A Critical Reorientation in HCI

CS 347

Nava Haghighi

Today

Critical theory and critical design

Critical reorientation in the design process

Moving beyond the design process

“I’m just an engineer.”

[Bloomberg]

Langdon Winner [1980], "Do Artifacts Have Politics?"

“in designing tools we are designing ways of being” [Winograd and Flores 1986]

What we design, doesn’t just create futures, but “**defutures**” other possible futures. [Fry 1999]

Designers exert **power over** their users by implicitly or explicitly constructing a normative ground—how someone should or could think, act, and express themselves during use. [Li 2023]

The shortcomings of user-centered design

HCI says, "care about people!"

Today we begin opening up the question of, "which people?"

This was initially a problem because traditional user-centered design does not have any explicit theory of power.

What could go wrong?

How it started:

WIRED SUBSCRIBE

SAM GUSTIN BUSINESS FEB 11, 2011 2:56 PM

Social Media Sparked, Accelerated Egypt's Revolutionary Fire

If three decades of violent repression and despotic rule were kindling for the Egyptian revolution, social media was both a spark and an accelerant for the movement. Did social media like Facebook and Twitter cause the revolution? No. But these tools did speed up the process by helping to organize the revolutionaries, transmit their message [...]

How it's going:

CNN BUSINESS Audio Live TV Log In

Markets →

DOW	33,717.09	0.77% ▼
S&P 500	4,017.77	1.30% ▼
NASDAQ	11,393.81	1.96% ▼

Fear & Greed Index →

Jan. 6 Committee failed to hold social media companies to account for their role in the Capitol attack, staffers and witnesses say

By Donie O'Sullivan, Audrey Ash and Zachary Cohen, CNN

Updated 7:23 PM EST, Thu January 26, 2023

Video Ad Feedback

Twitter whistleblower: Jan. 6 committee failed to hold Twitter accountable

How it started:

The Computer for the 21st Century

Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

by Mark Weiser

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

Consider writing, perhaps the first information technology. The ability to represent spoken language symbolically for long-term storage freed information from the limits of individual memory. Today this technology is ubiquitous in industrialized countries. Not only do books, magazines and newspapers convey written information, but so do street signs, billboards, shop signs and even graffiti. Candy wrappers are covered in writing. The constant background presence of these products of "literacy technology" does not require active attention, but the information to be transmitted is ready for use at a glance. It is difficult to imagine modern life otherwise.

Silicon-based information technology, in contrast, is far from having become part of the environment. More than 50 million personal computers have been sold, and the computer nonetheless remains largely in a world of its own. It is approachable only through complex jargon that has nothing to do with the tasks for which people use computers. The state of the art is perhaps analogous to the period when scribes had to know as much about making ink or baking clay as they did about writing.

The arcane aura that surrounds personal computers is not just a "user interface" problem. My colleagues and I at the Xerox Palo Alto Research Center think that the idea of a "personal" computer itself is misplaced and that the vision of laptop machines, dynabooks and "knowledge navigators" is only a transitional step toward achieving the real potential of information technology. Such machines cannot truly make computing an integral, invisible part of people's lives. We are therefore trying to conceive a new way of thinking about computers, one that takes into account the human world and allows the computers themselves to vanish into the background.

Such a disappearance is a fundamental consequence not of technology but of human psychology. Whenever people learn something sufficiently well, they cease to be aware of it. When you look at a street sign, for example, you absorb its information without consciously performing the act of reading. Computer scientist, economist and Nobelist Herbert A. Simon calls this phenomenon "compiling"; philosopher Michael Polanyi calls it the "tacit dimension"; psychologist

The idea of integrating computers seamlessly into the world at large runs counter to a number of present-day trends. "Ubiquitous computing" in this context does not mean just computers that can be carried to the beach, jungle or airport. Even the most powerful notebook computer, with access to a worldwide information network, still focuses attention on a single box. By analogy with writing, carrying a superlaptop is like owning just one very important book. Customizing this book, even writing millions of other books, does not begin to capture the real power of literacy.

