CS181DT Class 3: Tool fundamentals

Class 3 agenda

- Zipcrit
- Critique norms
- PM1: Hacking Zine Crit
- Break
- Seminar
- PM2 and Proj1 details

Critique norms

Why peer critique?

- Reinforce learning goals of the assignment
- Develop a community of practice
  - Sure, you'll get instructor comments on Canvas, but often times, you'll learn more from your peers
- Methods
  - Ask constructive questions - "Why did you choose to include this panel? Why did you choose the layout like this?"
  - End with one thing you genuinely liked

https://www-s3-live.kent.edu/s3fs-root/s3fs-public/file/Teaching%20Tool%20in%20a%20Flash%20-%20Critiques_1.pdf

CS181DT crit norms

- We’re all learning together in a community of practice
- Ask non-judgmental and constructive questions
- End with a thing you liked
- (Others?)

Last time: CS181DT course norms

- Dos:
  - It’s OK to be wrong! No bad or stupid questions. It’s good to ask questions!
  - Constructive, actionable criticism; don’t shut down others completely or be rude
  - Mindfulness, active listening
  - Acknowledge each other’s efforts
  - Collaboration!

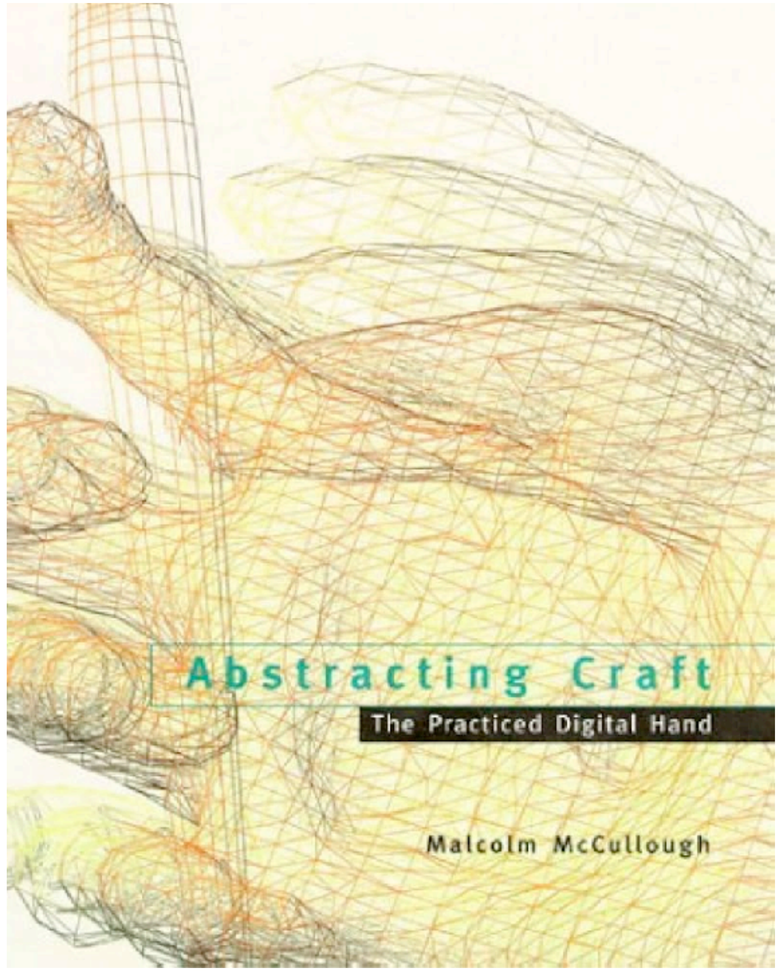
PM1 crit time

- Turn to the person sitting next to you and swap zines. Take a minute or two to read each other's zines and gather your thoughts. Then take turns giving each other feedback:
  - How well do you think the zine captures the narrative of hacking?
  - What are some other things that stand out to you? Why do they stand out?
- When you finish, come up to the front to find another pair that's finished, and trade partners.
- We'll continue doing zine swaps this way until 11:30 (or everyone has read everyone else's zine, whatever comes first).

