Lecture 13: Accessibility

Nigini Oliveira
Manaswi Saha
Liang He
Jeremy Viny
Jian Li Zheng
A Basic Tenet of Design

You are not designing for yourself
You bring a lot of background to the table
That background is your asset
But you also need to be mindful of it

You need to understand the context of your design and the people who will use it
What this means can vary widely
And may be beyond what you can or will do
Pinkification

This is a really complicated issue

But it is not new

We will start here

Then work through more obvious problems
Finally! For years I've had to rely on pencils, or at worst, a twig and some drops of my feminine blood to write down recipes (the only thing a lady should be writing ever). I had despaired of ever being able to write down said recipes in a permanent manner, though my men-folk assured me that I "shouldn't worry your pretty little head". But, AT LAST! Bic, the great liberator, has released a womanly pen that my gentle baby hands can use without fear of unlady-like callouses and bruises. Thank you, Bic!

It is very, very hard to imagine that the people who made the decision to launch “Bic for Her” were the same women expected to buy them.
(Bic for Her)
Kodak, 1926

Kodak launched this black camera in 1926.

It was successful, but was selling more to men.

Engaged Walter Dorwin Teague to design a model that would appeal to women.

Kodak Vest Pocket Series III (1926)
Kodak launched this black camera in 1926.

It was successful, but was selling more to men.

Engaged Walter Dorwin Teague to design a model that would appeal to women.

His solution was to release the camera in 5 different colors, each packed in a pseudo-silk lined box, where the box and liner matched the color of the camera.

Kodak Vest Pocket Series III (1926)
Walter Dorwin Teague
Vanity Kodak (1928)
Apple launched this white iPod in 2001. It was successful, but was selling more to men. Designed a model that would appeal to women. Their solution was a smaller version of the iPod in 5 different colors.
Jonathan Ive
Apple iPod Mini (2004)

Walter Dowrin Teague
Vanity Kodak (1928)
Observations by Buxton

Same basic design brief
- Same use of color
- Same number and choice of colors
- Same simultaneous release of colors

Teague / Kodak example is a classic
- Known to any trained industrial designer
- Jonathan Ive is an extremely well trained designer
- Draws inspiration from the past
"That is simply good, intelligent design in action. It is also a very **good lesson**: an obsession with the new and original, without a **deep literacy and appreciation for the past**, leads to a path of missed opportunities."
Design, preferences and choice
Differences and Preferences

Our Experiments Findings & Data Sets Blog For Researchers About Us

[Your Title Here]

What will next study be called on LabintheWild?

Come up with future study slogans for LabintheWild and see where in the world your fellow contributors are from! This will take around 5 minutes.

Participate now!

How accurate is your peripheral vision?

Are you curious about how accurate your peripheral vision is compared to others? Learn more about your visual perception by doing these fun tasks! This test takes around 8 minutes.

Participate now!

What is your privacy profile?

Find out how your data sharing behavior compares to others and learn about the Internet of Things. This study takes around 10 minutes.

Participate now!

232 participating countries
Abandoning “One Best Design”

People have different preferences
   We can study these preferences
   We can even predict these preferences

A design that emphasizes one preference will generally disadvantage some other preference
   Not always, because software is malleable

How should we think about differences
   One powerful viewpoint is social justice
People with Disabilities

1 billion people worldwide
  15% of the population

50 million people in US

Including yourself if you are fortunate to live to develop disabilities
A Social Justice Problem

1 billion people worldwide
  15% of the population

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Including yourself if you are fortunate to live to develop disabilities

16% of people in the US
10% of workforce
5% of STEM workforce
1% of PhDs in STEM
A Social Justice Problem

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Including yourself if you are fortunate to live to develop disabilities

Are we reinforcing this or are we working against this?
Accessibility

Designing products/services that are accessible to people with disabilities

Different types of accessibility
- Web/ Mobile (aka Digital)
- Physical
Accessibility is the Law