Furthermore, although ubiquitous computers may use sound and video in addition to text and graphics, that does not make them "multimedia computers." Today's multimedia machine makes the computer screen into a demanding focus of attention rather than allowing it to fade into the background.

Perhaps most diametrically opposed to our vision is the notion of virtual reality, which attempts to make a world inside the computer. Users don special goggles that project an artificial scene onto their eyes; they wear gloves or even bodysuits that sense their motions and gestures so that they can move about and manipulate virtual objects. Although it may have its purpose in allowing people to explore realms otherwise inaccessible—the insides of cells, the surfaces of distant planets, the information web of data bases—virtual reality is only a map, not a territo-

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How it's going:

The Verge

Menu +

TRANSPO / CARS / ELECTRIC CARS

The future of cars is a subscription nightmare / Heated seats, remote start key fobs, and other creature comforts are likely to be subject to monthly or annual fees

By ANDREW J. HAWKINS / @andyjayhawk

Jul 13, 2022, 10:31 AM PDT

0 Comments / 0 New

Photo by Roberto Baldwin for The Verge

How it started:

abc NEWS LOG IN

Couple Who Met on Facebook in 2007 Just Got Engaged - at Facebook Headquarters

Nafis Joon said they would never have met if not for Facebook.

By YAZHOU SUN
July 3, 2014, 1:34 PM

A Surprise Proposal for the Social Media Age
Steven Kawalit enlisted the help of Facebook in asking for Nafis Joon's hand in marriage.

How it's going:

How domestic abusers use smartphones to spy on their partners

There's more creepy spyware out there than you think — and regulating it is a legal and technological challenge.

By Nicki Dell, Karen Levy, Damon McCoy, and Thomas Ristenpart | May 21, 2018, 8:40am EDT

[Freed et al. 2018]

How it started:

The New York Times Magazine

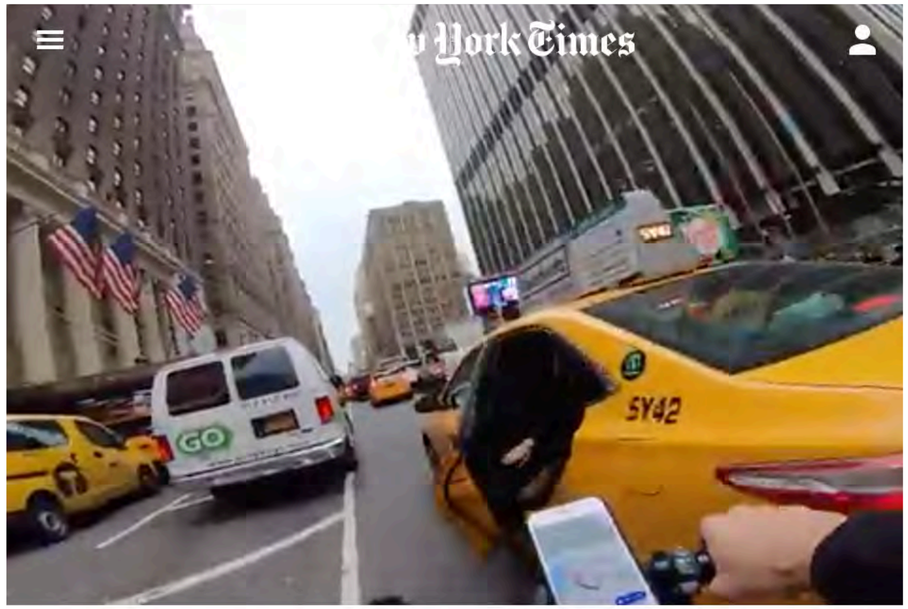
GIVE THE TIMES

IT'S THE ECONOMY

Delivery Start-Ups Are Back Like It's 1999

Give this article 123

How it's going:



