Accessible Computing Seminar

Lecture #7 – Accessibility and Universal Design

Natural Environments Are Mostly Not Inhabitable / Livable For Human Beings

- Throughout history, people have constantly modified and adapted their existing physical environments, to make these more inhabitable and livable.
- However, with the growing expansion of human-made environments, and with increasing complexity of new technologies, discrimination and exclusion of a diversity of users also becomes more eventual.

Would YOU Want to Sit on This Chair?
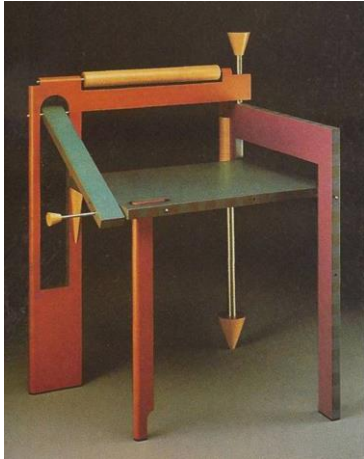
"The only thing important about design is how it relates to people."

Victor Papanek, 1968

Designs We Love To Hate

• Cell phone?

• Adult-proof caps?

• "Blister" packages?

• What else would YOU include?

What Flavor Is YOUR Bathroom Cleanser?

What is Universal Design?

- The term "Universal Design" was coined by architect Ronald L. Mace

- It refers to designing of products and built environments that accessible to all, regardless of age, ability or status in life
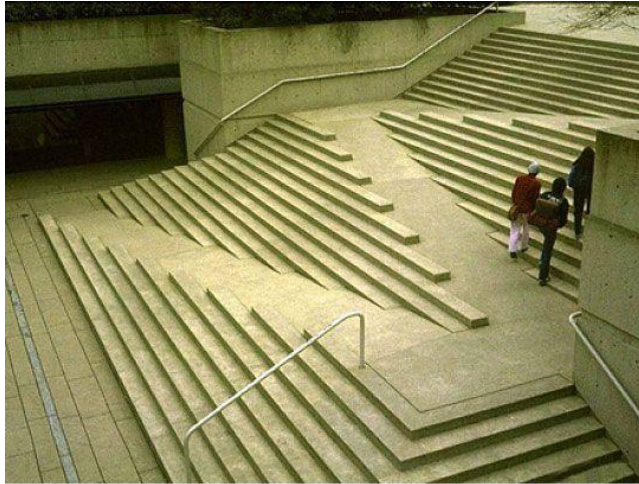
Accessibility Versus Universal Design
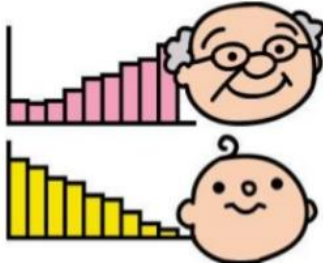

Equality · Accessibility · Universal design

Right-handed vs. Left-handed

Left Handed

Ambidextrous

more awesome pictures at THEMETAPICTURE.COM

Why Universal Design?

- Rise in life expectancy
- Increased survival rate of those with significant injuries, illnesses and birth defects
- This leads to a growing interest AND need for universal design

ADA - Architectural Accessibility

ADA - Reasonable Accommodation

Section 255 of Telecommunications Act

Section 508 of Rehab Act

Workplace Stresses

Working Seniors

"Aging in place"

Home healthcare

Competing For Customers

- About 1 in 7 Americans has a disability

- About 1 in 3 Americans has a family member or coworker with a disability

Remember that you are unique – Just like 300 million others

15% of us have disabilities

5% of us have cognitive disabilities

Thinking

4% of us have sensory disabilities

Seeing

Hearing

9% of us have physical disabilities
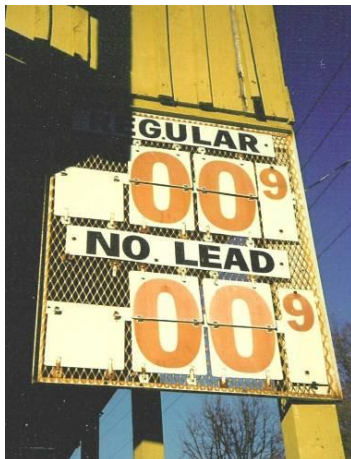
Handling

