A Turn to Assets in Community-Based Computing Research: Tradeoffs, Deficits, and Neoliberalism in Technological Development

JEAN HARDY, Michigan State University, USA
JACOB THEBAULT-SPIEKER, University of Wisconsin – Madison, USA

CSCW and HCI scholars are increasingly adopting asset-based approaches to community-based social computing research. Emerging from asset-based community development (ABCD), an approach to community and economic development research and practice that emerged in the 1990s, advocates for asset-based approaches argue that a "needs-based approach" to development is overly focused on community deficits, and in doing so portrays communities in a largely negative light. Using ABCD methods, social computing scholars work to aid communities in identifying, classifying, and deploying their unrealized assets through sociotechnical systems. But researchers deploying asset-based approaches in CSCW and HCI more broadly have yet to grapple with the origins of ABCD in neoliberal economic shifts of the 1980s and 1990s that perpetuated distrust in the state and sought to transfer development power to private, local actors. Drawing on a case study of controversy around the construction of a cell tower in a very remote and rural community in the Midwestern United States to examine the inherent tradoffs present in asset- and deficit-based research.

CCS Concepts: • **Human-centered computing → Collaborative and social computing**; *Collaborative and social computing theory, concepts, and paradigms*; Computer supported cooperative work

Additional Key Words and Phrases: Asset-based community development, sociotechnical gap, neoliberalism, community and economic development, Rural HCI

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1 INTRODUCTION

From the development of vaccine distribution systems to community-based Internet infrastructure, technological development has long been key to community and economic development around the globe. While varied in practice from place to place, community and economic development in its contemporary formation broadly materialized after World War 2, driven by domestic and international entities, to address localized manifestations of poverty, economic growth and stability, and concerns related to quality of life, especially in low-income and developing communities.

In fact, technological development has become a key driver of regional economies, as well as influencing the needs of municipalities and civic organizations. The ability to create the right kind of data, attract the right kind of investment, and serve the modern needs of community members have all been affected by a community's ability to access the right kind of technology. This is an essential facet of large swaths of CSCW research that has emerged in the "third wave" (and beyond) of HCI, focusing on understanding the context and place of interaction between groups of humans and computational systems [2,3]. Technology and community and economic development manifest in cities through the design of civic tech, in

the realm of information and communication technology for development (ICTD), and is increasingly being investigated in other social sciences such as economics and sociology, outside of the realm of traditional disciplines for human-centered computing research.

One aspect of community and economic development that has recently been taken up in CSCW and HCI research more broadly is asset-based community development. Asset-based community development, or ABCD, is an asset-driven approach to community and economic development that emerged in the 1990s to resist the negative framework that had long been used to justify urban development activities [33]. Asset-based scholars argue that that negative framework, a largely "needs-based approach" to community and economic development, focused too heavily on a community's deficits (i.e., what was wrong with the community). This in turn meant that non-profit, civic, and municipal organizations were incentivized to focus on communities in a negative light, as full of problems and despair, rather than as full of unique opportunities and, as ABCD scholars encourage in their reframing, assets. In other words, ABCD rejected the needs-based, deficit framing in favor of an opportunity-based, asset framing.

Recent research in HCI brought ABCD into our methodological wheelhouse and encouraged researchers and designers working with marginalized or otherwise underfunded and unsupported communities to reframe their work towards discovering and designing for unrealized or underutilized assets [6,10,15,20,22,24,38,47,48,50–52]. Following traditional ABCD research, this work in HCI seeks to aid communities in identifying and classifying their unrealized or underutilized assets. But computing scholars, going back to the early 2000s [39], have also put forth their own unique contributions, working to design systems to help communities make their assets more productive and visible for community and economic development activities.

While this "turn to assets," as we reference in the title of this paper, is an opportunity to diversify our abilities as scholars to frame and narrate the experiences of the communities we work with, an assets-based approach has so far been overly positive in its outlook on what is possible with this new tool at the disposal of researchers and designers. But what does this turn to assets actually mean for community-based and community-engaged research in computing and design research? How are assets (and their corresponding deficits) materializing in CSCW, HCI, and ICTD scholarship? How might the origin of asset-based approaches in neoliberal economic shifts of the 1980s and 1990s, and the individualistic narratives they perpetuate, be antithetical to the work we as community-engaged scholars might be interested in creating in a new paradigm for HCI research? By asking these questions, we encourage computing researchers to reflect on the ideology and scale of ABCD research.

Inspired by prior critical reflections on the state of HCI research (e.g., [44]) and the rapid expansion of ABCD influenced research in CSCW and HCI [49], we take this moment as an opportunity to delve more deeply into foundational concepts and themes that are essential to both ABCD and its place in community and economic development history. Drawing from a deeper understanding of deficits, assets, and neoliberalism in technological development, we construct a case study based on a recent technological development project in one rural American community to gain a better understanding of community, or meso, level asset-based approaches.

The aims of this paper are two-fold: first, we unpack the history of asset-based community development and its deep ties to neoliberal ideologies of individualism. Second, we explore the scale of assets in community-based computing research inspired by ABCD to show how asset-based research can be done otherwise, in way that complicates the individualistic origins of ABCD, and in a way that seeks to find a balance between assets and deficits. To achieve this, we use a case study of infrastructural controversy to reflect on the

ability of asset-based approaches to address foundational concerns in CSCW, primarily that of the sociotechnical gap [1]. In doing so, we explore the potential for asset-based approaches to serve as Ackerman-style 'first-order approximations,' and in doing so, focus on the potential tradeoffs of asset- and deficit-based approaches. Concluding our paper, we build on Lindtner and colleague's [29] formulation of a "reflexive-interventionist approach" with an eye towards enabling computing scholars to transcend the neoliberal formulation of ABCD. In doing so, we hope to work towards a more clear-eyed approach to asset-based work that is aware of its ideological origins and intentionally choose the tradeoffs we take on through our methods.

2 DEFICITS

2.1 Origins of Asset-Based Community Development

In their influential article describing the origins of asset-based community development, planning and development scholars Mathie and Cunningham [33] argue that an asset-based approach to community and economic development emerged to resist a largely negative existing approach to urban development activities:

"In the needs-based approach, well-intentioned efforts of universities, donor agencies, and governments have generated needs surveys, analysed problems, and identified solutions to meet those needs. In the process, however, they have inadvertently presented a one-sided negative view, which has often compromised, rather than contributed to, community capacity building" [33].

In other words, a development approach wholly based on a community's needs largely relies on community organizations framing those needs as *deficits* that need to be solved for the sake of community health and economic prosperity. Organizations are incentivized by a state and non-profit-driven granting structure that funds community development by focusing exclusively on the *deficits*. This, as Mathie and Cunningham argue, results in these communities being seen perpetually in a negative light, as full of problems and despair, rather than as home to unique opportunities in the form of assets.

The purpose and framing of ABCD by Mathie and Cunningham, alongside methods advocated for in ABCD like asset mapping, have been the primary way that social computing and HCI scholars have conceptualized assets in response to prior deficit-driven research in computing. ABCD originated from the work of Kretzmann and McKnight and their widely read textbook, *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets* [27]. The pair of community development scholars arrived at the concept of asset-based approaches through their work with American low-income communities in the 1980s and 1990s that were dealing with continued state and federal disinvestment.

The (largely American) environment from which this work emerged was one of non-profit community-based organizations reliant upon grants from state and federal governments, as well as private foundations (e.g., the Ford Foundation). Community and economic development as a practice in its current form came out of the era immediately before and after World War 2 that saw massive state investment in combating poverty and, in doing so, increasing the social and economic safety net for low-income and working-class people. What began as the work of the American government in the 1940s and 50s increasingly became the purview of community-based non-profits and Community Action Agencies. Many of these entities were created in the 1960s to transfer the onus of eliminating poverty from the government to private, or some semblance of public-private, locally-based entities [31,32]. In doing so, the contemporary granting mechanisms that focus on solving community's deficits or problems were created. The work of these organizations grew over

the past 50 years, becoming essential, and sometimes the only, services for addressing issues related to poverty and community development in cities across the United States.