Americans with Disabilities Act, 1990
  Requires accessibility in employment, public entities and public transportation, public accommodations and commercial facilities

Rehabilitation Act, 1973
  Section 508, 1998
  Mandates federal procurement of accessible electronic and information technologies

National Federation of the Blind vs. Target, 2006
Universal Design vs. Assistive Technology
Personal Texting by Deaf People

Teletypewriter (TTY) used by deaf people in their homes circa 1970

1990s TTY with built-in acoustic modem

SMS texting
<table>
<thead>
<tr>
<th></th>
<th>Permanent</th>
<th>Temporary</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch</td>
<td>One arm</td>
<td>Arm injury</td>
<td>New parent</td>
</tr>
<tr>
<td>See</td>
<td>Blind</td>
<td>Cataract</td>
<td>Distracted driver</td>
</tr>
<tr>
<td>Hear</td>
<td>Deaf</td>
<td>Ear infection</td>
<td>Bartender</td>
</tr>
<tr>
<td>Speak</td>
<td>Non-verbal</td>
<td>Laryngitis</td>
<td>Heavy accent</td>
</tr>
</tbody>
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What have the tech industry done?

- MS Word Accessibility checker ([video](#))
- Chrome Console/Audit Tools ([video](#))
- Accessible Graphics by SAS ([DUB seminar](#))
- Apple promotes 2017 capabilities ([video](#))
Current State of Devices

Slide Rule, Kane et al, ASSETS 2008

Apple VoiceOver
Equal Access to Information

Is this access equal?
Equal Access to Information

Is this access equal?

Some dimensions to consider

Cost
Speed
Accuracy
Ease

Simply being possible is not enough
A Closer Look at Text Entry
Contrast with Braille Input
Contrast with Braille Input
Ability-Based Design

States that all interfaces make assumptions about the abilities needed to use them.

Any one-size-fits-all design is therefore inaccessible to many people.

Instead of asking people to struggle to adapt, asks that interfaces adapt or be adaptable to match the abilities of each person.

Wobbrock, TACCESS, 2011
Perkinput
Perkinput
Speech Input
“Sometimes you don’t follow along as well unless [you are] one on one.”
Accessibility is More than Text Entry

Eyes-Free Yoga, Rector et al, ASSETS 2013
Accessibility is More than Text Entry

Eyes-Free Yoga, Rector et al, ASSETS 2013
Accessibility is More than Text Entry
Accessibility is More than Text Entry

How do you find a bus stop?

Azenkot et al, CHI 2011
Accessibility is More than Text Entry
Project Sidewalk - projectsidewalk.io

Let's create a path for everyone

Start Mapping
Accessibility is More than Text Entry
Project Sidewalk - projectsidewalk.io
What is Disability?

The old model is medical, focused on the individual with a mindset of “fixing” an impairment

Current model understands disability is imposed by society and design not accounting for diversity

“Disability is thus not just a health problem. …the interaction between features of a person’s body and features of the society in which he or she lives. Overcoming the difficulties…requires interventions to remove environmental and social barriers.”
What is Disability?

Impairment
a problem in body function or structure

Activity Limitation
a difficulty encountered by a person in executing a task or action

Participation Restriction
a problem experienced by a person in involvement in life situations
A Social Justice Problem

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15% of the population

50 million people in US

Including yourself if you are fortunate to live to develop disabilities

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“Entrepreneurs … tend to start businesses to solve their own problem”

Diverse participation is critical in effective design
A Basic Tenet of Design

You are not designing for yourself

You need to understand the context of your design and the people who will use it

We need diversity in who is doing design

As a field, our work suffers because of this failing
CSE 440: Introduction to HCI
User Interface Design, Prototyping, and Evaluation

Lecture 15: Accessibility

Katharina Reinecke
Nigini Oliveira
Manaswi Saha
Dhruv Jain
Ashish Chaudhary

Tuesday/Thursday
10:30-11:50