Break

Recall Lecture 1: A definition of a tool

- a **moving entity** whose use is initiated and actively **guided by a human being**, for whom it acts as an **extension**, toward a specific **purpose** (Malcom McCullough, 1966)
- This to me implies..
  - 1. Interactivity (moving)
  - 2. Agency from humans (guided by)
  - 3. Complimenting human skills (extension)
  - 4. Existence of goals (purpose)

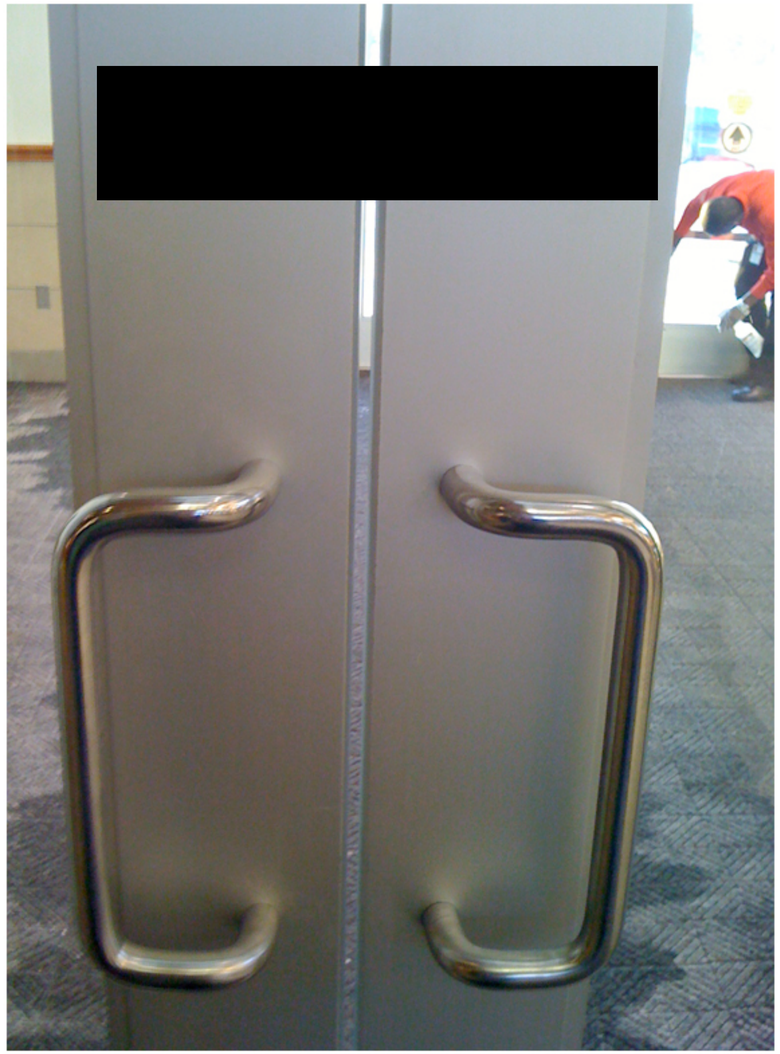


Invention of the tool

- Tools are extensions of our body
- Humans are the only species to *create tools* to shape their environment
  - Other animals use tools (monkeys, sea otters, corvids, etc)
- Traces of tools have been found as far back as 3.3 million years
- Most of our interactions with the real world are *mediated* by tools

Discuss: How many tools did you use yesterday, and how did they act as extensions of your body (or brain)?

Consider the door handle



How do you know to push or pull?

Affordance

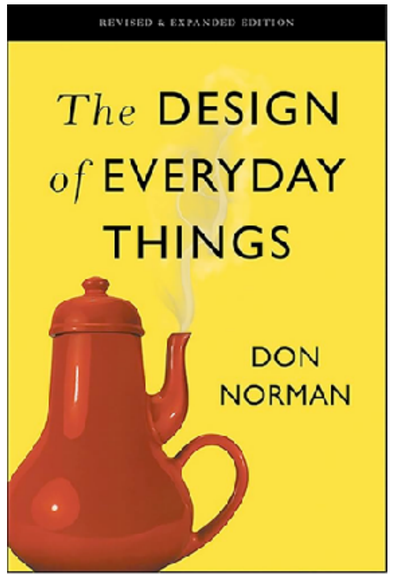
- “the term affordance refers to the **perceived and actual properties** of the thing, primarily those fundamental properties that determine just how the thing could possibly be used.”