This was the context in which Kretzmann and McKnight found themselves establishing ABCD. They position the asset-based approach being used in some low-income communities as a method of self-empowerment in contrast to the "needs-driven dead end" of low-income "client neighborhoods" that have come to see their needs as only being able to be solved by intervention from outsiders. As they state in the introduction to their textbook [27],

> "…many lower income urban neighborhoods are now environments of service where behaviors are affected because residents come to believe that their well-being depends upon being a client. They begin to see themselves as people with special needs that can only be met by outsiders. They become consumers of services, with no incentive to be producers."

A needs-based approach to community development, in their purview, focuses almost entirely on the "deficiencies" of the communities in question. Rather than focusing on individual and community empowerment, Kretzmann and McKnight argue that these community members have become reliant on outside intervention through welfare services and the like.

This kind of language and research was arguably essential in the 1990s to the continued demolition of an economic and social public safety net at the federal level in the United States. The focus on poor people as merely "clients," who are self-perpetuating their own poverty and misery, is the same language that was utilized to build up the image of the gendered and racialized "welfare queen" that was so essential to demonizing low-income communities and communities of color in the United States at the time. It is this framing of deficits, built on a history of transferring community and economic development activity away from explicitly public entities (e.g., state and local governments) to private ones, that contemporary asset-based research in CSCW and HCI is built on today. As Soden and colleagues argue in a recent CSCW paper [43], the "presentism" of our scholarly community results in a failure to account for history of our ideas or methods. Here we hope to moderate this "presentism" and historicize HCI and CSCW's understanding of ABCD. We see the historical ideology of ABCD, based in the emergence of neoliberalism that we will explain in more detail in Section 4, as being necessary to recognize historically in the rejection of deficit framings.

2.2 Deficits in HCI research

Deficit-driven, needs-based approaches are no stranger to HCI research. In fact, as Oulasvirta and Hornbæk [37] argue, the foundational element that unites the majority of HCI research is its problem-solving mission. In many ways, problem-solving is often a mask for responding to deficits in the form of research. For example, [37] frame a research problem in HCI as, "a stated lack of understanding about some phenomenon in human use of computing, or stated inability to construct interactive technology to address that phenomenon for desired ends." Both a "lack of understanding" and "inability" are negative in their emphasis on the absence of something which needs to be solved. For example, in our own research in areas related to the role of geography in computing, we have sought to better understand how rurality negatively impacts both the quality of user generated data and the user experience of social media systems [13,14,18,45,46]. Broadly, work in Rural HCI has often sought to figure out how to address the deficits inherent to rural areas related to infrastructural constraints (e.g., [12,35]), a lack of educational and healthcare resources (e.g., [40,41]), and a failure of existing technical systems to represent the values and culture of rural communities (e.g., [14,25]).

Drawing from arguments made by scholars in fields related to ABCD, HCI researchers have also critiqued the emphasis on deficits in HCI research, especially when it comes to studying specific types of communities. For example, Hardy et al. [15] argue that a deficit framing in Rural HCI research "may fall into the trap of portraying rural areas exclusively in a negative light – i.e., as a problem that needs to be solved, rather than as an opportunity for creating new knowledge and understanding with rural people at the center of the issue at hand." Work at the forefront of bringing asset-based methods and perspectives into CSCW and HCI research has also been critical of deficit-driven research in HCI. For example, Wong-Villacres et al. [51] state that many ICTD initiatives, "[dwell] on constraints and deficits, [disregarding] potential that might be harnxessed for realizing technosocial opportunities towards greater equity." Asset-based research in HCI hasn't completely embraced a rejection of needs-based approaches so much as the originators of ABCD were in its formulation. This is likely due to the continued prominence of user needs as central to HCI. But, the rejection of a needs-based approach, as we summarize above, is inherent and foundational to ABCD as a methodological tool. In other words, it is embedded in asset-based approaches. What we suggest, and unpack in more detail later, is that there is a limited reflexivity and acknowledgement of the origins of critiques of deficit-based approaches in harmful economic and social programs and discourses which is fundamentally at odds with much of the ideological commitments made in HCI and ICTD research that focuses on marginalized communities.

3 ASSETS

3.1 What are assets?

We once again turn primarily to the work of Kretzmann and McKnight [27] and Mathie and Cunningham [33] to explore what assets are within the conceptualization of ABCD, and therefore asset-based approaches to CSCW and HCI research. These two texts are our foundation here for two reasons: 1) Kretzmann and McKnight's textbook was the first text to solidify the ABCD framework and therefore is what much of the academic literature and community and economic development practice is built upon; and 2) Mathie and Cunningham is the primary, and often only, text from which the majority of computing scholars advocating for asset-based approaches derive their work on. By looking at both of these, a foundational text and another text that reflects on the decade following that text, we come to a better understanding of how ABCD as a process conceptualizes, discovers, and deploys assets.

Kretzmann and McKnight's foundational justification for a focus on assets is their oppositional relationship to deficits, that assets flip the deficit model on its head. In their book, they argue that shifting to a "capacity-oriented emphasis" of development is required in the present day because "community development takes place only when local community people are committed to investing themselves and their resources in the effort" and that "the prospect for outside help is bleak" [27]. Kretzmann and McKnight argue that assets are materialized through a combination of an individual skills and capacity inventory, the association of a community's citizens, and through the local institutions that make up the visible fabric of the community [27]. Framing ABCD through the lens of social capital 10 years later, Mathie and Cunningham [33] advocate for a focus on relationships between people, and argue that social capital is a type of "latent asset" waiting to be activated through an understanding of local success stories.

In ABCD, it's not enough that assets merely exist. They have to be discovered and materialized through the ABCD process so they can be activated to their full potential. Kretzmann and McKnight call this process a "capacity inventory," which is based on

documenting the skills, community relationships, and entrepreneurial interests of an individual. In particular, they over-emphasize the focus on the individual that we see throughout ABCD, stating, "The purpose of the Inventory is to help a particular person contribute… [it] is not designed to do a study of neighborhood residents that will primarily result in tables and charts showing numbers of skills, activities and enterprises" [27]. The emphasis on the individual is important because it's supposed to ensure that individuals feel like their unique contribution is being recognized. Mathie and Cunningham frame this process of asset discovery as "appreciative inquiry" that "collects stories of community successes and [analyzes] the reason for success" [33]. In both of these cases, abstracted versions of asset maps documenting the relationship between individuals and organizations often result.

Despite the focus on assets as highly individualized, in order for them to be activated, ABCD scholars argue that organizations are essential. Kretzmann and McKnight call these "associations." Mathie and Cunningham, drawing on a decade of ABCD work that has implemented Kretzmann and McKnight's views, provide more guidance for the role of these organizations. They advocate more clearly for a "core steering group" and "representative planning group" that can convene and act upon the assets that are materialized in the discovery process, building relationships and capacity through a community's assets "for mutually beneficial problem solving within the community" [33].

