

Reflections on the impact of design research in society

Jodi Forlizzi, Herbert A. Simon Professor
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About me





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What is design?

Jodi Forlizzi
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Design, a creative process (Schön, 1983)

Reflection in action: insight that arises from taking a step in a design process

Reflection on action: insight that comes from taking a step back and contemplating the design process

Back talk: how the material a designer is working with “speaks back” to give shape to possibility

Conversation with material: collectively, these actions are the action of design, giving form to something



Design inquiry (Buxton, 2007)

An investigation made using the design process

- Imagining the future
- Giving form through conversation with material
- Repeatedly reframing a problem with many possible solutions
- Refining the solution through iteration



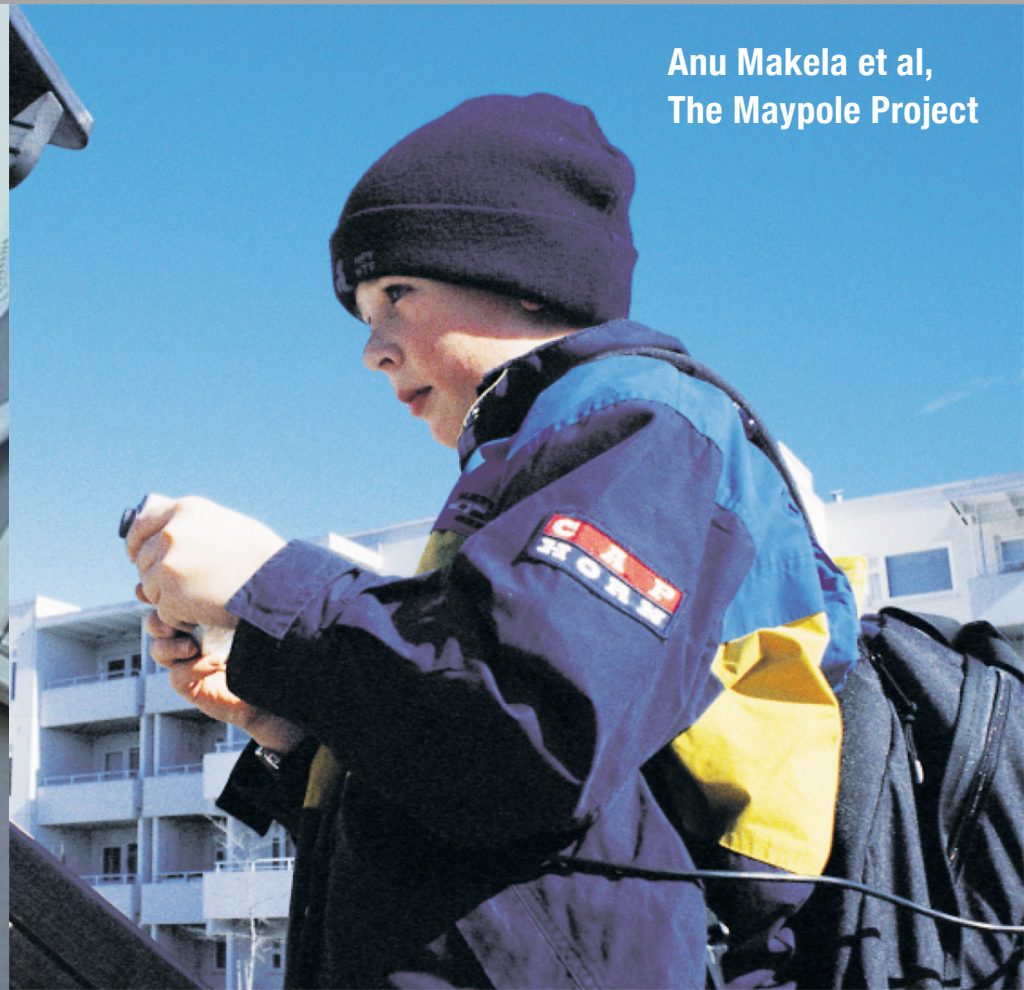


From design practice to design research

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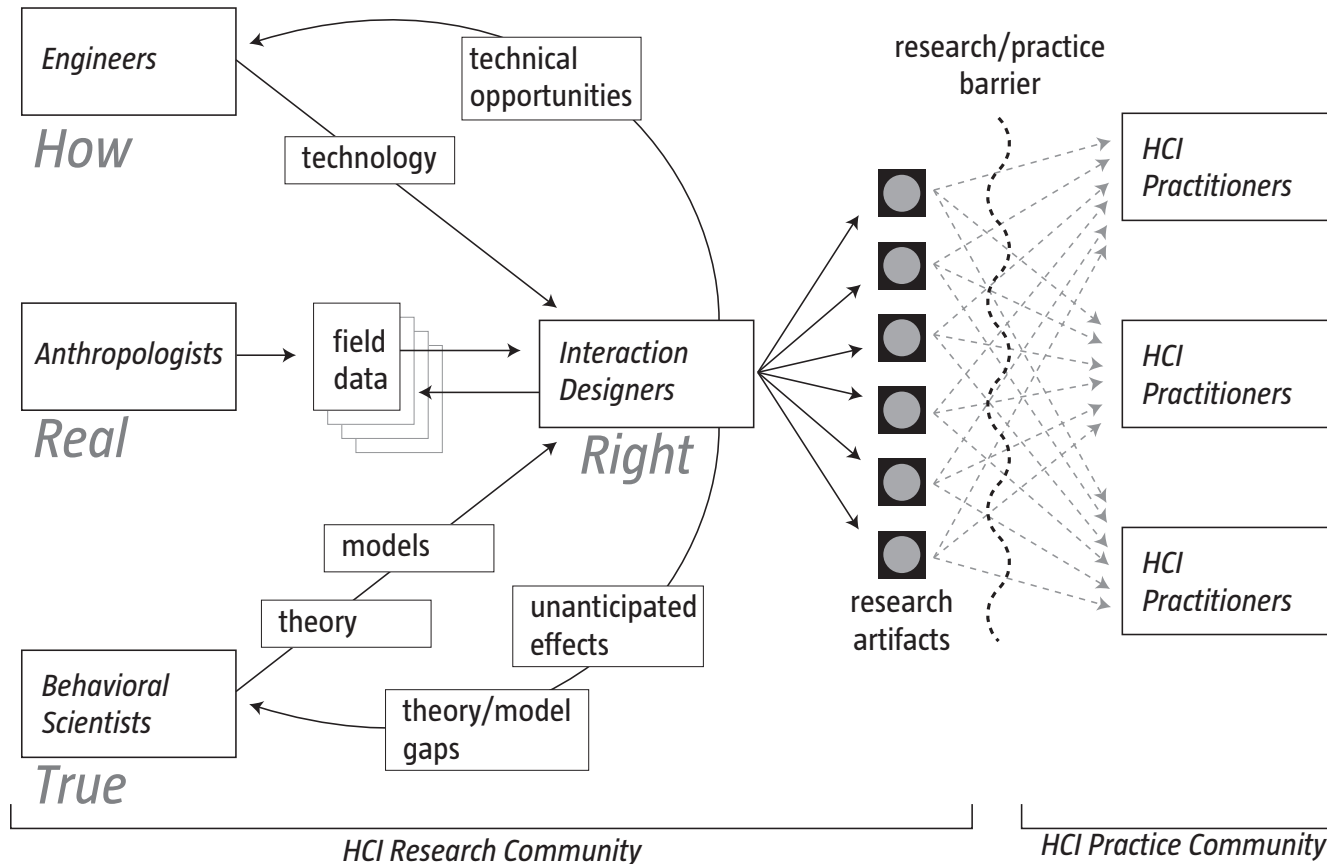


Formalizing Research through Design



Anu Makela et al,
The Maypole Project

Research through Design (Zimmerman et al, 2007)



