveena Karusala, Isaac Holeman, and Richard Anderson. 2019. Engaging Identity, Assets, and Constraints in Designing for Resilience. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–23.

[21] Naveena Karusala, Aditya Vishwanath, Arkadeep Kumar, Aman Mangal, and Neha Kumar. 2017. Care as a resource in underserved learning environments. *Proceedings of the ACM on Human-Computer Interaction* 1, CSCW (2017), 1–22.

[22] John Kretzmann and John P McKnight. 1996. Assets-based community development. *National civic review* 85, 4 (1996), 23–29.

[23] Alison Mathie and Gord Cunningham. 2003. From clients to citizens: Asset-based community development as a strategy for community-driven development. *Development in practice* 13, 5 (2003), 474–486.

[24] Kelly Mills, Elizabeth Bonsignore, Tamara Clegg, June Ahn, Jason Yip, Daniel Pauw, Lautaro Cabrera, Kenna Hernly, and Caroline Pitt. 2019. Connecting children's scientific funds of knowledge shared on social media to science concepts. *International Journal of Child-Computer Interaction* 21 (2019), 54–64.

[25] Luis C Moll, Cathy Amanti, Deborah Neff, and Norma Gonzalez. 1992. Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into practice* 31, 2 (1992), 132–141.

[26] Lucy Pei and Bonnie Nardi. 2019. We Did It Right, But It Was Still Wrong: Toward Assets-Based Design. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. 1–11.

[27] Wendy Roldan, Paola Vanegas, Laura Pina, Carmen Gonzalez, and Jason Yip. 2019. The Role of Funds of Knowledge in Online Search and Brokering. (2019).

[28] Sayan Sarcar, Cosmin Munteanu, Jussi Jokinen, Neil Charness, Mark Dunlop, Xiangshi Ren, and Jenny Waycott. 2020. Designing Interactions for the Ageing Populations-Addressing Global Challenges. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–5.

[29] Alexandra To. 2020. Hosting Virtual Conversations about Race: "Engaging with Race in HCI" CHI 2020 Workshop Report Back. https://link.medium.com/l60gQRw1K7

[30] Richard R Valencia. 2012. *The evolution of deficit thinking: Educational thought and practice*. Routledge.

[31] Cara Wilson, Roisin McNaney, Abi Roper, Tara Capel, Laura Scheepmaker, Margot Brereton, Stephanie Wilson, David Philip Green, and Jayne Wallace. 2020. Rethinking Notions of 'Giving Voice' in Design. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–8.

[32] Marisol Wong-Villacres, Carl DiSalvo, Neha Kumar, and Betsy DiSalvo. 2020. Culture in Action: Unpacking Capacities to Inform Assets-Based Design. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–14.

[33] Marisol Wong-Villacres, Arkadeep Kumar, Aditya Vishwanath, Naveena Karusala, Betsy DiSalvo, and Neha Kumar. 2018. Designing for intersections. In *Proceedings of the 2018 Designing Interactive Systems Conference*. 45–58.

[34] Tara J Yosso*. 2005. Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race ethnicity and education* 8, 1 (2005), 69–91.

[35] Annuska Zolyomi, Andrew Begel, Jennifer Frances Waldern, John Tang, Michael Barnett, Edward Cutrell, Daniel McDuff, Sean Andrist, and Meredith Ringel Morris. 2019. Managing Stress: The Needs of Autistic Adults in Video Calling. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–29.