3.2 Assets in HCI research

Recent research in CSCW, ICTD, and HCI more broadly have taken up this call for an asset-based approach [6,10,15,20,22,24,38,47,48,50–52]. This research has relied heavily on Mathie and Cunningham's [33] framing of social capital as a "latent," or underdeveloped, asset that can be both appreciated and depleted depending on a community member's relationships and social standing. The goal of asset-based approaches in CSCW and HCI, in many ways, is furthering the appreciation and realization of latent social capital to improve a community's development prospects. Given the role that social capital plays in the history of social computing and online communities research, especially in articulating contribution to computing environments and what users get out of it, it comes as no surprise that computing researchers would attach to the ideas of social capital emerging from ABCD. Indeed, one of the authors of this paper has advocated extensively in previous publications in favor of asset-based approaches to counter negative perceptions of particular communities [e.g., 15]. To incorporate ABCD into their own work, researchers in CSCW, HCI, and ICTD have taken three approaches that we will summarize here: identifying and classifying assets, designing for assets, and identifying the limitations of assets. Through these processes, we argue, researchers attempt to transform assets from unrealized or underutilized into productive interventions that seek to empower community members.

Given that assets are often unrecognized or underutilized, especially the social assets that are so important to CSCW researchers, one of the first steps researchers perform is identifying and classifying existing assets in communities. Asset identification is done with an eye towards addressing a challenge, bridging an opportunity gap, and/or influencing the design of some type of intervention. For example, Karusala et al. [24] and Wong-Villacres et al. [51] both focus on the existence of care in interpersonal relationships as an opportunity to design for low-resource learning centers. Xu and Maitland [52], Irani et al. [20], and Pei and Nardi [38] looked at the kinds of assets that refugees might have to bridge opportunity gaps. Further, Cho et al. [6] call upon an informal network of Latinx mothers as a source of inspiration for how information moves through a particular community. Classification sometimes followed identification in these projects, such as the work of Xu and Maitland [52] who constructed a classification system to aid in creating data collection tools for mapping

assets, or Pei and Nardi [38] who proposed an asset utilization framework that classifies and evaluates interventions based on their asset use and novelty. The work of identifying and classifying assets demonstrates that it's not enough merely to know that assets exist, but there must be further work to make the assets useful or productive to the communities and community-based design interventions.

Once assets were realized as potential opportunities for productive intervention, researchers often moved onto designing interventions to facilitate asset utilization. Xu and Maitland [52] developed an asset map that made asset identification easier. They give an example of making the broader community aware of the many types of language knowledge that exist in the refugee camp. Cho et al. [6] developed their "Comadre" tool to share low- and no-cost after school opportunities, mirroring their design off their identification of the informal mom network of information sharing. Through their intervention design for refugee education, Pei and Nardi [38] argue that asset-based design should focus on decreasing novelty in order to make invention and repair of designed interventions more manageable for low-resource communities.

Designing for assets is supposed to result in the transformation of underutilized assets into productive opportunities to address community needs, bridge resource gaps, and develop opportunities for education. Yet many projects recognized or ran into limitations in the course of their research. For example, Cho et al. [6] argued that a major weakness of asset-based approaches were "its resistance to legislate a standardized course of action based on the assets it uncovers." Yet, while successful in fulfilling what it set out to do, they failed to consider the sustainability of their design intervention; a glimpse into why potential standardized courses of action may not be easily replicated. Further, and most importantly with respect to limitations, Karusala et al. [22] cautioned others that while ABCD can be an empowering approach, that different groups of actors have different access to assets. While drawing upon an asset for intervention, other less privileged actors may be left behind. In this way, leveraging assets still can have negative outcomes. Wong-Villacres et al. [47] suggest that one way to deal with the disparate access to community assets is through a focus on individual capacity in addition to assets.

3.3 Reflecting on assets and deficits in HCI

To summarize Sections 2 and 3, it becomes increasingly clear that asset-based approaches are attractive to researchers and practitioners in HCI and CSCW as they offer an alternative for navigating community empowerment that doesn't rely solely on the problem-solving and often technosolutionist paradigm that much research falls under. But given its growing place in our field, there is also a need for a critical reflection on asset-based approaches in CSCW and HCI. As noted in Section 3.2., there are also many limitations to how asset-based approaches have been deployed in HCI. For example, Wong-Villacres et al. [47] suggest that it's necessary to focus on individual capacity to access assets once realized in a community, not just to make assets available. Yet a deeper engagement with ABCD literature would reveal that many of these insights (e.g., the need to develop capacity, the role of organizations in maintaining longevity of asset-based approaches) are foundational in ABCD literature. There is still a lot to be understood with respect to how asset-based approaches in HCI can best reflect and build upon in three decades of ABCD practice and research.

We do not intend to argue that asset-based research in HCI has wholesale taken up a bootstrap, individualistic formation of assets that reflects the full set of harms stemming from a neoliberal position. In fact, many of the papers we cite above are actively working to construct formulations of assets that counter these issues. For example: [24]'s embrace of care as an asset to structure resource access; [10]'s critique of assets as glossing over

potential harmful power dynamics; or [47]'s focus on capacity to understand the role of agency in addressing inequity. Many of these papers are deeply embedded in community practices, but still largely rely on the methods originating in ABCD that start with the individual and use individualized assets as a means to understand opportunity for communities. We find this disconnect between the individualized origins of ABCD and its current use to be a primary point of contention and opportunity for asset-based research in HCI, further demonstrating the importance for us as researchers to understand the ideological histories of the approaches we adopt [43].

There are other methodological and theoretical traditions in CSCW and HCI's past and present that do community-oriented work that is community centered and not necessarily built on similar individualistic underpinnings, and which may come with their own pros and cons or tradeoffs. For example, work in value-centered design and participatory design has increasingly thought about the role of things like maintenance and care in community level design interventions (e.g., [9,23]). Further, civic technology research often looks to collaboration and community in designing for public goods and services [42]. While there seems to be a clear need for a systematic review of how CSCW deals with "community," both methodologically and theoretically, which could allow us to further understand potential shortcomings (and strengths) of asset-based approaches, that is outside the scope of this paper.

We see two primary concerns that we feel are best situated to address in what follows in the paper. First, as we began to broach in our section on deficits, ABCD has a fraught base upon which it is built; a base grounded in ideology that prioritizes the capacity of an individual as central to the capacity of a community and focuses on individual empowerment. We see this primarily as a function of the neoliberalization of economic and community relationships in the last two decades of the 20th century and unpack this using critical ABCD scholars in Section 4. Second, given asset-based approaches in HCI (and ABCD more broadly) as largely being incremental [50], there has yet to be a discussion of what the tradeoffs might be in focusing on assets over deficits in our work. In other words, with a tradeoffs lens, we are concerned with what we are losing and what we are gaining when we focus on assets rather than deficits. Using this concept of *tradeoffs*, inspired by from Ackerman's work on the sociotechnical gap, in Section 5 we construct a case study of rural telecommunications infrastructure development to unpack, and in Section 6, discuss how asset-deficit approaches speak back to foundational approaches to CSCW, and in many ways how it has fallen into the same gaps.

Throughout this paper, we purposely draw attention to notions of social systems of scale in asset-based research. We do this because, despite their framing described above as largely individualized assets that can be utilized by a community when collected together, assets do not need to fit neatly into a micro-meso-macro scale. In fact, by looking at assets (and deficits) across scale and beyond just their origin in the individual, we argue that there are increased opportunities to reflect on the ideology at play in community and economic development, and associated technological development. As we will describe in more detail in the introduction to Section 5, we see deeply engaging with issues of scale in asset-based research as an opportunity to partially reject neoliberal elements of ABCD, and encourage this as part of a reflexive interventionist approach to asset-based research.