RtD: Sketching through speculative futures



Bill Gaver,
Drift Table

RtD: Sketching with interaction



Guus Baggersmans,
Friendly Vending



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Technology is changing design... and design research

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Technology is changing design

- In graphic design, printing is disappearing
- In industrial design, mechanical devices are disappearing
- In interaction design, mobile apps have peaked
- In service design, most services are data driven
- AI tools changing the practice

After Hugh Dubberly





Technology is changing Design Research

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Carnegie Mellon University



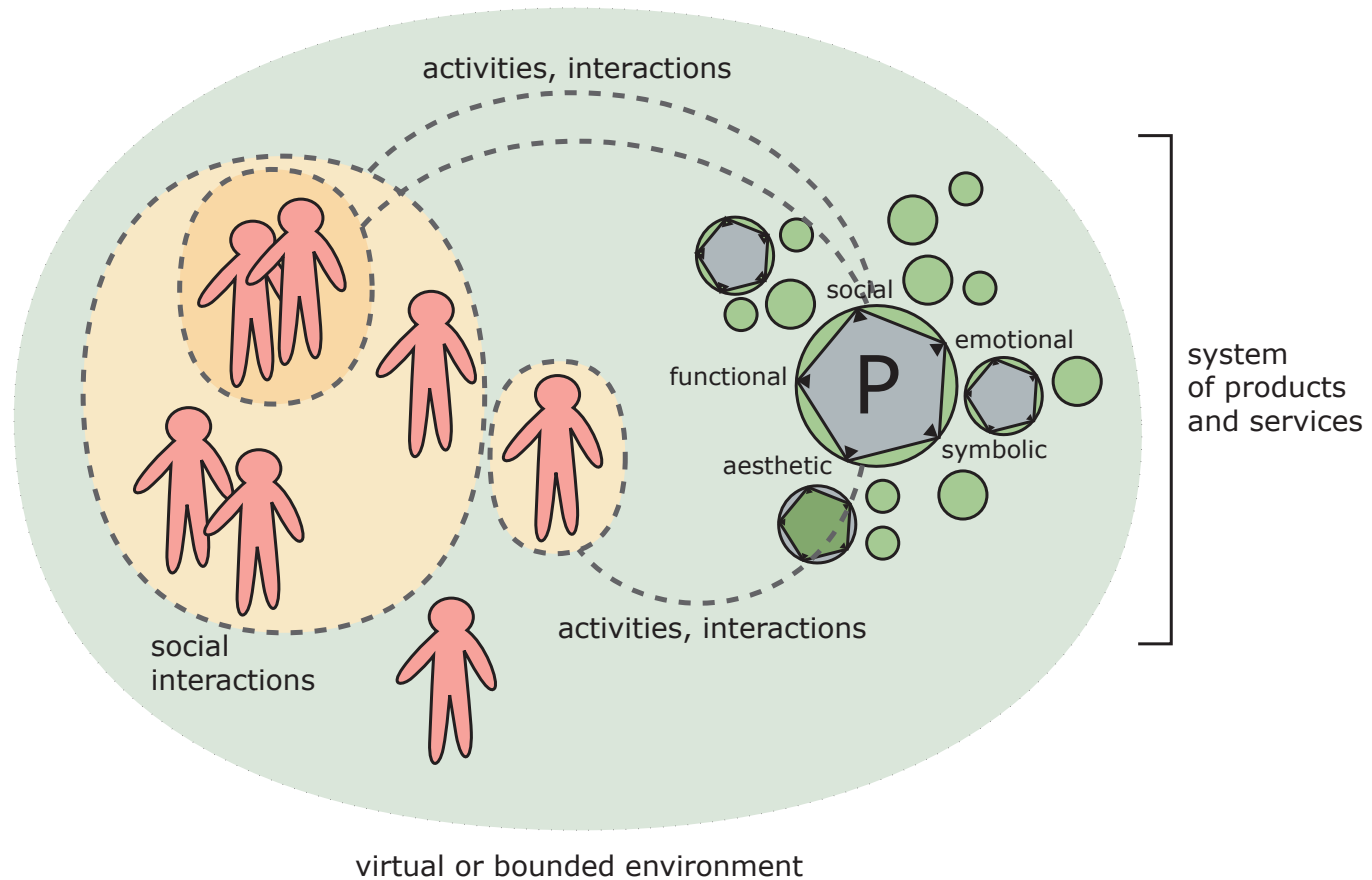
Many thoughts, no agreed upon name

There is no agreed-upon name

- Fourth-order design (Buchanan)
- Systemic design (Nelson)
- Transition design (Irwin)
- Computational design (Maeda)
- Data-enabled design (Cain)
- Product-service ecologies (Forlizzi)



Product-service ecologies





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AI and automation in the hospitality industry

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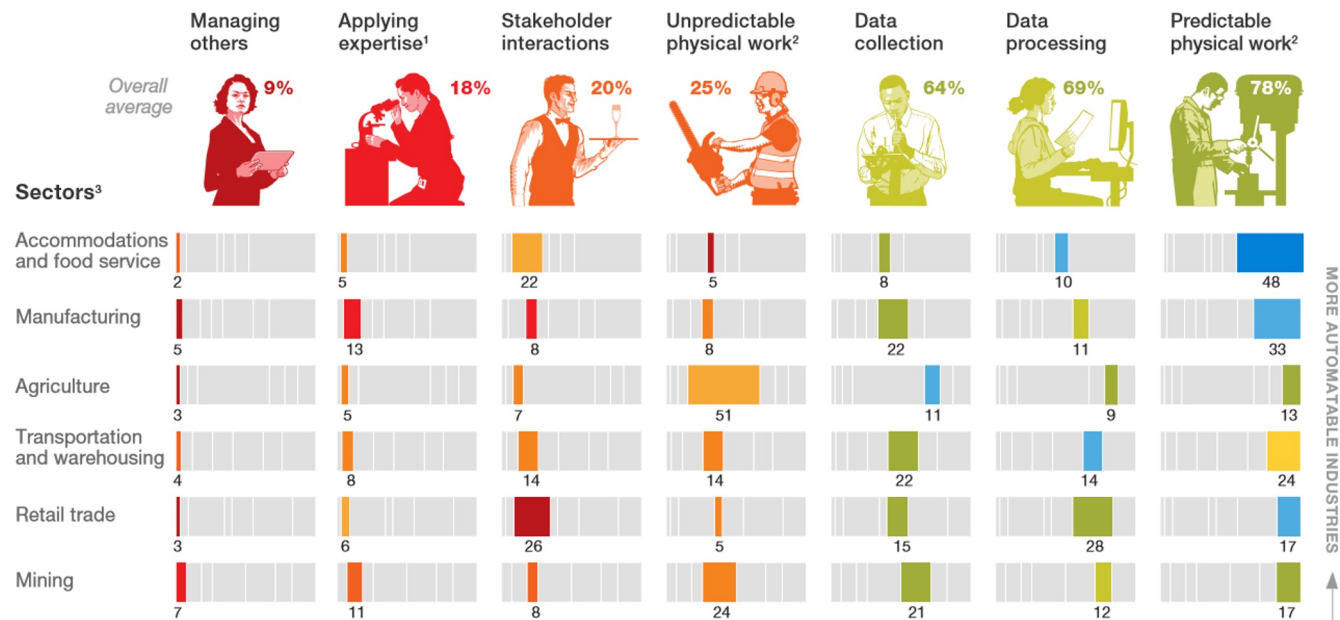


Hospitality in danger of automation

The technical potential for automation in the US

Many types of activities in industry sectors have the technical potential to be automated, but that potential varies significantly across activities.