Scissors afford cutting

What are some clues?

- Holes for fingers to hold
- Sharp blades to cut things
- Screw to allow axial rotation

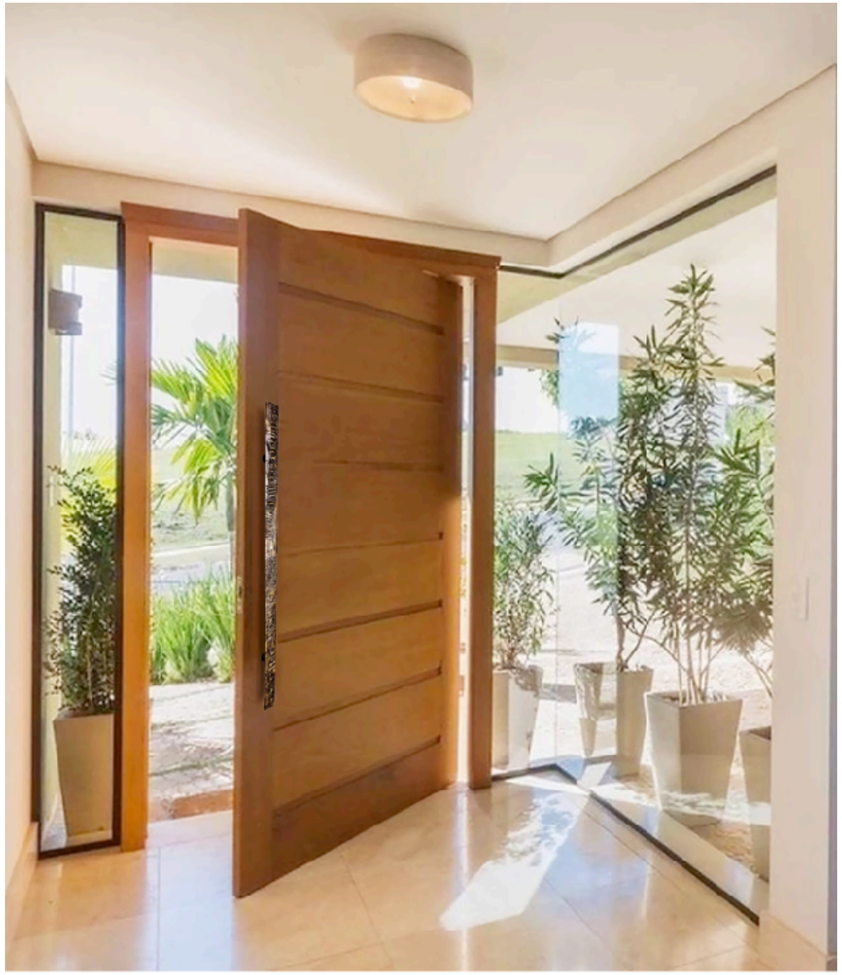
We call these **signifiers.**



Consider the door handle (again)