Mobility

11% of us live with someone with a disability

Some things we may not live to see…

- …but most of us will live long enough to experience disability for ourselves because of…

Modern medical care

Returning war veterans

The way we live, work, …

…and play

Baby Boomers

- Extended careers
- Active lifestyles
- ½ are sandwiched between children and parents

Seniors

- Most rapid growth worldwide
- Desire to age in place
- Most caregivers are females over 75
- Rising number care for grandchildren

The 7 Principles of Universal Design

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive Use
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use

Principle 1: Equitable Use

• The design is useful and marketable to people with diverse abilities.

Principle 1: Equitable Use

- Some children standing;
- Some children in wheelchairs

Principle 2: Flexibility in Use

- The design accommodates a wide range of individual preferences and abilities.
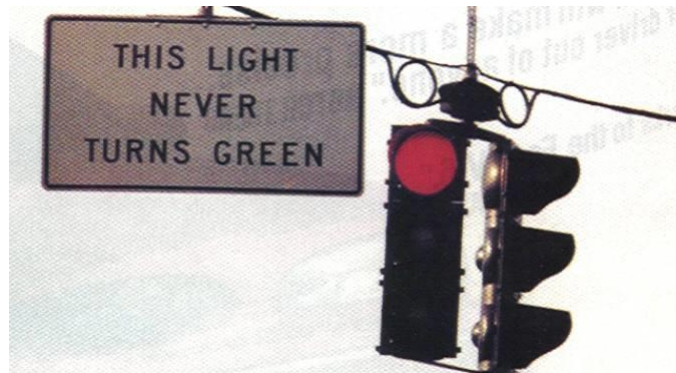
Principle 2: Flexibility in Use

Principle 3: Simple and Intuitive Use

- Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or concentration.

Principle 3: Simple and Intuitive Use

Handling and storage instructions include which end is up, keep it dry, etc.

Principle 4: Perceptible Information

- The design communicates information effectively to the user, regardless of the environment or the user's abilities

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Principle 4: Perceptible Information

Principle 5: Tolerance for Error

- The design minimizes hazards and negative consequences of accidental actions.

Principle 5: Tolerance for Error

- The design minimizes hazards and negative consequences of accidental actions.
- "CAUTION: It is not recommended that children or pets regularly drink water from the toilet, even though the bowl water is not harmful to children or pets."

Label on toilet bowl cleaner bottle

Principle 6: Low Physical Effort

- The design can be used efficiently and comfortably and with a minimum of fatigue.

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Principle 7: Size and Space for Approach and Use

- Appropriate size and space is provided for use, regardless of user's body size or posture.

Principle 7: Size and Space for Approach and Use

Principle 7: Size and Space for Approach and Use

Better products for everyone

Acela Express

• Seniors and people with
  disabilities are especially
  important in highly competitive
  markets.

Duracell hearing aid batteries

- Packaging that reduces effort is as important to usability as the product itself.

Florian Ratchet-Cut Shears

- Addressing the needs of customers with disabilities results in products everyone wants.

Ford's "Third Age Suit"

- Young designers and engineers can be taught to "think ageless".

Gold Violin

- Successful marketing respects customers' lifestyles – whatever their age or ability.

Leviton Manufacturing Company

- "Universal design has become an extremely important idea to us – maybe the most important idea."

Oxo Good Grips

- Sometimes universal design markets itself.

Philips Healthcare Services

- Simple, intuitive use is critical to success of home healthcare technologies.

Tupperware

- Products that last through several generations should be usable by people of all ages and abilities.

Designing for "average" users

- Some of us are just a little more average than others

- Age, disabilities, and situations make each of us unique…