Technical feasibility: % of time spent on activities that can be automated by adapting currently demonstrated technology

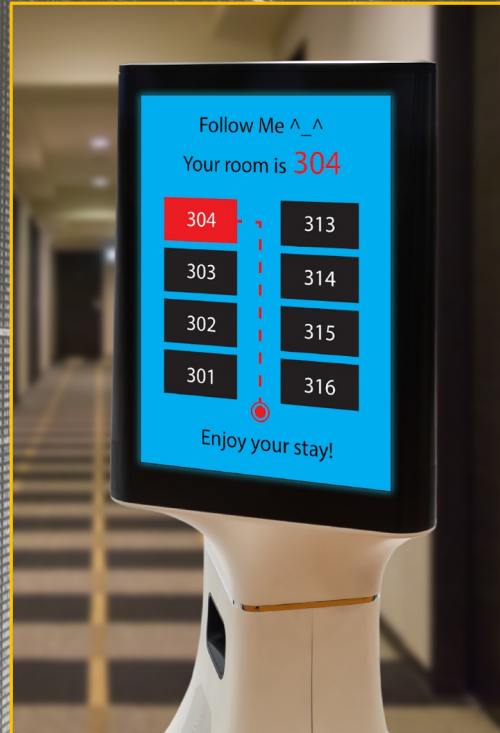


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Robots and automation in the hospitality industry

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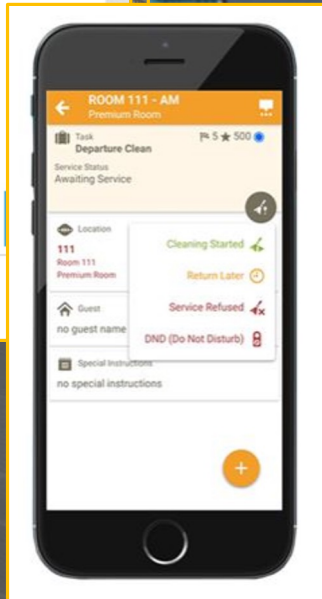
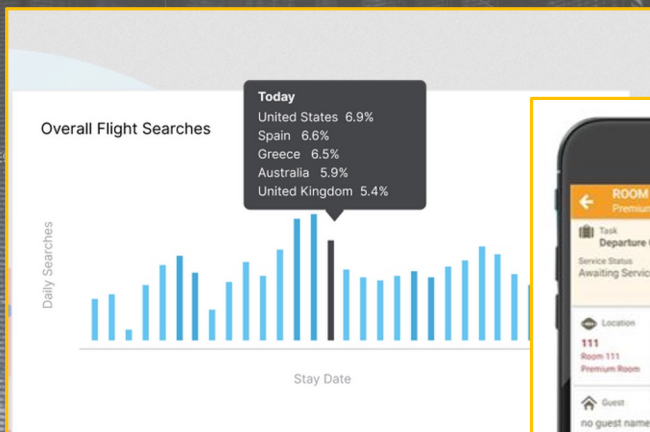
Meet Flippy, Chippy, Sally, and Sippy