A label is a bad signifier…

Better: push bars vs pull handles



Instead, the build in the signifiers to the design

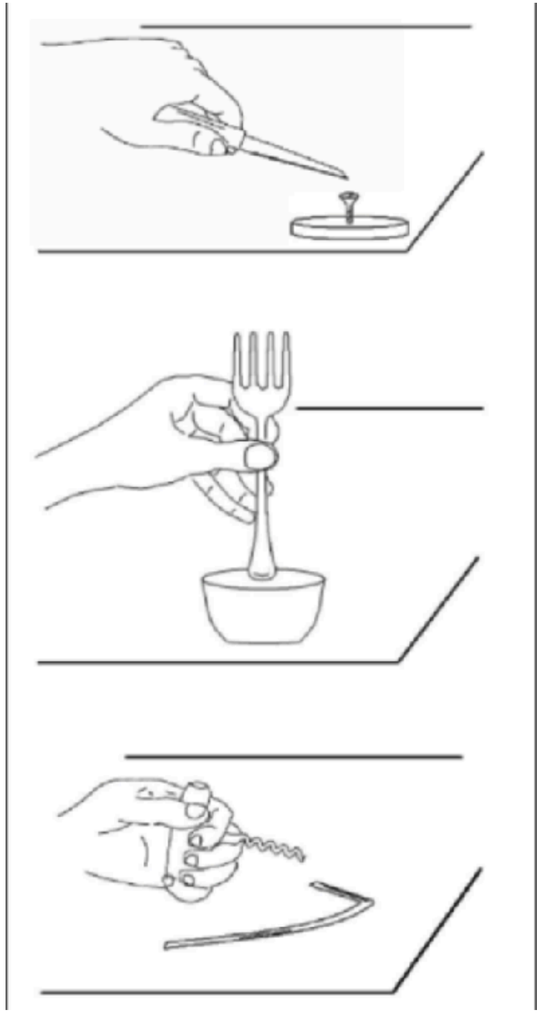
Your turn

- Affordance contest!
- Turn to the person next to you and pick an object one of you has on hand. In 90 seconds, brainstorm as many affordances (and the corresponding signifiers) as you can. Keep track!

- Sharp blades signify that scissors afford cutting
- Finger holes signify that scissors afford holding
- Screw signifies that scissors afford rotational movement
- Weight of the steel signifies that scissors afford being used as a blunt weapon

Physical affordances lead to appropriation

- Have you ever used a knife a screwdriver when no screwdriver was around? Or a pencil as a ruler?
- Because we can perceive signifiers and affordances of physical tools, we are able to (mis)use them in creative ways
- …Even if they aren’t always the best tool for the task



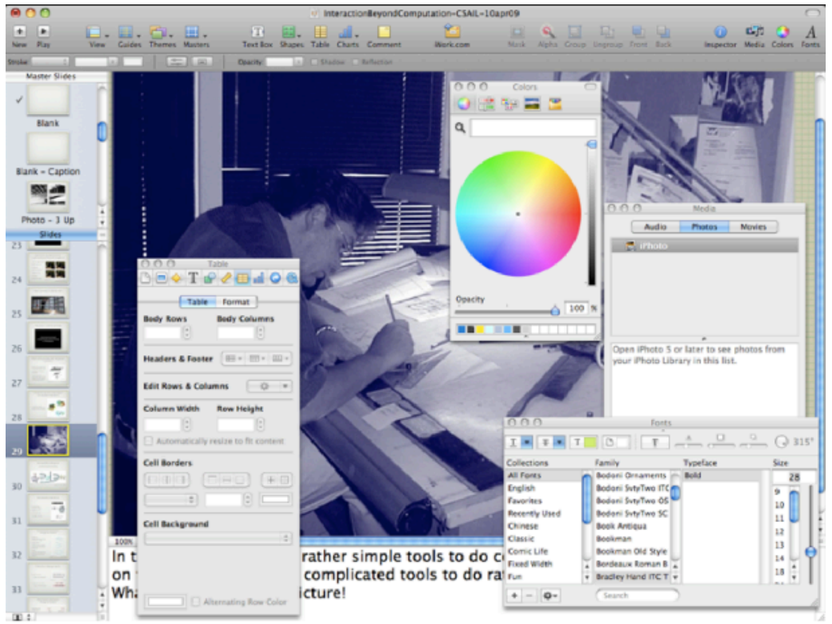
https://pubmed.ncbi.nlm.nih.gov/34239080/

Maslow’s law of the instrument

- A cognitive bias on over-reliance of familiarity of tools - “If the only tool you have is a hammer, it is tempting to treat everything as if it were a nail.” (Abraham Maslow, 1966)
- Also known as Maslow’s hammer
- Results in using familiar tools even if they might not be the best tool for the task
  - Ex: You prefer Python even if you’re doing low level graphics programming better suited for C++

The computer is a tool

- “Computers are like a bicycle for our minds” - Steve Jobs
- Computers have replaced a lot of traditional analog tools