My Frantic Life as a Cab-Dodging, Tip-Chasing Food App Deliveryman

By Andy Newman

July 21, 2019

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HCI's role

HCI has historically:

- Acted as canary in the coal mine: raised empirical and conceptual critiques before the technology is widespread
- Offered guidance on how to guide the technology toward pro-social outcomes

Being A Turker

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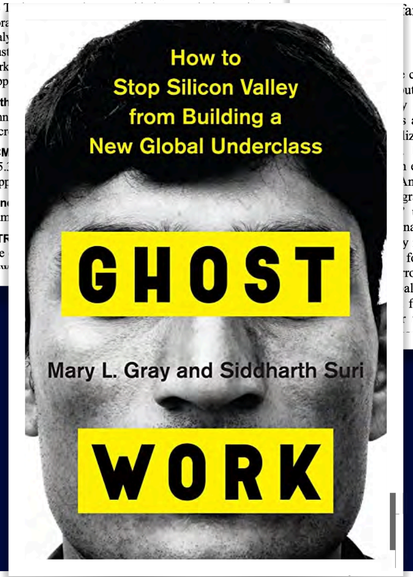
ABSTRACT
We conducted an ethnomethodological analysis of publicly available content on Turker Nation, a general forum fo Amazon Mechanical Turk (AMT) users. Using forum dat we provide novel depth and detail on how the Turker Natio members operate as economic actors, working out whic Requesters and jobs are worthwhile to them. We show som of the key ways Turker Nation functions as a community an also look further into Turker-Requester relationships fro



Turkopticon: Interrupting Worker Invisibility in Amazon Mechanical Turk

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year of deployment. The system receives 100,000 page views a month and has become a staple tool for many AMT workers, installed over 7,000 times at time of writing.

Turkopticon allows workers to create and use reviews of employers when choosing employers on AMT. Building and maintaining the system, as well as communicating about the system with workers, has offered us a distinct vantage point into the social processes of designing interventions into large-scale, real world systems. Turkopticon supports a thriving collective of workers engaged in mutual aid, brought together by our simple browser extension and web-based technology.

This paper makes several contributions. First, it offers a case study designing an intervention into a highly distributed microlabor system. Second, it shows an example of systems design incorporating tools feminist analysis and reflexivity. Rather than conducting HCI research to reveal and represent values and positions, and then building systems to resolve those political differences, we built a system to make worker-employer relations visible and to provoke ethical and political debate. Third, this paper contributes lessons learned from intervening in existing, large-scale socio-technical systems (here, AMT) from its margins.

METHOD AND OUR STANCE

We Are Dynamo: Overcoming Stalling and Friction in Collective Action for Crowd Workers

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costs of communication, the web promises uted collectives to act around shared issues. collective action efforts never succeed: affordances make it easy to gather, these lizing characteristics impede any focus In this paper, we study challenges to efforts through the lens of online labor by Amazon Mechanical Turk workers. Through graphic fieldwork, we sought to understand unique barriers to collective action. We namo, a platform to support the Mechanical in forming publics around issues and then found that collective action publics tread a row path between the twin perils of stalling alancing with each step between losing flaring into acrimony. However, specially to maintain efforts' forward motion can

An overarching research narrative celebrates the web's affordances for galvanizing coordinated actions (e.g., [3, 4, 5]). However, many collective action efforts never succeed. The Internet's sword is double-edged: the same affordances that seem to make it an ideal setting to gather also seem to debilitate actual action. It is much easier to derail an effort than to push one onward to success [21]. People may talk past each other [24], and even when they do engage, more discussion can mean lower-quality outcomes [22]. Unfortunately, across many domains, the majority of collective efforts fail [17, 32]. Online coordination is even more challenged when political and social stakes are high or when action may expose participants to harm [4].