4 NEOLIBERALISM AND THE MARKET REALIZATION OF INTANGIBLE ASSETS

4.1 Neoliberalism, assets, and technosolutionism

Asset-based community development emerged in the middle of an economic era in the United States that saw the broader political system, across mainstream ideologies, doing two things that are central to the arguments we are making in this paper: first, public power was increasingly being transferred over to private entities; and second, individual responsibility and free markets became embraced as the primary mechanisms through which to address both economic and social issues. This time of economic and political policy change is frequently referred to as neoliberalism. As economic geographer David Harvey summarizes in *A Brief History of Neoliberalism*, "Neoliberalism is in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade" [16]. In the United States, neoliberalism meant not only an embrace of the individual as the primary arbiter for future economic and business possibility, removing regulatory and tax constraints that would hinder the entrepreneurial individual, but also an active and ongoing (to this day) process of dismantling state-governed social and welfare programs in favor of private, market-based solutions. For example, in the case of supporting community and economic development, as we summarized in Section 2, this meant creating a culture of private, rather than public, funding for (and therefore control over) development work (e.g., from organizations like the Ford Foundation).[1]

We situate ABCD within this period of the solidification of neoliberalism. We draw heavily from the work of MacLeod and Emejulu [30], who argue that the emergence of ABCD was embedded in economic trajectories whose goal was to perpetuate distrust of the state and seek to transfer power to private, local actors. ABCD became an essential component of the post-Reagan reorganization of the American welfare state by portraying poor communities as steeped in a "culture of dependency" [30]. MacLeod and Emejulu argue that, "Rather than seeking to organize against the elimination, reduction, and/or privatization of public services, ABCD, in theory and practice, seeks accommodation with this dominant ideological position" [30]. In its rejection of deficit-based thinking, ABCD frequently ignores the external factors and inequality that are arguably the source of deficits to begin with. In other words, the emergence of ABCD is both a symptom and an arbiter of neoliberalism, transferring onus and responsibility for community and economic development onto private actors and individuals when underdevelopment is a systemic issue.

In its embrace of ABCD as a more participatory and community-based approach to HCI and CSCW, researchers risk reifying and bringing the individualizing tactics of neoliberalism into the world of technological development, which already in many ways feeds into neoliberal narratives that favor economic growth over all other aspects of user experience [13]. A primary contribution of this article is to bring this view of ABCD to caution the optimism of its deployment in CSCW and HCI. We do not advocate for a wholesale dismissal of ABCD, but rather suggest cautious optimism for asset-based approaches which are critical of where assets come from, what they represent, how they are used, and what they represent in an era where technosolutionism seems to have a stranglehold on what is best for our collective futures. Not all assets are good and the individualist model driving ABCD doesn't often recognize that just because an asset may exist in a community, doesn't mean that everyone has access to it [47]. Existing research in HCI, as we summarized in 3.2, has already begun to address some of the limitations of asset-based approaches. We extend that work

[1] For an on the ground analysis of how this process unfolded in the 1950s and 1960s, we recommend Marris and Rein's 1967 book, *Dilemmas of Social Reform: Poverty and Community Action in the United States* [31]. For an in-depth theoretical and historical understanding of how private community-based organizations came to dominate social service provision in the 20th century, we recommend Marwell's work [32].

here. As Lindtner et al. [29] suggest, we need a reflexive-interventionist stance that "seeks to give substance and new resources to the pursuit of democratization beyond technosolutionism." We suggest the need to work against the individualist origins of asset-based approaches, focus on the need for meso-level interventions that are rooted in collectivity as argued in some prior HCI engagements summarized above, and to resist feeding the continued march towards the privatization of public services in areas such as civic tech and the "smart city" [26]. In particular, we argue that we need to look at both the assets and the deficits, and the resulting tradeoffs, of the asset-based approach to social computing research.

4.2 Tradeoffs: The potential economization of intangible assets

At its heart, ABCD is a process of realizing unrealized or intangible assets through a community-based development process that focuses on leveraging individual assets towards collective economic and community success. Drawing from Mark Ackerman's work articulating the sociotechnical gap [1], we argue that the realization of intangible assets towards a community-economic good is one potential *tradeoff* of asset-based approaches to CSCW and HCI. More explicitly, we believe that the tradeoff in realizing community assets is that it has the possibility of transforming an intangible cultural or personal asset into something that can be assigned value.

This process, assigning value in a market-world where value was previously not derived, is often referred to as a process of economization. Science and technology studies (STS) scholars Çaliskan and Callon [5] describe economization as the process through which things, people, behaviors, organizations, and institutions become part of the economy. As a broader example of the process of economization, Murphy [36] argues that the creation of gross domestic product as a measurement for tracking the economy of a nation was meant to optimize productivity across a lifespan, in doing so making human life more economic. In her ethnographic work on contemporary innovation movements in China, Lindtner [28] argues that people and their ideas get subsumed into discourse of technological progress, transforming ideas related to democracy, justice, and self-improvement into mechanisms to "render oneself attractive to logics of investment." In other words, people are urged to reshape their ideas and aspirations as entrepreneurial, as derivatives of value, and therefore more readily accessible to investment capital.

In many ways, what we see in ABCD is a process of economization: an individual's intangible assets are inventoried and realized to best determine what their contribution, entrepreneurial or otherwise, to a community's growth could be. In traditional community and economic development, these assets are used to devise development practice to improve the economic and social standing of a community. In asset-based approaches to computing research, it is similar but the assets are materialized through sociotechnical interventions. What sits at the intersection of economization and ABCD is their orientation towards assigning value of assets within the growth narratives embedded in neoliberal capitalism that prioritize certain kinds of economic progress as indicative of their success [13]. In other words, the materialization of intangible assets through an asset-based approach can both help a community, through bringing people together to solve a common problem, or harm a community, by turning a cultural or personal aspect of it into something that can be assigned value and therefore making it more easily exploitable by markets. While we do not see this as currently happening in asset-based computing research, there is a long history of community and human-centered design methods being coopted by corporate interests. Further, as [30] make it quite clear, ABCD as a methodological control has in many ways has always been

embedded in corporate interests. This is one of many potential tradeoffs of asset-based approaches to social computing research.

Of course, the intended role of asset-based approaches within CSCW and HCI is it's use as a community-centered, social empowerment process that can help formulate and inform technical design. Indeed, recent ABCD-focused work published at CSCW suggests that asset-based approaches can be one way of addressing the Ackerman's sociotechnical gap [50]. We agree, in part, but also recognize that in some ways asset-based approaches may also fall into the same sociotechnical gap they are meant to address through their inability to address the tradeoffs that come with asset-based approaches.

Ackerman's influential articulation of the 'sociotechnical gap,' has come to be one of the more foundational concepts in the field of CSCW. At its core, the premise of the sociotechnical gap is, in Ackerman's words, the "divide between what we know we must support socially and what we can support technically" [1]. Of importance for us here are two of the things that Ackerman suggests can address the sociotechnical gap: 1) we can develop "palliatives to ameliorate the current social conditions," in other words, addressing but not solving the social problems underlying certain technical problems; and 2) we can create first-order approximations, "tractable solutions that partially solve specific problems with *known tradeoffs*" (emphasis ours) [1]. He argues that many of the user-centered and community-centered design approaches (e.g. "stakeholder analysis, participatory design, the Scandinavian approach") all serve as palliatives for the inherently unsolvable sociotechnical gap, by including relevant community needs early in the design process. Establishing first-order approximations is where Ackerman suggested that CSCW research needed further development in 2000, and we pose that this may still be true today [1]. However, a key component of first-order approximations is that these solutions are known to work for specific problems, that *tradeoffs are well understood*, and can be incorporated into a decision-making process.

This is the crux of our argument here: HCI and CSCW's use of asset-based approaches are currently naïve to the ideological commitments we make when adopting these practices, namely that asset-based approaches were created as a neoliberal reaction to ongoing critiques of deficit-based approaches to community development. In short, research in HCI and CSCW *does not understand or consider the tradeoffs* in the decision to adopt asset-based approaches to technological design.

To illustrate this, we now turn to a case study, which focuses on a cellular tower development controversy in a rural community in Michigan. Using an illustrative case study as an investigation into asset-based approaches of technological and community development, with an eye towards rural communities, we will exemplify Ackerman-inspired tradeoffs of asset-based approaches to better conceptualize the potential benefits and harms of asset-based practices.