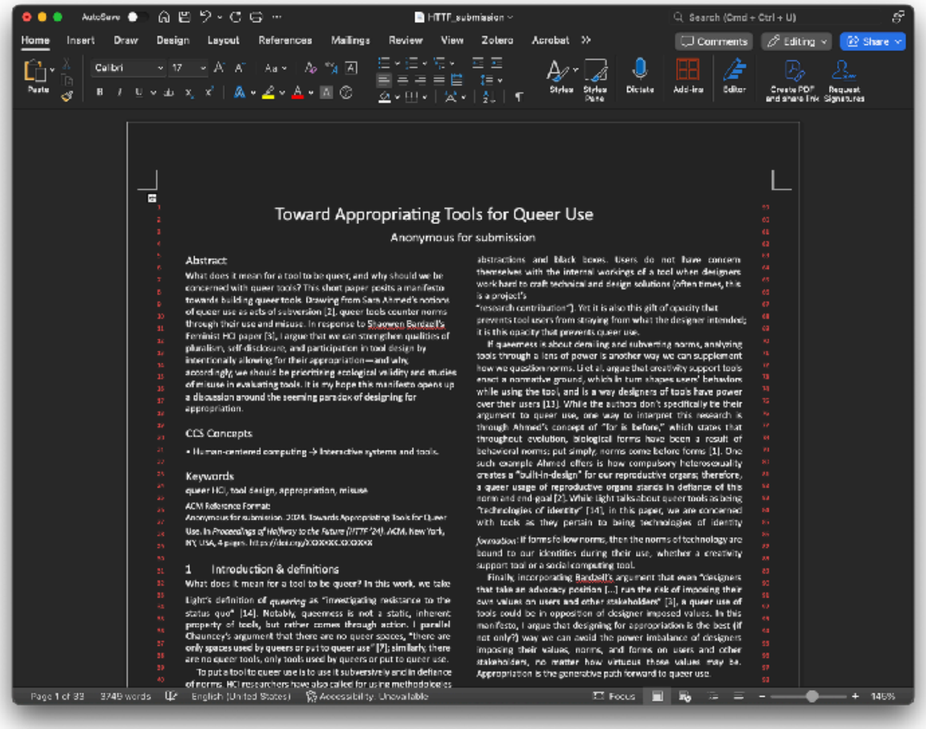


- But if we internalize tools as extensions of our body, then we need to physically interface with computers somehow…