Amazon Mechanical Turk (AMT), a crowd work platform, embodies many of these promises and perils. To some, crowds bear the potential of mass action and people power. Yet as Irani and Silberman have argued [19], AMT's design directs this collective power into reliable, steadily humming

The Future of Crowd Work

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ABSTRACT
Paid crowd work offers remarkable opportunities for improving productivity, social mobility, and the global economy by engaging a geographically distributed workforce to complete complex tasks on demand and at scale. But it is also possible that crowd work will fail to achieve its potential, focusing on assembly-line piecework.

to a range of workers and focused support for various task. For example, anyone with access to the Internet can perform *micro*-tasks on the order of seconds using platforms such as Amazon's Mechanical Turk, while more skilled workers can complete multi-hour tasks on professional online marketplaces such as oDesk or work for months to solve R&D challenges on open innovation

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A Data-Driven Analysis of Workers' Earnings on Amazon Mechanical Turk

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ABSTRACT
A growing number of people are working as part of on-line crowd work. Crowd work is often thought to be low wage work. However, we know little about the wage distribution in practice and what causes low/high earnings in this setting. We recorded 2,676 workers performing 3.8 million tasks on Amazon Mechanical Turk. Our task-level analysis revealed that workers earned a median hourly wage of only ~$2/h, and only 4% earned more than $7.25/h. While the average requester pays more than $11/h, lower-paying requesters post much more work. Our wage calculations are influenced by how unpaid work is accounted for, *e.g.*, time spent searching for tasks, working on tasks that are rejected, and working on tasks that are ultimately not submitted. We further explore the characteristics of tasks and working patterns that yield higher hourly wages. Our analysis informs platform design and worker tools to create a more positive future for crowd work.

Author Keywords
Crowdsourcing; Amazon Mechanical Turk; Hourly wage

is considered to extend the modern office work [4 enabling people with disabilities, at-home pare temporarily out-of-work people to work [1,4,39,46,

Yet, despite the potential for crowdsourcing plat extend the scope of the labor market, many are c that workers on crowdsourcing markets are treated [19,38,39,42,47,60]. Concerns about low earnings work platforms have been voiced repeatedly. Past has found evidence that workers typically earn a fr the U.S. minimum wage [34,35,37–39,49] and many report not being paid for adequately completed tasks This is problematic as income generation is the motivation of workers [4,13,46,49].

Detailed research into crowd work earnings has bee by an absence of adequate quantitative data. Prior based on self-reported income data (*e.g.*, [4,34,49]) subject to systemic biases [22] and is often not su granular to facilitate a detailed investigation of dispersion. Existing data-driven quantitative

Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers

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ABSTRACT
Software algorithms are changing how people work in an ever-growing number of fields, managing distributed human workers at a large scale. In these work settings, human jobs are assigned, optimized, and evaluated through algorithms and tracked data. We explored the impact of this algorithmic, data-driven management on human workers and work practices in the context of Uber and Lyft, new ridesharing services. Our findings from a qualitative study describe how drivers responded when algorithms assigned work, provided informational support, and evaluated their performance, and how drivers used online forums to socially make sense of the algorithm features. Implications and future work are discussed.

but its impact on human workers and work practices has been largely unexplored. In recent years, the press and many scholars have brought attention to the importance of studying the sociotechnical aspects of algorithms [2, 10, 37], yet to our knowledge, there has been little empirical work in this area.

We explored the impact of algorithmic management in the context of new ridesharing services Uber and Lyft. Algorithmic management is one of the core innovations that enables these services. Independent, distributed drivers with their own cars are algorithmically matched with passengers within seconds or minutes, and the fare dynamically changes based on where passenger demand surges, all through the app on their mobile phones. Drivers'

A critical theory of HCI

critical design™ vs. critical design

What is "Critical" about Critical Design? [Bardzell and Bardzell 2013]

YOU READ THIS

Critical theory: Speculative and generative, not to explain what is known but offer new ways of thinking about it