5 (DIS)CONNECTEDNESS AND CONTROVERSY IN RURAL TECHNOLOGICAL DEVELOPMENT

To get a better sense of tradeoffs in asset-based approaches to social computing research, we turn to a case of infrastructural controversy in a rural region of the United States. As many STS scholars have argued, the study of technological controversies is key to understanding the role of technology and its evolution in contemporary society [21]. We look at the assets and deficits, as well as the actors and their positions, at the center of a controversy surrounding the construction of 263-foot cellular tower in Keweenaw County, Michigan in 2020 and 2021. Keweenaw County, and particularly the area of the County where the tower was proposed, is incredibly rural. The county has a population of 2,130 people spread across 540 square miles and has only one incorporated village, with a population of 127 as of 2020.

The proposed tower location is in a forested area of the county near Copper Harbor, a small, unincorporated town that in recent years has seen an explosion of tourism related to its growing mountain biking community. Copper Harbor is known, and in some ways desired as a tourist destination, for its remoteness, being the furthest town from an interstate highway in the continental United States [11]. What we present here in this case is a descriptive, single-case study [53] in that it is one instance of a particular phenomenon (i.e., the exploration of asset-based tradeoffs). While this is just one case of controversy in community and economic development where the deficits and assets of a particular infrastructural decision are at odds with each other, there are many other instances of similar controversies in rural areas related to infrastructural decisions that could both benefit and harm a region's development, depending on the view taken (e.g., [7,17,34]).

Drawn from the first author's long-term ethnographic research in the study region, we chose this particular case because it allows us to explore the scale of social and development efforts beyond the individual. In doing so, we focus intentionally on the community-level to best understand how assets and deficits are operationalized at the community-level in this controversy. Bringing together the arguments we make in section 3.3 about the need to bring together a community-level understanding of assets AND deficits, and in section 4.2 with respect to understanding the tradeoffs of asset-based approaches, we are purposely looking at community-level assets and deficits in our case study. This case is not meant to be representative of the normative asset-based approach present in HCI research. While asset-based approaches have largely been formulated around individual perceptions of their assets that can benefit a community more broadly, as noted in earlier in Section 4, we have thus far critiqued this individualist framework for reinforcing neoliberal approaches to development. To remediate and recuperate from ABCD's neoliberal origins, we see it necessary to center meso level understandings of assets that are embedded within community perceptions of place, and in this case, perceptions of disconnectedness and natural beauty that are at the center of the controversy.

5.1 Infrastructural controversy and rural assets

At an ordinary municipal meeting in November of 2020, the members of the Planning Commission in Eagle Harbor Township voted to approve the special land use permit application of Diamond Towers, a wireless infrastructure company, to build a 263-foot cellular tower in a forested area of the township adjacent to a local historic lodge. The tower, which was going to host antenna space for AT&T and other cellular providers, would expand cellular service to an area of the county that was underserved. Meeting attendees noted the importance of this cellular service for first responders in a very remote and forested region with lots of tourists, and described a similar effort a decade earlier on a nearby mountain that ended with the cellular tower not being built. One attendee foreshadowed the controversy that would unfold over the following 12 months: "People are desperate for cell service and broadband service in that area. How can we do this without hurting the business of the Mountain Lodge that we were so anxious to get?"[2] The Mountain Lodge mentioned is a historic lodge built by Works Progress Administration laborers during the era of the New Deal. Sold only two years prior by the County to a private owner, after decades of economic difficulty, there was concern that building a large antenna tower immediately adjacent to the lodge would invite turbulence into the newly established relationship between the township and lodge owner. The Township board followed the Planning Commission's recommendation

[2] Unless otherwise noted, quotes are taken directly from the Meeting Minutes provided by municipal and county bodies.

and approved the application only a few days later at their Board meeting. Within a few months, the owners of the historic lodge filed suit against the Township, citing failure to address certain requirements of the local zoning ordinances.

By April of 2021, the Township Board made the decision to send the application for land use to build the antenna back to the Planning Commission, which held a series of determination meetings and public hearings over the next four months that were attended by upwards of 50 people. In its public communication about the issue, the Lodge argued that while cell phone service was an issue, the lack of cell phone service was one thing that drew people to the area: "This is one of the draws to the area, as people look to get away from the hustle and bustle of their daily life." The Lodge also argued on its website that the current approach to placing cellular infrastructure was antithetical to the community's needs and relationship to place:

> "Rather than wait for a cell tower development company or a cell service company to come to the area every couple of years and suggest where they want to put a cell tower, let us take a more holistic approach and think about the entire [region]…This moves us away from the 'have a hammer, where is the next nail' strategy that continually leads to sub-par solutions and many people being upset. With this holistic approach, the first step is to fall in love with the problem, and not fall in love with a solution first."

At an August 2021 public hearing, a representative from Diamond argued that the current site was "more suitable than other [sites] because it is not centrally placed within the historic view-shed. It is a far preferable site than on the mountain itself." At the same August meeting during the public comment period, one resident said, echoing concerns of the Lodge, "[The tower developers and contractors] will leave and go back to Indiana, go back out east. We are left with that [antenna]." While community members were very much aware of the difficulties of living in an area with poor cellular service at best, many voiced their concerns at meetings and on social media that the new tower would negatively impact scenic views of the region, from the property of the Lodge as well from a nearby historic mountaintop lookout, both registered on the National Register of Historic Places.

In that August 2021 hearing, the Planning Commission voted to deny special land use permit application – noting that application was not compliant with issues related to being "designed, constructed, operated and maintained in a manner harmonious with the character of adjacent property and the surrounding area" and that it would "change the essential character of the surrounding area." The following month, in September 2021, the Township Board accepted the determination of the Planning Commission and voted to deny the application from Diamond and notify them of the determination. Shortly thereafter, Diamond filed suit against Eagle Harbor Township alleging violations of the 1996 Telecommunications Act. At the time of writing, the controversy has not been resolved.

We chose this case because of the multi-layered nature of deficit and asset-based thinking that drove much of the justifications on all sides of the controversy. This is not a case of techniques such as an asset inventory being utilized by these actors in the standard ABCD process that is reflected in ABCD research. Rather, this case exemplifies how the discourse and ethos of asset-based thinking is utilized in economic and community development controversies happening on the ground in communities. How ABCD materializes and functions on the ground in community development practice in rural areas is radically different than how it functions when advocated for by researchers and ABCD professionals. Through the ethnographic work that inspired our focus on this case, the first-author frequently heard asset-based language being utilized that was never truly accompanied by any of the ABCD techniques that are prescribed in the research literature. To summarize, we chose this case not because it embodies the ABCD approach popularized in prior HCI research,

but because of how assets and deficits were interpreted in a way that reflects the complex tradeoffs present in a technological development process.

Looking at the deficits at the forefront of the controversy, voiced by community members and the tower company, we find concerns with a lack of cellular infrastructure and economic instability. A lack of cellular infrastructure was not only an inconvenience for residents, but forced first responders to use alternative radio technologies when in the area (e.g., while rescuing a mountain biker injured on a trail). There was also general concern that a lack of cellular service was a potential deficit with respect to an out-of-town, largely urban-originating tourist population that expected constant connection. Lack of cellular infrastructure could, in turn, negatively impact the kinds of services that local businesses could provide, minimizing potential tourism investment, and therefore feeding into long term economic instability of the region that has largely relied on amenity-based tourism as its primary industry for decades.

