Designing for Diversity

Human Computer Interaction

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What we (should) know...

- It is important to design for the user, to follow a human-centered process

- "People are a mess"
  - they have different abilities and weaknesses
  - they come from different backgrounds and cultures
  - they have different interests, viewpoints, and experiences
  - they are of different ages and sizes
  - ...

- All these things have an impact on the way in which a person use a software application and, indeed, on whether they can use it at all
Are We Designing For People Like Us?

- If we use our own abilities as a starting point...
- ... we make things that are easy for some people to use, but difficult for everyone else
- ... we end up with systems designed for people like us
  - specific gender, age, language ability, tech literacy, physical ability, specific access to money, time, etc.
"Normal"... Who?

- The interactions we design with technology depend heavily on what we can understand/remember, see, hear, say, and touch.

- Assuming all those senses and abilities are fully enabled all the time means ignoring several people.
  - it also reflects how people really are, as "life happens"

- We want our designs to reflect that diversity.
Principles and Methodologies

Inclusive and Universal Design
Inclusive Design

- A design methodology that enables and draws on the full range of human diversity
  - i.e., including and learning from people with a range of perspectives

- Designing a diversity of ways to participate so that everyone has a sense of belonging

- It not a "one size fits all" approach, but a "one size fits one"
  - it is more designing a system, a portion of it, or an application for a specific use case and extending this to others

- **Beware**: there is no "standard" and shared definitions, principles, and practices
  - here, we rely on a recent definition and practices by Microsoft Design
    (https://www.microsoft.com/design/inclusive/)
Three Principles of Inclusive Design

1. **Recognize exclusion**
   - it means examining what you are building, and recognizing who would be excluded from using it
   - sometimes exclusion happens when we do not pay attention to our biases, and it could be temporary or situational

2. **Learn from diversity**
   - put people at the center of the design process from day zero
   - we can try to imagine how a person with a given set of abilities would use a system
   - we cannot imagine her various contexts, being them situational, emotional, or what gives her joy or frustration

3. **Solve for one, extend to many**
The Beauty of Constraints

- Designing for people with permanent disabilities can seem like a significant constraint...
- ...but the resulting designs can benefit a much larger number of people
- Examples?
The Beauty of Constraints

- Designing for people with permanent disabilities can seem like a significant constraint...
- ...but the resulting designs can benefit a much larger number of people
- Examples
  - closed captioning was created for the hard of hearing community, but they are useful for reading in a crowded airport or to teach children how to read
  - remote controls, automatic door openers, audiobooks, ...
You're creating a video game for **console**

A **competitive** game, with characters who need to jump, run, ... maybe even drive, at a certain stage.

Who are you excluding?
- Be sure to include various contexts/situations, not just "edge cases".
- Which of them can you observe, and how?

Which 1-2 solution(s) can we come to, then?
Example: Creating a Video Game

- Jumping, running, driving, ... will require fine motor skills to compete.

- Possible factors to consider:
  - what if you have limited mobility?
  - or if you never played a video game before?
  - ...

Human Computer Interaction
Example: Creating a Video Game

- A possible solution: a co-pilot mode
  - allows two game controllers to work together, so that two people can control the same character, or car, or...
  - in this way, an advanced or skilled player can play alongside someone who might need more assistance

- This opens gaming to various kinds of people
  - people with disabilities or temporary injuries
  - novice gamers
  - kids
  - people who just want to play together without competing
Copilot Mode – Xbox One

Who are we excluding, now?
Xbox Adaptive Controller

source: https://xbox.com/adaptive-controller
Are We Speaking About Accessibility?

- Not only accessibility is an attribute, inclusive design is a method.
  - Accessibility focuses primarily on people with disabilities.
    - Ensuring that there are no barriers to serving them.
    - Via testable accommodations able to solve a technical, design, physical, or cognitive barrier to engaging with a system or product.

- Inclusive design will make your systems and products more accessible, but it is not a process for meeting all accessibility standards.

- Accessibility and inclusive design work together to make experiences that are not only compliant with some standards, but usable and open to all.
Universal Design

- Designing interactive systems that are usable by anyone, with any range of abilities, using any technology platform

- A "one size fits all" approach, less prone to consider very specific cases
  - it is strongest at describing the qualities and nature of a final design
  - it might not involve the participation of some excluded communities

- Born for the physical world, then adopted in the digital one
Universal and Inclusive Design: Examples

https://www.youtube.com/watch?v=pqdbbk-ohk
Guidelines
Accessibility... for the Web
Accessibility... and the Web

- Despite the great potential that the Web might have for people with disabilities, this potential is still largely unrealized
  - some sites can only be navigated using a mouse
  - only a very small percentage of video or multimedia content has been captioned
  - very few websites are fully usable by people who are blind

- Web accessibility encompasses all disabilities that affect access to the Web: auditory, cognitive, neurological, physical, speech, visual
  - also situational or temporary impairments
Web Accessibility Relies on Several Components

- Web content
  - text, images, forms, multimedia, scripts, etc.

- User agents
  - browsers, voice browsers, mobile browsers, …, and some assistive technologies

- Authoring tools
  - code editors, content management systems, database scripts, etc.
W3C Web Accessibility Initiative

- The W3C Web Accessibility Initiative (WAI) provides a set of **guidelines** that are internationally recognized as standards
  - Web Content Accessibility Guidelines (WCAG)
  - User Agent Accessibility Guidelines (UAAG)
  - Authoring Tool Accessibility Guidelines (ATAG)
  - Accessible Rich Internet Applications (WAI-ARIA)

- and adopted in laws, e.g., the Italian's Stanca Act that promotes the accessibility of information technology
WCAG 2.0: Example

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References

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