— applying critical theory to design, including questioning one's own positionally and power as designers and contribution to capitalist systems

Metacriticism: "Skilled appreciation of the arts"

— Instill critical thought and imagination of alternative futures

What is "Critical" about Critical Design? [Bardzell and Bardzell 2013]

YOU READ THIS

Dunne and Raby's **critical design™** [Dunne and Raby 2001, Pierce et al. 2015]

Use design to make consumers more critical about how their lives are mediated by ideologies or norms inscribed in design

Mathieu Lehanneur and David Edwards, Andrea, 2009. [Dunne and Raby 2013]

What is "Critical" about Critical Design? [Bardzell and Bardzell 2013]

YOU READ THIS

"a design research project may be judged "critical" to the extents that it proposes a **perspective-changing holistic account of a given phenomenon**, and that this account is **grounded in speculative theory**, reflects a **dialogical methodology**, **improves the public's cultural competence**, and is **reflexively aware of itself as an actor**—with both power and constraints—within the social world it is seeking to change."

Feminist HCI [Bardzell 2010]

YOU READ THIS

A range of feminist interaction design qualities that can be applied to **theory, methodology, user research, evaluation**

Feminist Standpoint theory:

"all knowledge attempts are **socially situated** and that some are better than others as starting points for knowledge. Knowledge production is **inevitably enmeshed in acts of power**, and in patriarchal societies, **women's knowledge is suppressed**."

Feminist HCI [Bardzell 2010]

YOU READ THIS

Pluralism: artifacts that resist single, universal points of view

Participation: knowers are not substitutable, resisting generalizability/replicability

Advocacy: Ethical dilemma of design

— reinforcing status quo vs. advocacy but advocacy still runs risk of enforcing one's own position

Modern frontiers grappling with these issues

Intersectional HCI [Schlesinger et al. 2017]

- HCI tends to focus on one aspect of identity at a time when designing, rather than dealing with design challenges arising from overlapping identity attributes

Race and racism [Ogbonnaya-Ogburu 2020]

- Racism is ordinary and baked into our designs — and HCI targeting web-scale populations typically assumes a SV default

A critical reorientation in the design process

Ideation, prototyping, evaluation

Stanford Embedded Ethics

Evaluation

Expose unintended consequences of a design by analyzing it through a critical lens

Value-based Methods: value-sensitive design [Friedman 1996]

Evaluation

Expose unintended consequences of a design by analyzing it through a critical lens

Beyond universal values: embracing values in tension [Haghighi and Jörke et al. 2023]

Evaluation

Expose unintended consequences of a design by analyzing it through a critical lens

Beyond values harms: decolonizing design [Ansari 2019, Smith et al. 2021]

— What are the views of the world that are implicitly assumed, even in values work?

— value community > Implicitly assumes individualism as default

Evaluation

Expose unintended consequences of a design by analyzing it through a critical lens

A bottom-up evaluation: algorithm audits [Sandvig et al. 2014; Metaxa et al. 2021]

— systematically querying an algorithm and observing its outputs to draw inferences about its opaque inner workings

Audit examples

(Harvard professor Googling her own name)

Google ads for Black names are 25% more likely to suggest arrest records [Sweeney 2013]

Algorithmic risk scores for a bail-setting algorithm were higher for Black defendants than (otherwise equivalent) White defendants [Angwin et al. 2016]

Algorithmic health risk scores will assign the same level of risk to a sicker Black patient than a White patient [Obermeyer et al. 2019]

Why? Often because the algorithm conflates signals. E.g., health cost as a proxy for health needs—but less money is spent on Black patients!

