A Critical Reorientation in HCI

CS 347
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Today

Critical theory and critical design
Critical reorientation in the design process
Moving beyond the design process
“I’m just an engineer.”
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:

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 accelerator 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 [...]
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 and 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 easy, or at least 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

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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 super-laptop 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 test and graphics, that does not make them "multimedia computers." Today’s multimedia machine makes the computer screen into a dominating focus of attention rather than allowing it to fade into the background. Perhaps most dismaying is its emphasis on 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 realities otherwise inaccessible—the insides of cells, the surfaces of distant planets, the information web of data bases—all real reality is only a map, not a territo-

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:

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 Kawaiit 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 Dei, Karen Levy, Damon McCoy, and Thomas Ristenpart | May 21, 2018, 8:40am EDT

[Freed et al. 2018]
How it started:

**Delivery Start-Ups Are Back Like It’s 1999**

How it’s going:

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

By Andy Newman

July 21, 2019
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.

The Future of Crowd Work

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ABSTRACT

The mechanization of work has engendered new forms of work, which can afford abundant opportunities for improving productivity, social equity, and the global economy by engaging a geographically distributed workforce to complete computer-based, microtask-type work at a large scale. But it is also possible that crowd work will fail to achieve potential; focusing on systemic finesse.

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 teams, allocating resources, selecting among candidates for jobs, assigning tasks, and providing feedback to workers. We explore the impact of this phenomenon on algorithmic and data-driven management on human workers and work practices in the context of Uber and Lyft’s ride-hailing services. Our findings from a qualitative study describe how drivers respond when algorithmic work provides detailed information, support and evaluation, and performance, and how drivers adapt online to these factors through multiple sources, including the drivers’ subjective experiences. Overall, they find that the systems are effective way of organizing work, but it must be in a way that is fair and that workers feel that they have a voice in the process.
A critical theory of HCI

critical design™ vs. critical design
What is “Critical” about Critical Design? [Bardzell and Bardzell 2013]

**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]

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 Lehmannur and David Edwards, Andrea, 2009.  [Dunne and Raby 2013]
What is “Critical” about Critical Design? [Bardzell and Bardzell 2013]

“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]

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]

**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

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]
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.

**HCl’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
References


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