Again, tools mediate interactions

Computer hardware mediates interactions

Computer software mediates interactions



No longer natural, but *designed* affordances

Breakability

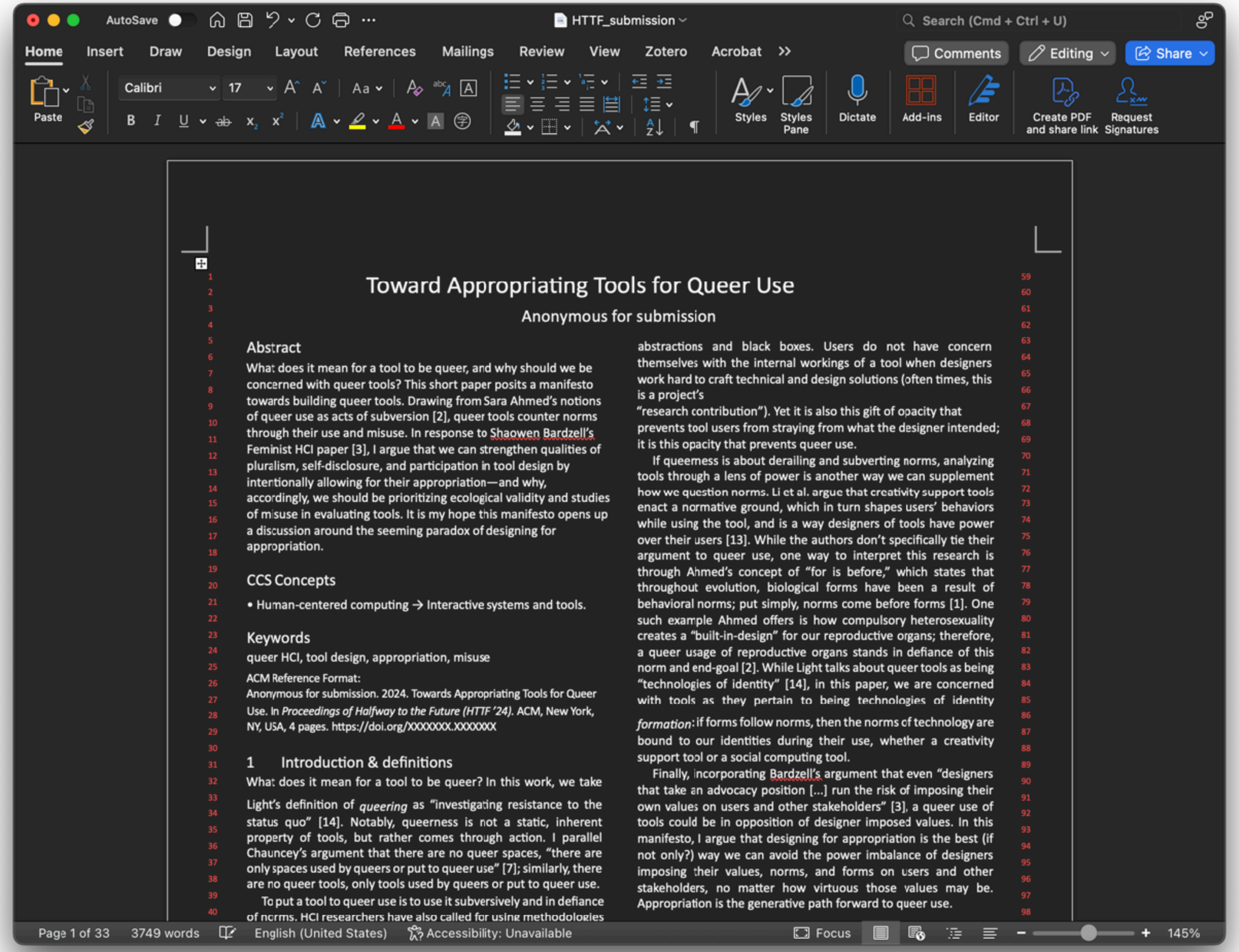
Glass affords breaking by its material properties

Pushability

A button doesn't intrinsically afford pushing: we've culturally learned that

Takeaway:

Software tools use *symbols* to signify what they can do. Digital symbols may be more difficult to understand than things in the physical world.



Toward Appropriating Tools for Queer Use

Anonymous for submission

Abstract

What does it mean for a tool to be queer, and why should we be concerned with queer tools? This short paper posits a manifesto towards building queer tools. Drawing from Sara Ahmed's notions of queer use as acts of subversion [2], queer tools counter norms through their use and misuse. In response to Shaowen Bardzell's Feminist HCI paper [3], I argue that we can strengthen qualities of pluralism, self-disclosure, and participation in tool design by intentionally allowing for their appropriation—and why, accordingly, we should be prioritizing ecological validity and studies of misuse in evaluating tools. It is my hope this manifesto opens up a discussion around the seeming paradox of designing for appropriation.

CCS Concepts

• Human-centered computing → Interactive systems and tools.

Keywords

queer HCI, tool design, appropriation, misuse

ACM Reference Format:
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1 Introduction & definitions

What does it mean for a tool to be queer? In this work, we take Light's definition of *queering* as "investigating resistance to the status quo" [14]. Notably, queerness is not a static, inherent property of tools, but rather comes through action. I parallel Chauncey's argument that there are no queer spaces, "there are only spaces used by queers or put to queer use" [7]; similarly, there are no queer tools, only tools used by queers or put to queer use.

To put a tool to queer use is to use it subversively and in defiance of norms. HCI researchers have also called for using methodologies abstractions and black boxes. Users do not have concern themselves with the internal workings of a tool when designers work hard to craft technical and design solutions (often times, this is a project's "research contribution"). Yet it is also this gift of opacity that prevents tool users from straying from what the designer intended; it is this opacity that prevents queer use.