Ideation and prototyping

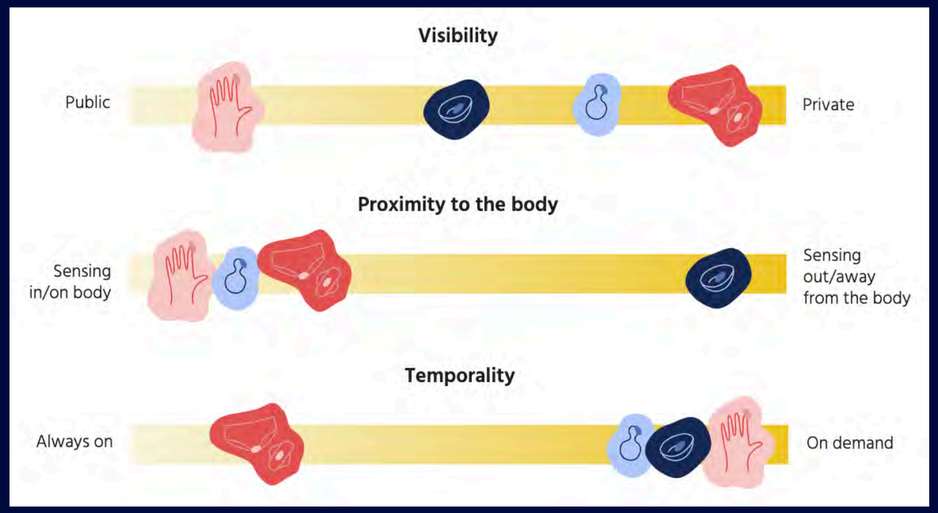
But why wait until evaluation?

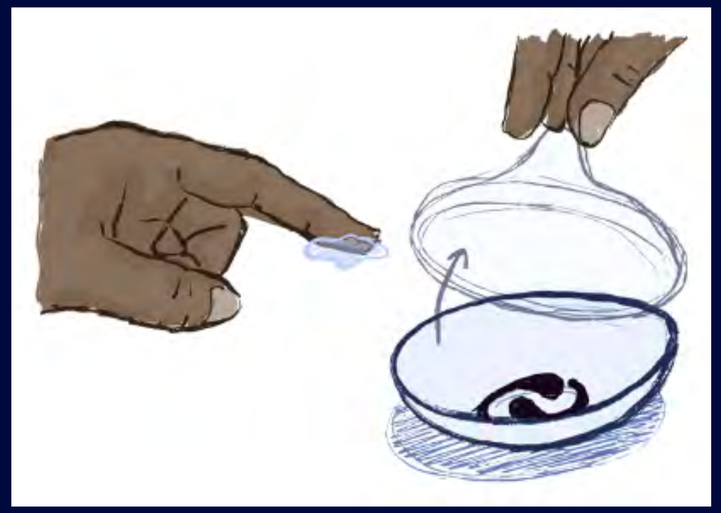
What do we deem important enough to allocate resources to?
How does our approach to addressing it shapes how it is perceived?

Take one minute… menstruation and fertility tracking

Critical design/theory as a generative lens:

Tactful Feminist Sensing [Campo Woytuk et al. 2023]