Turning to community assets in this case, we see a surprisingly similar picture. Disconnectedness from cellular infrastructure was seen by some as a selling point of the region; it was a place that people could get away from the "hustle and bustle" of typical city life. As one statewide news source described about the area: "Buyers have been purchasing homes and land sight-unseen, above asking price. That trend is expected to continue if a controversial proposed cell tower gets built, ending the digital isolation that limits the region's appeal to those seeking vacation homes or a picturesque place to realize their work-from-home dreams" [19]. By solving the supposed problem of disconnectedness, there was real concern that many in the region would lose the rural idyll they called home, flooded with wealthy outsiders looking for their own piece of the idyllic landscape, but who had been kept at arm's reach until now by its digitally cut-off nature. At the time of writing, the community assets that were the deciding factor in the case were not the disconnectedness, but the natural beauty of the region that was determined to be negatively impacted by the construction of the tower. As the Michigan State Historical Preservation Office communicated to the Federal Communications Commission with regards to the impact the antenna could have on the local historic properties, "it appears that the construction of the proposed tower at that location could result in the introduction of a visual element that diminishes the integrity of the property's significant historical features."

What we see here is not a straightforward determination or division between community assets and deficits that support or fall in opposition to expanded technological infrastructure development. Specifically, disconnectedness was a point of contention AND connection between assets and deficits. Therefore we see disconnectedness as a key site in which to explore the role of tradeoffs in asset-based approaches to social computing research.

6 TRADEOFFS IN ASSET-BASED APPROACHES

6.1 Engaging with tensions and tradeoffs in the cell tower controversy

In exploring the case study above, our intention was to focus on the community-level, in order to see the meso-level impact on the community overall, despite a fairly substantial interplay between individualized goals and community assets. Of note, for instance, is the privately-owned lodge, leveraging community-focused language to center the controversy around the region's scenic views (e.g. "let us take a more holistic approach and think about the entire [region]"), and put forward a conservative "don't fix what isn't broken" narrative that benefits their own, current, business interests. On the other hand, Diamond's counterargument centered on a different set of assets, access to cellular service, which is not only a pain point for individuals in the region but could also help expand economic growth in the region more

broadly, rather than merely maintaining the economic stability of the lodge. As stated above, as of now, the conceptual framework put forward by the lodge and the community members in mass won the day, and "don't fix what isn't broken" is a prevailing concept that resonated with the Planning Commission.

Of course, these are the positive, albeit somewhat speculative, directions the argument took, but what might a different set of events or positions look like? The Mountain Lodge, today, poses a "a more holistic approach," suggesting there are alternatives to the current approach of building one large cell tower. Through one lens, building many smaller cell towers throughout the region might be an amenable "more holistic" approach. However, in the early 2010s, similar controversies came up in other regions, similar arguments were made, and the result was a continuation of poor/lacking cellular service. This is likely due to the feasibility of building one large cell tower, versus many smaller towers throughout the region. Conversely, had Diamond's argument prevailed, the region *would see* substantive benefit due to available cell service, the community would be more well connected, first responders would be able to rely on their standard tools, and this would likely spur economic growth. Concerns about the cell tower itself changing the fundamental nature of the area would pass over time, though the substantive increase in property values and an influx of wealth to purchase the most idyllic sections of land could, potentially, shift both the visual landscape and the intangible feel of the region.

By failing to consider tradeoffs, ABCD risks merely becoming a palliative or bandaid, akin to stakeholder analysis, without the ability to intervene with a solution. This case study, and the speculative directions of the case described in the last paragraph, exemplify the kinds of tradeoffs that are likely to come about through the use of ABCD as a method: the community-level asset of a disconnected regional way of life — which benefits one large established local business — was prioritized over the operational deficits or needs the regional community has, like limitations in first responders' capacity or economic growth of the region. In short, this case study provides an illustrative example of the potential pitfalls of adopting ABCD orientations without interrogating the ideological orientations that underpin it. In other words, a local business was able to weaponize asset-based discourse in order to shut down a development that could theoretically have addressed many of the perceived deficits of the case region.

Moreover, we cautiously pose that if ABCD practitioners successfully recognize and grapple with the ideological tradeoffs and subsequent outcomes, ABCD could better address the sociotechnical gap, achieving the type of community-engagment CSCW aspires to. Choosing ABCD as a method without recognizing the historical setting it comes from, we argue, potentially brings those same neoliberal ideologies into play, resulting in outcomes that prioritize individual actors (i.e., the lodge) rather than the community as a whole. For ABCD methods to be a well-understood tool that can be intentionally chosen (or not), engaging with the ideological tradeoffs and tensions that come along with the method is likely necessary. This is particularly true as CSCW, as well as HCI and ICTD more broadly, shift asset-based approaches from thinking about community development as a stand-alone process towards thinking about design and technical systems as being deeply embedded in contemporary community and economic development (e.g. [9,34]).

6.2 A reflexive-interventionist approach to asset-based computing research

Prior work by Lindtner and colleagues [29] sought to make sense of the place of computing researchers within efforts to democratize technology production through making. In trying to complicate the technosolutionist narratives that are central to much of HCI, they suggest a "reflexive-interventionist stance" to help researchers consider how and who they are

accountable to in the community as they pursue the democratization of the sociotechnical. We wonder what it might look like to construct a reflexive-interventionist approach to asset-based computing research that is not only concerned with efforts to democratize computing, but also to consider the tradeoffs, and particularly the ideologies, that are embedded within the methodological approaches we advocate for.

As we have documented extensively in this paper, the emergence of ABCD was embedded in economic trajectories of neoliberal narratives whose goal was to perpetuate distrust of the state and seek to transfer power to private actors. Originating as such, ABCD has grown alongside community and economic development efforts that continually privatize and individualize those same efforts when the solutions are arguably systemic (and public) in nature. ABCD is a popular approach in American community and economic development practice, especially in rural places. HCI similarly grapples with trajectories, originating in largely state-sponsored (albeit imperialist) work (e.g., [4]) and evolving into a discipline that is preoccupied with "implications for design" and takeaways that are easily transferable to private sector actors [8,37]. What we see in asset-based approaches to community and economic development, technological or otherwise, are in many ways struggles with what it means to grow and the tradeoffs that emerge when two growth-oriented fields converge.

The primary ways that we have modeled engaging with a reflexive-interventionist approach in the creation of our own case study are: 1) deeply examining the scale of asset-based research, and through that, 2) countering the ideologies present in traditional ABCD approaches that would prioritize an individualist approach over a collective one. To address our first point, researchers should consider developing alternatives to "asset inventories" and other forms of data collection that prioritize individual assets. While traditional ABCD work advocates moving from individual to community by collating individual assets [33], we believe that there is space to actually begin ABCD projects by looking directly to community level assets related to culture, values, and institutions. This will require further methodological work by asset-based computing scholars. In doing so, this also requires breaking with traditional approaches to asset-based research that are embedded in neoliberal ideologies and therefore addressing our second point. In other words, we need to identify asset-based methodologies (and corresponding methods) that allow for either a rejection of individualism as the primary means through which to do asset-based research, or at least allow for a multi-scalar approach. We see engaging with and addressing these tensions and tradeoffs head-on as a necessary step in shiftng asset-based research from a methodological palliative towards a more transformational toolkit.

Rather than throwing the asset-based baby out with the neoliberal bathwater, we'd like to believe that there is indeed opportunity in truly community-level approaches to asset-based research that complicates growth narratives and recognizes the "true needs" of community (if that truth can actually be captured). We recognize the limitations of this paper in choosing to focus exclusively on how ABCD manifests in HCI, in the process potentially missing other areas of research that truly embrace community level needs. But we believe there is still value in what we bring forth here specifically for asset-based approaches to computing research. Heeding Lindtner et al.'s advice and taking a reflexive-interventionist stance allows us to acknowledge not only the positionality of computing and development research as growth oriented, but also the ideological origins of these perspectives. It is then our responsibility to reflexively counter these ideologies and histories that might push us into perpetuating individualist growth narratives in asset-based research. To paraphrase what the owners of the Lodge wrote at one point during the cell tower controversy: we need to fall in love with a problem before we fall in love with a solution. Rather than taking asset-based approaches at face value, and the individualizing ideologies that come with them, a path forward for asset-based research in CSCW and HCI might best be one that we already see

glimpses of in recent research focusing on care and inequity: that of deconstruction and reformation to imagine a different and more community-centered approach.