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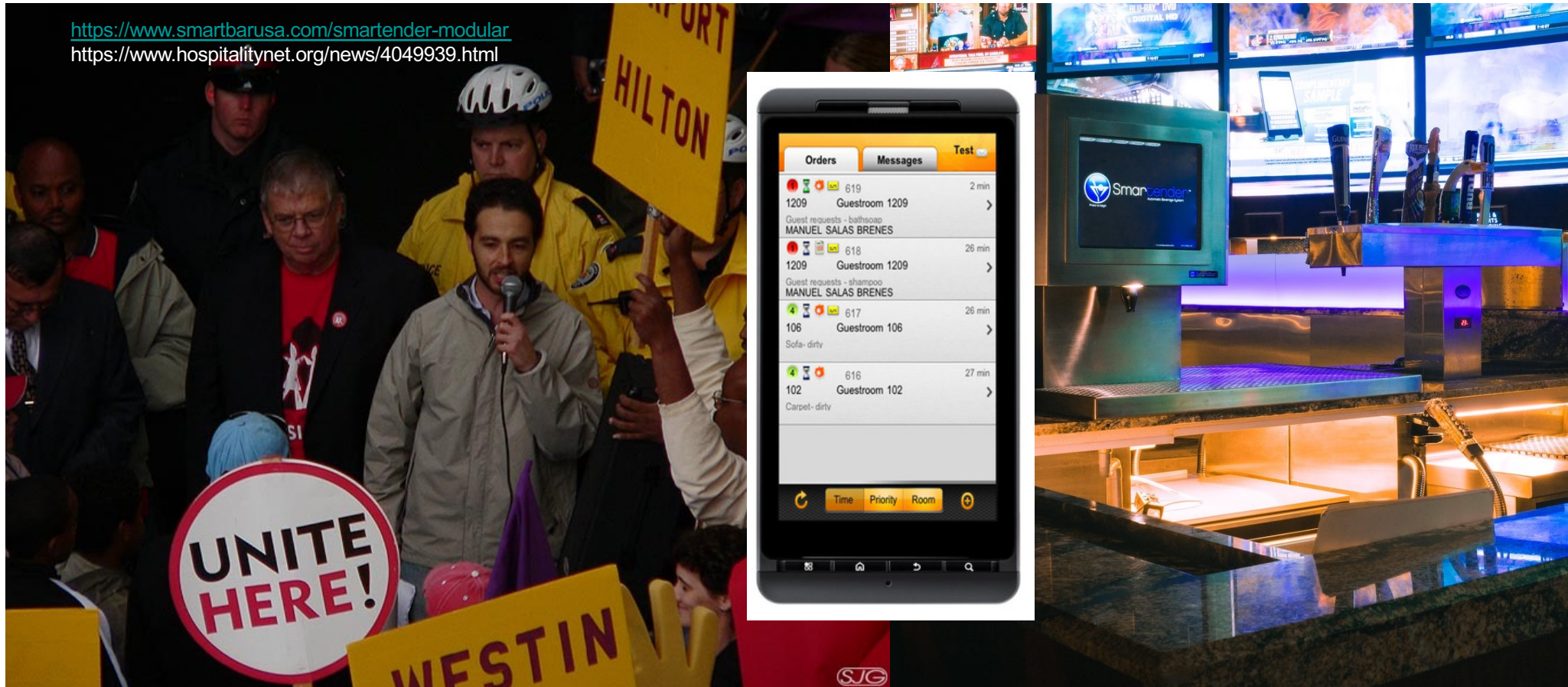


A variety of technologies



Preparing workers for a future of automation

<https://www.smartbarusa.com/smartender-modular>
<https://www.hospitalitynet.org/news/4049939.html>





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Research Roadmap



Literature Review



Hospitality, invisible work



- A physically demanding job done by women who are largely immigrants and women of color
- As employers move from daily housekeeping, their work is becoming harder



Digitalizing hospitality



- Deprives housekeepers of autonomy
- Many check out rooms in a row
- Enables faster communication between housekeepers and other operations — managers, engineering, etc.

Impact of automation on worker well-being

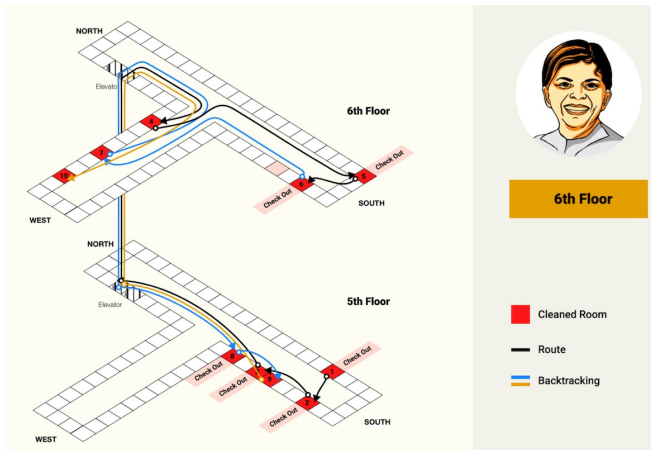
- Social science literature on automation traditionally focused on job displacement
- Recent literature highlights complexity, especially in service sector
- Recent research points to reskilling



Enter design research...