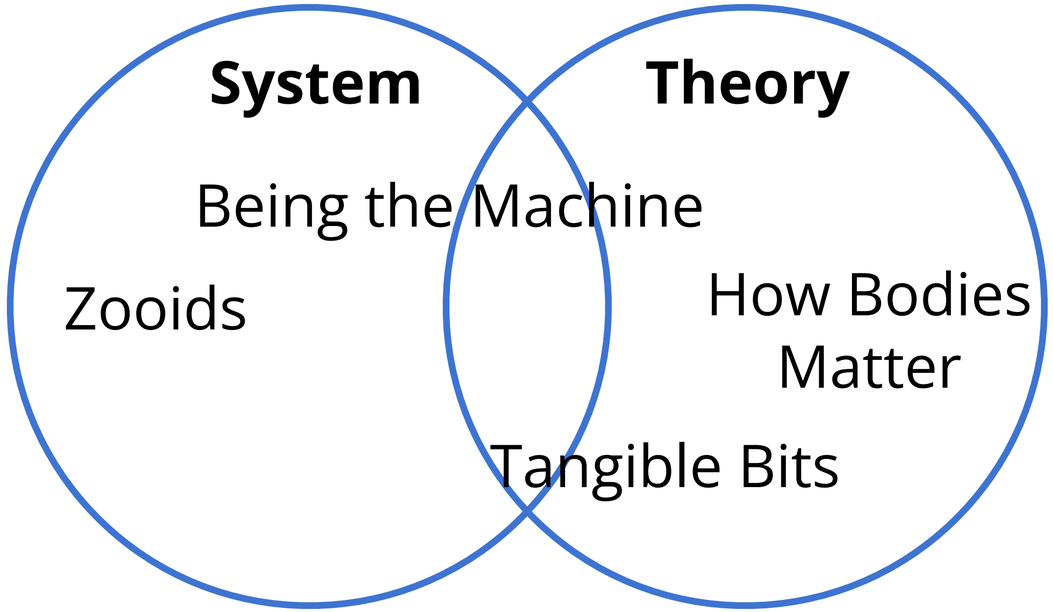
If queerness is about derailing and subverting norms, analyzing tools through a lens of power is another way we can supplement how we question norms. Li et al. argue that creativity support tools enact a normative ground, which in turn shapes users' behaviors while using the tool, and is a way designers of tools have power over their users [13]. While the authors don't specifically tie their argument to queer use, one way to interpret this research is through Ahmed's concept of "for is before," which states that throughout evolution, biological forms have been a result of behavioral norms; put simply, norms come before forms [1]. One such example Ahmed offers is how compulsory heterosexuality creates a "built-in-design" for our reproductive organs; therefore, a queer usage of reproductive organs stands in defiance of this norm and end-goal [2]. While Light talks about queer tools as being "technologies of identity" [14], in this paper, we are concerned with tools as they pertain to being technologies of identity *formation*: if forms follow norms, then the norms of technology are bound to our identities during their use, whether a creativity support tool or a social computing tool.

Finally, incorporating Bardzell's argument that even "designers that take an advocacy position [...] run the risk of imposing their own values on users and other stakeholders" [3], a queer use of tools could be in opposition of designer imposed values. In this manifesto, I argue that designing for appropriation is the best (if not only?) way we can avoid the power imbalance of designers imposing their values, norms, and forms on users and other stakeholders, no matter how virtuous those values may be. Appropriation is the generative path forward to queer use.

How to read HCI research papers

Types of HCI papers

- In this class, we'll be mainly reading 2 types of HCI papers
  - A description of a *system* that was built
  - A more *theoretical* or *design* oriented contribution



How to read HCI papers

- Always find and watch the video of the system first - a static PDF is a poor medium to describe an interactive system
- Read and understand the **introduction** carefully: this is where the authors make their argument and motivation for why the work is important
- It’s OK to skim the related work & methods sections
- Build a wholistic understanding of the system through the system written description, but more importantly the figures & video
- The discussion is a grab bag; worth skimming or reading deeply if something in there interests you
- For theory papers, the sections are slightly different, but best to get the **main point of the theory** and **read the examples** that crystallize and apply the theory

Class 3 Recap

- Nothing due this week :)
- Next Monday, we'll cut foamboard and release PM2
- Next Weds seminars
  - Tangible Bits, How Bodies Matter - Nico & Angela
  - Being the Machine, Zooids - Tanner & Zariah
  - Optionally (but highly recommended), read the Bret Victor Brief Rant first
  - Only 2 reading responses due (synthesizes both readings)
- Some lecture slide credit to Michel Beaudouin-Lafon!