7 CONCLUSION

Bringing together a more complete understanding of asset-based approaches to computing research, along with an attention to the first-order approximations and tradeoffs needed to address the sociotechnical gap, we see much opportunity for future work in this space to adopt a reflexive-interventionist approach. Specifically, a reflexive-interventionist approach to asset-based research needs to consider not only the (1) assets of a community, beyond its individuals, but (2) its deficits as well. This approach investigates (3) positions and actors within the research space or phenomena, and the (4) ideologies that our methods bring with them. This approach (5) actively works to remediate or attenuate those ideologies, going beyond merely recognizing they exist, to best understand what is best for the communities with which we do our research.

As such, we end with a provocation to CSCW: what are the necessary methods, reflexivity, and modes of engagement with communities to effectively achieve this reflexive-interventionist approach to asset-based research? We have articulated a set of five considerations of this direction that we see as important, but this remains an open problem in which the unknowns are, ultimately, unknown.

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REFERENCES

[1] Mark S. Ackerman. 2000. The Intellectual Challenge of CSCW: The Gap Between Social Requirements and Technical Feasibility. *Human–Computer Interaction* 15, 2–3 (September 2000), 179–203. https://doi.org/10.1207/S15327051HCI1523_5

[2] Susanne Bødker. 2006. When second wave HCI meets third wave challenges. In *Proceedings of the 4th Nordic conference on Human-computer interaction: changing roles* (*NordiCHI '06*), October 14, 2006, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 1–8. . https://doi.org/10.1145/1182475.1182476

[3] Susanne Bødker. 2015. Third-wave HCI, 10 years later---participation and sharing. *interactions* 22, 5 (August 2015), 24–31. https://doi.org/10.1145/2804405

[4] Richard A. Bolt. 1980. "Put-that-there": Voice and gesture at the graphics interface. In *Proceedings of the 7th annual conference on Computer graphics and interactive techniques* (*SIGGRAPH '80*), July 01, 1980, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 262–270. . https://doi.org/10.1145/800250.807503

[5] Koray Çalışkan and Michel Callon. 2009. Economization, part 1: shifting attention from the economy towards processes of economization. *Economy and Society* 38, 3 (August 2009), 369–398. https://doi.org/10.1080/03085140903020580

[6] 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 - CHI '19*, 2019, Glasgow, Scotland Uk. ACM Press, Glasgow, Scotland Uk, 1–14. . https://doi.org/10.1145/3290605.3300837

[7] Patrick Devine-Wright. 2005. Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy* 8, 2 (2005), 125–139. https://doi.org/10.1002/we.124

[8] Paul Dourish. 2006. Implications for design. April 22, 2006. ACM, 541–550. . https://doi.org/10.1145/1124772.1124855

[9] Michaelanne Dye, David Nemer, Neha Kumar, and Amy S. Bruckman. 2019. If it Rains, Ask Grandma to Disconnect the Nano: Maintenance & Care in Havana's StreetNet. *Proc. ACM Hum.-Comput. Interact.* 3, CSCW (November 2019), 187:1-187:27. https://doi.org/10.1145/3359289

[10] 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*, April 21, 2020, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 1–14. . Retrieved January 5, 2022 from http://doi.org/10.1145/3313831.3376647

[11] Henry Grabar. 2012. How Far Can You Live From an Interstate Highway? *CityLab*. Retrieved July 13, 2019 from http://www.theatlanticcities.com/commute/2012/10/how-far-can-you-live-interstate-highway/3449/

[12] Chris Greenhalgh, Alan Chamberlain, Mark Davies, Kevin Glover, Stela Valchovska, and Andy Crabtree. 2014. Displaying Locality: Connecting with Customers and Visitors In-Situ via Their Mobile Devices. In *Proceedings of The International Symposium on Pervasive Displays* (*PerDis '14*), 2014, New York, NY, USA. ACM, New York, NY, USA, 62:62-62:67. . https://doi.org/10.1145/2611009.2611021

[13] Jean Hardy. 2019. How the Design of Social Technology Fails Rural America. In *Companion Publication of the 2019 on Designing Interactive Systems Conference 2019 Companion* (*DIS '19 Companion*), 2019, New York, NY, USA. ACM, New York, NY, USA, 189–193. . https://doi.org/10.1145/3301019.3323906

[14] Jean Hardy and Silvia Lindtner. 2017. Constructing a Desiring User: Discourse, Rurality, and Design in Location-Based Social Networks. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing* (*CSCW '17*), 2017, New York, NY, USA. ACM, New York, NY, USA, 13–25. . https://doi.org/10.1145/2998181.2998347

[15] Jean Hardy, Susan Wyche, and Tiffany Veinot. 2019. Rural HCI Research: Definitions, Distinctions, Methods, and Opportunities. *Proc. ACM Hum.-Comput. Interact.* 3, CSCW (November 2019), 196:1-196:33. https://doi.org/10.1145/3359298

[16] David Harvey. 2005. *A Brief History of Neoliberalism*. Oxford University Press.

[17] Sara Heidenreich. 2016. Out of Sight, out of Mind? Controversy over Offshore Wind Energy in Norway's News Media. *Science as Culture* 25, 4 (October 2016), 449–472. https://doi.org/10.1080/09505431.2016.1183609

[18] Molly G. Hickman, Viral Pasad, Harsh Kamalesh Sanghavi, Jacob Thebault-Spieker, and Sang Won Lee. 2021. Understanding Wikipedia Practices Through Hindi, Urdu, and English Takes on an Evolving Regional Conflict. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW1 (April 2021), 34:1-34:31. https://doi.org/10.1145/3449108

[19] Kelly House. 2021. In tiny Copper Harbor, a mountain biking boom causes growing pains | Bridge Michigan. *Bridge Michigan*. Retrieved January 15, 2022 from https://www.bridgemi.com/michigan-environment-watch/tiny-copper-harbor-mountain-biking-boom-causes-growing-pains

[20] 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* (*CHI EA '18*), 2018, New York, NY, USA. ACM, New York, NY, USA, LBW554:1-LBW554:6. . https://doi.org/10.1145/3170427.3188680

[21] Sheila Jasanoff. 2012. Genealogies of STS. *Soc Stud Sci* 42, 3 (June 2012), 435–441. https://doi.org/10.1177/0306312712440174

[22] Naveena Karusala, Isaac Holeman, and Richard Anderson. 2019. Engaging Identity, Assets, and Constraints in Designing for Resilience. *Proc. ACM Hum.-Comput. Interact.* 3, CSCW (November 2019), 1–23. https://doi.org/10.1145/3359315

[23] Naveena Karusala, Azra Ismail, Karthik S Bhat, Aakash Gautam, Sachin R Pendse, Neha Kumar, Richard Anderson, Madeline Balaam, Shaowen Bardzell, Nicola J Bidwell, Melissa Densmore,

Elizabeth Kaziunas, Anne Marie Piper, Noopur Raval, Pushpendra Singh, Austin Toombs, Nervo Verdezoto, and Ding Wang. 2021. The Future of Care Work: Towards a Radical Politics of Care in CSCW Research and Practice. In *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing* (*CSCW '21*), October 23, 2021, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 338–342. . https://doi.org/10.1145/3462204.3481734

[24] Naveena Karusala, Aditya Vishwanath, Arkadeep Kumar, Aman Mangal, and Neha Kumar. 2017. Care as a Resource in Underserved Learning Environments. *Proc. ACM Hum.-Comput. Interact.* 1, CSCW (December 2017), 1–22. https://doi.org/10.1145/3134739

[25] Vera Khovanskaya, Phoebe Sengers, Melissa Mazmanian, and Charles Darrah. 2017. Reworking the Gaps Between Design and Ethnography. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (*CHI '17*), 2017, New York, NY, USA. ACM, New York, NY, USA, 5373–5385. . https://doi.org/10.1145/3025453.3026051

[26] Rob Kitchin, Paolo Cardullo, and Feliciantonio Cesare Di. 2019. Citizenship, Justice, and the Right to the Smart City. In *The Right to the Smart City*, Paolo Cardullo, Cesare Di Feliciantonio and Rob Kitchin (eds.). Emerald Publishing Limited, 1–24. https://doi.org/10.1108/978-1-78769-139-120191001

[27] J. Kretzmann and J. McKnight. 1993. *Building Communities from the Inside Out*. ACTA Publications, Chicago.