Effects of an ecological view

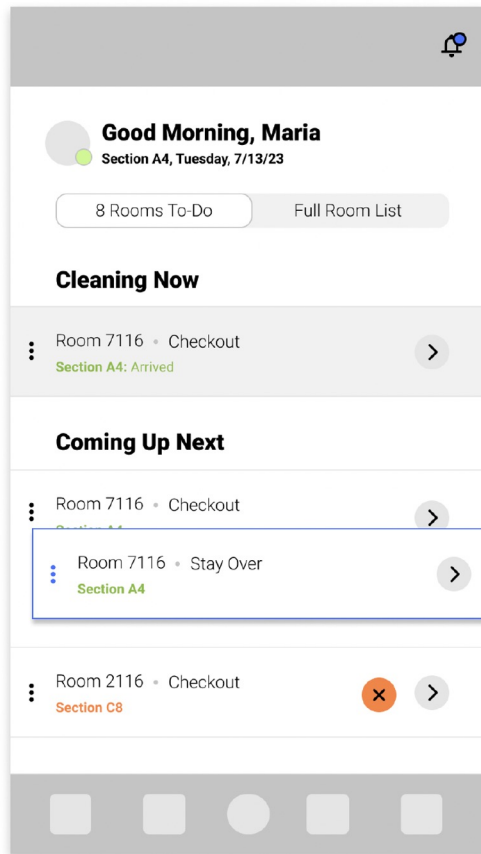


- Talking to housekeepers gave an individual perspective
- Talking to managers gave an organizational perspective
- Talking to the manufacturer of the software revealed additional (conflicting) perspectives
- Talking to hotel management revealed additional perspectives

Using reframing to advance the research



Effects of speculative prototypes



- Workshops and interviews to understand how AMs impact daily work
- Researchers collaborate with workers to sketch new designs
- Worker participation increases self-efficacy and transparency and reduces workload

Spektor et al, DIS24



Leads to new bargaining language



- Las Vegas Culinary Union Local 226
- Gather issues and report to union stewards asking for the ability to self-sequence rooms



Digital and AI literacy study



<https://www.reviewjournal.com/local/education/>

- First of a kind collaboration between a culinary training academy, our research team, and a software developer
- Explore modifications to software design to enable self-sequencing, digital literacy, and AI literacy training





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Impacts of Research through Design

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Leads to new technology strategies



Leads to words in the Executive Order

THE WHITE HOUSE



[Administration](#) [Priorities](#) [The Record](#) [Briefing Room](#) [Español](#) [MENU](#)



OCTOBER 30, 2023

Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence



› [BRIEFING ROOM](#) › [PRESIDENTIAL ACTIONS](#)

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:



PRESS RELEASE

AFL-CIO and Microsoft Announce New Tech-Labor Partnership on AI and the Future of the Workforce

