Accessibility Seminar
Persons with Disabilities

Richard Ladner
University of Washington

Computer Scientists

TV Raman
Google

Chieko Asakawa
IBM Japan

Computer Scientists

Raja Kushalnagar
Christian Vogler

Computer Scientists

Anindya ‘Bapin’ Bhattacharyya
Helen Keller National Center

Engineer

Iraq War Veteran
Jonathan Kuniholm

Geerat Vermeij

Geerat Vermeij, Ph.D.
Evolutionary Biologist
The Message

- People with disabilities can do almost anything in almost any scientific field.
- People with disabilities are often highly motivated to pursue careers in accessible computing research.

What We'll Do Today

- Purpose of the Seminar
- Data
- Models of Disability
- Terminology
- Impact of Access Technology

Purpose of the Seminar

- Learn about persons with disabilities and the technologies that give them access.
  - Practitioners
  - Researchers
  - Users
- Focus on mobile technologies
  - Android Platform
  - iPhone Platform

Tentative Schedule

- 10/07/09. Richard E. Ladner, CSE. Accessibility technology and research.
- 10/28/09. Alan Borring, CSE. One-bus-Away.
- 11/04/09. Shaun Kane, iSchool. Survey on mobile devices used by persons with disabilities.
- 12/09/09. Shiri Arzenek, CSE. iPhone Accessibility Applications.
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Basic Data

• 650 million people world-wide are disabled
• 16% of US population to ages 15 to 64 is disabled.
• 10% of the workforce is disabled
• 5% of the STEM workforce is disabled
• 1% of PhDs in STEM are disabled

Demographics US Population

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2002

Demographics Ages 14-21


World Health Organization

• International Classification of Functioning, Disability and Health (ICF), 2001
  – Health: umbrella term for disease, disorder, injury, or trauma.
  – Functioning: umbrella term for body functions and structures, activities, and participation.
  – Disability: umbrella term for impairments, activity limitations, and participation restrictions.
Models of Disability

- **Medical Model**
  - Disabled people are patients who need treatment and/or cure.
- **Education Model**
  - Disabled youth need special education.
- **Rehabilitation Model**
  - Disabled people need assistive technology and training for employment and everyday life.
- **Legal Model**
  - Disabled people are citizens who have rights and responsibilities like other citizens. Accessibility to public buildings and spaces, voting, television, and telephone are some of those rights.
- **Social Model**
  - Disabled people are part of the diversity of life, not necessarily in need of treatment and cure. They do need access when possible.

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What Term Should I Use?

- Person with a disability
- Disabled person
- Person with a physical impairment
- Physically impaired person
- Person with a handicap
- Handicapped person
- Person who is physically challenged
- Physically challenged person

What Term Should I Use?

- Person with a disability (PC in US, not outside)
- Disabled person (PC in England)
- Person with a physical impairment (medical)
- Physically impaired person (no)
- Person with a handicap (no)
- Handicapped person (no)
- Person who is physically challenged (no)
- Physically challenged person (no)

Let’s Get More Specific

- **Visually impaired**
  - Popular in education and medical circles but may emphasize the negative
- **Blind**
  - A term that is accepted by blind people
- **Low vision**
  - A term that is accepted by low vision people
- **Partially sighted**
  - A term used by some sighted people to describe themselves

Terminology Matters

- Working with the National Association of the Deaf
- Working with the National Federation of the Blind
- A research paper review
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Technology

• Prosthesis
  – Augmentation to restore lost function. Call it a “cure.”
• Assistive technology
  – Popular in rehabilitation literature. Emphasis on the need for assistance.
• Access technology
  – Allows an activity that would be difficult to impossible to achieve without it. Emphasis not on restoring function, but on achieving an end goal by whatever means possible.
  – Examples: Screen readers, video phones, wheelchairs

Personal Texting by Deaf People

TTY used by deaf people in their homes circa 1970

Modern TTY with built-in acoustic modem

Instant Messaging

Optical Character Recognition for Blind People

Kurzweil Machine Circa 1976

K-NFB Reader Mobile

Speech Recognition for Hands Free Access

UW student 2006

Built-in Accessibility

Windows 7 Magnifier

iPhone VoiceOver
**Trend**

Accessibility Solutions → Mainstream Solutions

**Potential Trend**

Standard Programmable Platforms → Multi-function Accessibility Solutions on Standard Platforms

Laptops, notebooks, phones,... are programmable!!

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**Example: Digital Pen Tactile Graphic**

Digital Pen

Tactile Graphic

Josh Scotland, RL

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**What's the problem?**

*The New York Times*

Tuesday, September 15, 2009

**Insurers Fight Speech-Impairment Remedy**

Insurers, including Medicare, won’t pay for $300 speech solution on an iPhone, but will pay for an $8,000 single function “medical device” for text-to-speech generation.

Why? The iPhone is not considered to be a medical device.

Disabled people viewed only in the medical model.

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**Possible Future Scenario**

- Blind person buys a standard cell phone and data service.
- Downloads accessibility applications to suit needs.
  - GPS application for location and directions
  - Bar code reader
  - OCR application
- Move from medical model to social model

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**Discussion**