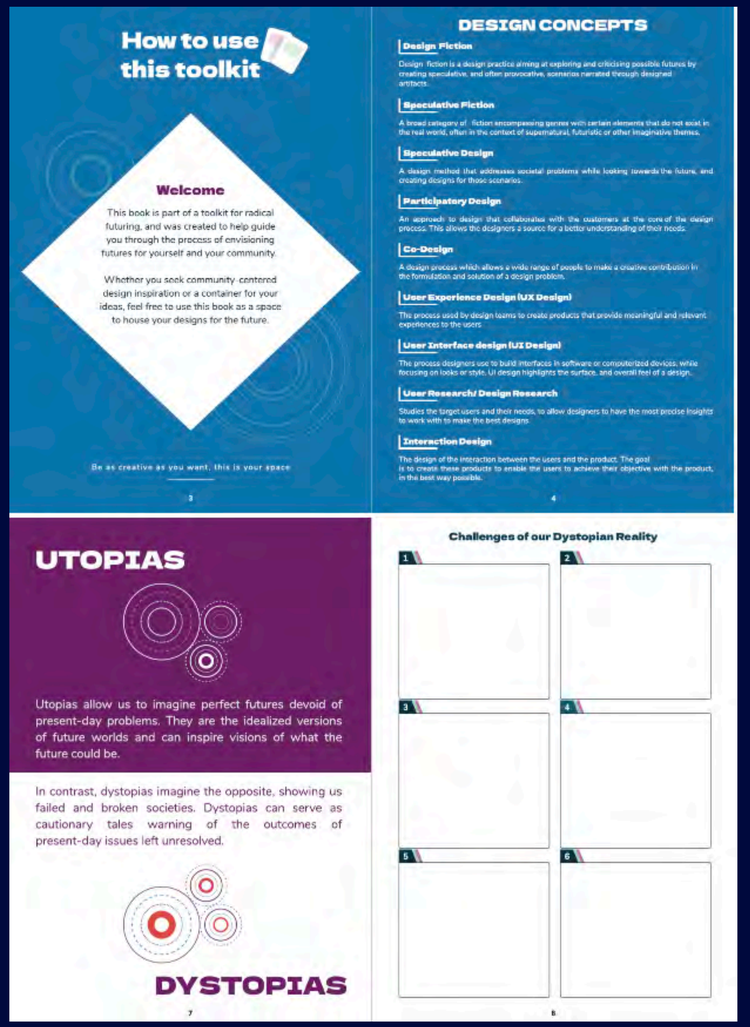
Who continues to remain in the margins?

“Islamically, I am no longer on my period": A Study of Menstrual Tracking in Muslim Women in the US [Ibrahim et al. 2024]

Design based in community

How can our methods empower the communities to engage in design?

Afrofuturist speculative design toolkit to support community-led design [Bray et al. 2022]



Research through design

RtD: methods and processes from design practice as a legitimate method of inquiry [Zimmerman 2010]

My nature watch [Gaver et al. 2019]

Situating design

Situated co-speculation on IoT using bespoke booklets [Desjardins et al. 2019]

Questioning the end goal

Think about self-tracking applications. When/why/how do you use them? What are the goals?

Self-tracking to do less? [Homewood, 2023]

Can what we design enable more flexibility and agency to the end user?

Methods for envisioning alternative worlds

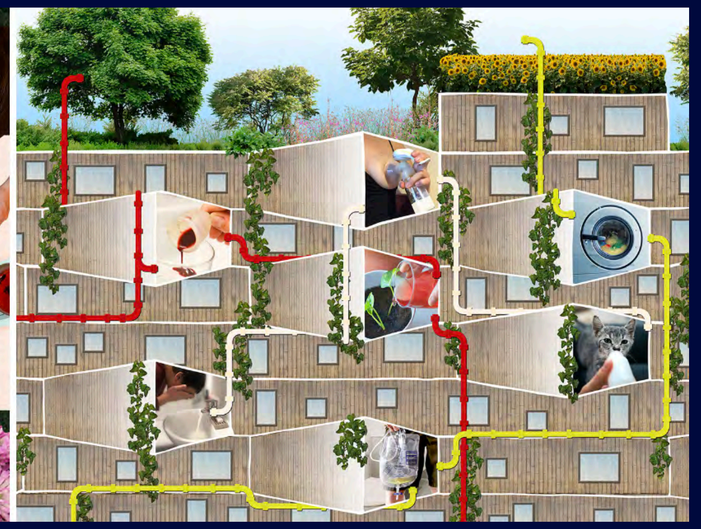
"Derived from the practice of telling fables or stories, the term fabulation orients design towards narrative potentials" [Rosner 2019]

But whose narratives? What do our existing methods enable?

Methods for envisioning alternative worlds

Fabulating and reflecting on fabulation. [Søndergaard et al. 2023]

What methods we use, what we consider scientific?