December 11, 2023

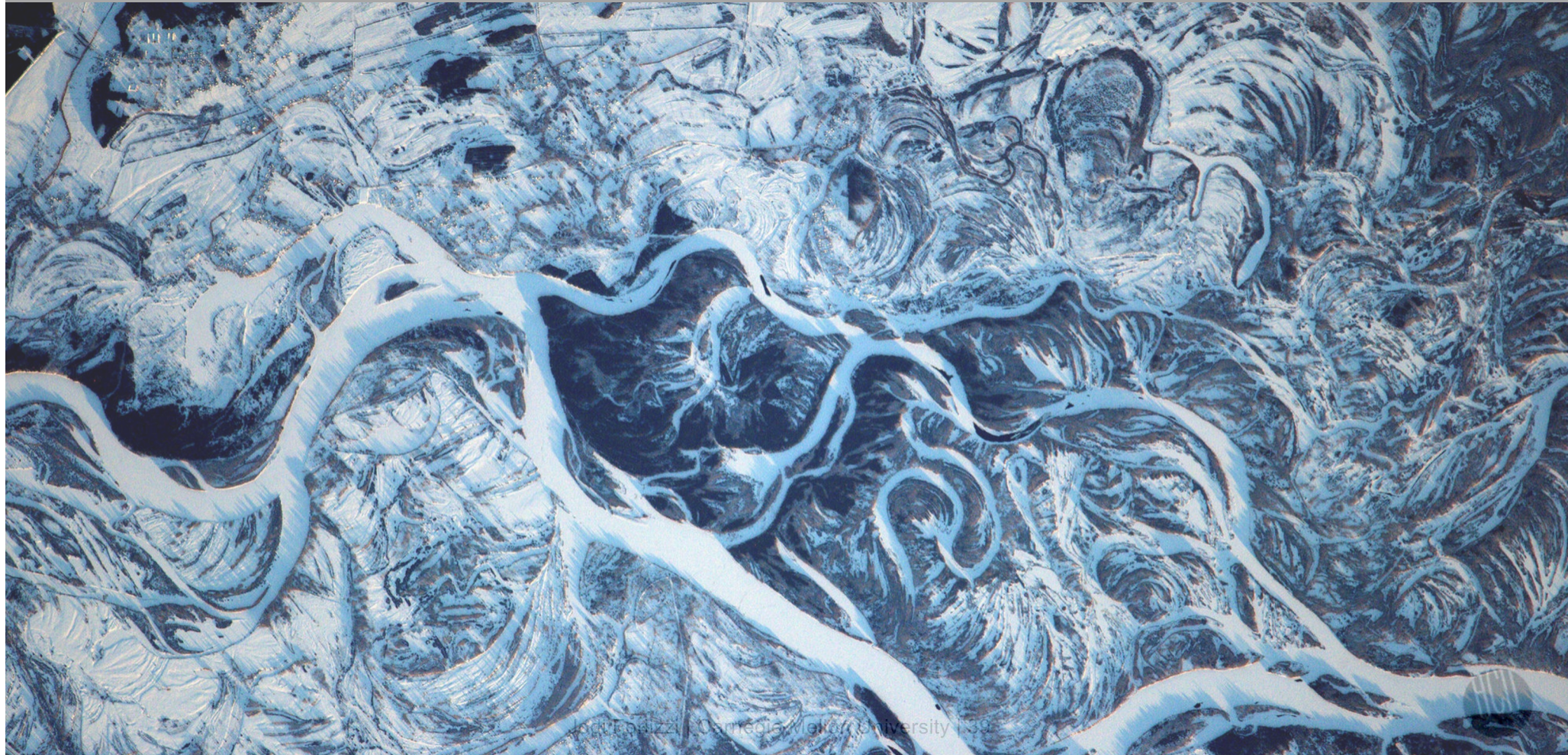


New AI alliance will educate workers, incorporate labor's voice in tech development and help shape policy that supports workers

The American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) and Microsoft Corp. on Monday announced the formation of a new partnership to create an open dialogue to discuss how artificial intelligence (AI) must anticipate the needs of workers and include their voices in its development and implementation. This partnership is the first of its kind between a labor organization and a technology company to focus on AI and will



In conclusion...



Heeding warning signals...

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Warning signals: Design as a discipline

- Design's value is increasingly being questioned
- Collapse of some design institutions
- Design organizations like AIGA, IDSA, etc. have lost relevance
- AI is automating lots of design work (and doing it poorly)



Warning signals: Research through Design

- Design is shrinking in importance in HCI research
- Loss of deep grounding in the discipline
- Funding is in smaller amounts
- HCI slow to adopt richer design perspectives, beyond UX design
- Increasing evidence for new types of RtD



Ensuring a future of research through design

- Create a more mature understanding of what design research is and how it creates value
- Develop new ways to have conversations about our field
- Create new funding mechanisms



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