[28] Lindtner, Silvia. 2020. *Prototype Nation*. Princeton University Press, Princeton, NJ, USA.

[29] Silvia Lindtner, Shaowen Bardzell, and Jeffrey Bardzell. 2016. Reconstituting the Utopian Vision of Making: HCI After Technosolutionism. May 07, 2016. ACM, 1390–1402. . https://doi.org/10.1145/2858036.2858506

[30] Mary Anne MacLeod and Akwugo Emejulu. 2014. Neoliberalism With a Community Face? A Critical Analysis of Asset-Based Community Development in Scotland. *Journal of Community Practice* 22, 4 (October 2014), 430–450. https://doi.org/10.1080/10705422.2014.959147

[31] Peter Marris and Martin Rein. 1967. *Dilemmas of Social Reform: Poverty and Community Action in the United States*. Atherton Press, New York.

[32] Nicole P. Marwell. 2004. Privatizing the Welfare State: Nonprofit Community-Based Organizations as Political Actors. *American Sociological Review* 69, 2 (2004), 265–291. Retrieved March 25, 2021 from http://www.jstor.org/stable/3593087

[33] 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. Retrieved July 10, 2018 from http://www.jstor.org/stable/4029934

[34] David McRobert, Julian Tennent-Riddell, and Chad Walker. 2016. Ontario's Green Economy and Green Energy Act: Why a Well-Intentioned Law Is Mired in Controversy and Opposed by Rural Communities. *Renewable Energy L. & Pol'y Rev.* 7, 2 (2017 2016), 91–112. Retrieved January 13, 2022 from https://heinonline.org/HOL/P?h=hein.journals/relp2016&i=107

[35] Roberta M. Melvin and Andrea Bunt. 2012. Designed for work, but not from here: rural and remote perspectives on networked technology. June 11, 2012. ACM, 176–185. . https://doi.org/10.1145/2317956.2317984

[36] Michelle Murphy. 2017. *The Economization of Life*. Duke University Press.

[37] Antti Oulasvirta and Kasper Hornbæk. 2016. HCI Research as Problem-Solving. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, May 07, 2016, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 4956–4967. . Retrieved September 1, 2021 from http://doi.org/10.1145/2858036.2858283

[38] 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 - CHI EA '19*, 2019, Glasgow, Scotland Uk. ACM Press, Glasgow, Scotland Uk, 1–11. . https://doi.org/10.1145/3290607.3310434

[39] Randal Pinkett and Richard O'Bryant. 2003. Building Community, Empowerment and Self-sufficiency. *null* 6, 2 (January 2003), 187–210. https://doi.org/10.1080/1369118032000093888

[40] María Graciela Badilla Quintana and Eduardo Parra Zambrano. 2014. E-mentoring: The effects on pedagogical training of rural teachers with complex geographical accesses. *Computers in Human Behavior* 30, (January 2014), 629–636. https://doi.org/10.1016/j.chb.2013.07.042

[41] Peter Radoll. 2009. The emergence of the indigenous field of practice: factors affecting Australian Indigenous household ICT adoption. In *Proceedings of the 21st Annual Conference of the Australian Computer-Human Interaction Special Interest Group: Design: Open 24/7* (*OZCHI '09*), November 23, 2009, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 317–320. . https://doi.org/10.1145/1738826.1738885

[42] Jorge Saldivar, Cristhian Parra, Marcelo Alcaraz, Rebeca Arteta, and Luca Cernuzzi. 2019. Civic Technology for Social Innovation. *Comput Supported Coop Work* 28, 1 (April 2019), 169–207. https://doi.org/10.1007/s10606-018-9311-7

[43] Robert Soden, David Ribes, Seyram Avle, and Will Sutherland. 2021. Time for Historicism in CSCW: An Invitation. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW2 (October 2021), 459:1-459:18. https://doi.org/10.1145/3479603

[44] Alex S. Taylor. 2011. Out There. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (*CHI '11*), 2011, New York, NY, USA. ACM, New York, NY, USA, 685–694. . https://doi.org/10.1145/1978942.1979042

[45] Jacob Thebault-Spieker, Aaron Halfaker, Loren G. Terveen, and Brent Hecht. 2018. Distance and Attraction: Gravity Models for Geographic Content Production. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (*CHI '18*), April 19, 2018, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 1–13. . https://doi.org/10.1145/3173574.3173722

[46] Jacob Thebault-Spieker, Brent Hecht, and Loren Terveen. 2018. Geographic Biases are "Born, not Made": Exploring Contributors' Spatiotemporal Behavior in OpenStreetMap. In *Proceedings of the 2018 ACM International Conference on Supporting Group Work* (*GROUP '18*), January 07, 2018, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 71–82. . https://doi.org/10.1145/3148330.3148350

[47] 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*, April 21, 2020, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 1–14. . Retrieved January 5, 2022 from http://doi.org/10.1145/3313831.3376329

[48] Marisol Wong-Villacres, Hayley Evans, Danielle Schechter, Betsy DiSalvo, and Neha Kumar. 2019. Consejero automatico: chatbots for supporting Latino parents' educational engagement. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development* (*ICTD '19*), January 04, 2019, New York, NY, USA. Association for Computing Machinery, New York, NY, USA, 1–5. . https://doi.org/10.1145/3287098.3287149

[49] Marisol Wong-Villacres, Aakash Gautam, Wendy Roldan, Lucy Pei, Jessa Dickinson, Azra Ismail, Betsy DiSalvo, Neha Kumar, Tammy Clegg, Sheena Erete, Emily Roden, Nithya Sambasivan, and Jason Yip. 2020. From Needs to Strengths: Operationalizing an Assets-Based Design of Technology. In *Conference Companion Publication of the 2020 on Computer Supported Cooperative Work and Social Computing*. Association for Computing Machinery, New York, NY, USA, 527–535. Retrieved January 15, 2022 from http://doi.org/10.1145/3406865.3418594

[50] Marisol Wong-Villacres, Aakash Gautam, Deborah Tatar, and Betsy DiSalvo. 2021. Reflections on Assets-Based Design: A Journey Towards A Collective of Assets-Based Thinkers. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW2 (October 2021), 401:1-401:32. https://doi.org/10.1145/3479545

[51] 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* (*DIS '18*), 2018, New York, NY, USA. ACM, New York, NY, USA, 45–58. . https://doi.org/10.1145/3196709.3196794

[52] Ying Xu and Carleen Maitland. 2017. Mobilizing Assets: Data-Driven Community Development with Refugees. In *Proceedings of the Ninth International Conference on Information and Communication Technologies and Development - ICTD '17*, 2017, Lahore, Pakistan. ACM Press, Lahore, Pakistan, 1–12. . https://doi.org/10.1145/3136560.3136579

[53] Robert K. Yin. 2018. *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications, Thousand Oaks, CA, USA.

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