Moving beyond the design process

Beyond the artifact, questioning research assumptions

Beyond the artifact

Strategies: Design for social justice such as from individual to systemic [Dombrowski, Harmon, and Fox 2016]

Activism: Turkopticon, an activist tool for workers in Amazon Mechanical Turk (AMT) [Irani et al. 2013]

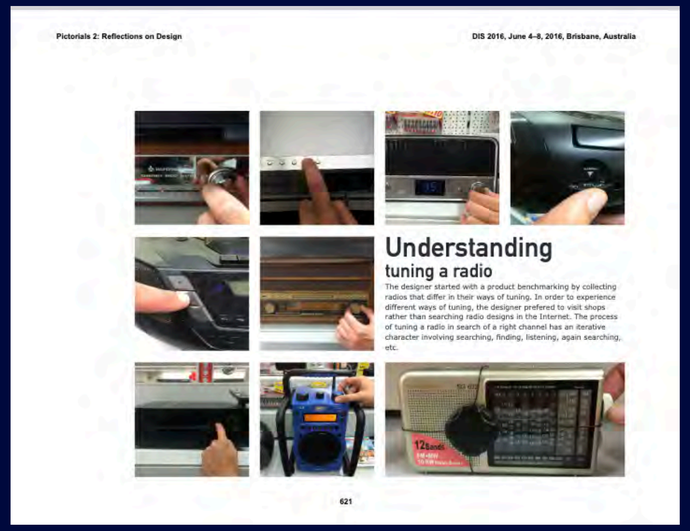
Policy: Integrating policy and design [Jackson, Gillespie, and Payette 2014]

— Partnership with labor unions for development of AI tools through involving workers [Spektor et al. 2023, Aupperlee 2023]

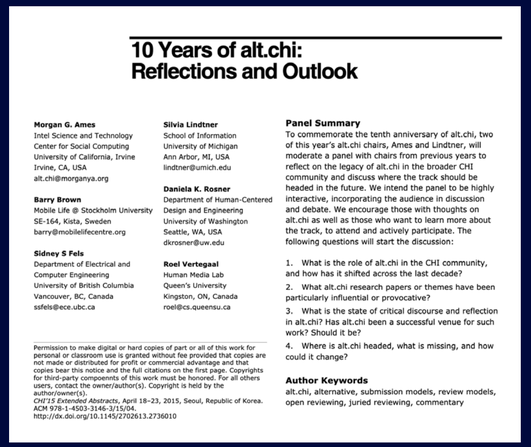
How is research disseminated?

Zines [Smith 2020, McNutt 2021]

Pictorials [Pierce 2014]



alt.chi [Ames et al. 2015]



10 Years of alt.chi: Reflections and Outlook

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Panel Summary
To commemorate the tenth anniversary of alt.chi, two of this year's alt.chi chairs, Ames and Lindtner, will moderate a panel with chairs from previous years to reflect on the legacy of alt.chi in the broader CHI community and discuss where the track should be headed in the future. We intend the panel to be highly interactive, incorporating the audience in discussion and debate. We encourage those with thoughts on alt.chi as well as those who want to learn more about the track, to attend and actively participate. The following questions will start the discussion:

1. What is the role of alt.chi in the CHI community, and how has it shifted across the last decade?
2. What alt.chi research papers or themes have been particularly influential or provocative?
3. What is the state of critical discourse and reflection in alt.chi? Has alt.chi been a successful venue for such work? Should it be?
4. Where is alt.chi headed, what is missing, and how could it change?

Author Keywords
alt.chi, alternative, submission models, review models, open reviewing, juried reviewing, commentary

Summary

Artifacts have politics: the systems we create influence groups and societies, often with undesirable outcomes

Designers hold power: the power is in the theories, methods for ideation, prototyping, and evaluation, and in how we dissipate knowledge.

HCI's role: Identify the ways in which technology shapes the society

Envision alternative methods and processes, technical approaches, policies, and designs that mitigate these issues

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