Cultural Differences

- Culture is the collective programming of the mind, which distinguishes the members of one human group from another (Hofstede, 1980).
- Culture influences interface acceptance (Evers and Day, 1997)
- Design preferences that were especially related to culture were colors, menus, input devices, sounds and multimedia
- Coca cola in Chinese means ‘bite the wax tadpole’
- Coco in Portuguese is the opposite of fragrance
- Dogs = low creature and insult in many cultures
- Many cultures do not understand baseball/football terms (e.g. "Got to first base", "Out in left field").

What to do then?

- Globalization
  - Product is “neutral” → “One size fits all”
  - Removing all culturally specific features from the system
  - If needed, changes at the interface level—not functionality
- Localization
  - Technical: e.g. sites w. reduced graphics in countries w. less advanced Internet connection
  - National Localization: following national boundaries
  - Cultural Localization: following cultural boundaries
- But careful, culture is not bounded by nations
  - One culture in many nations
  - One nation with many cultures

Hofstede’s model
What does it mean?

Hofstede’s 5 Dimensions of Culture

► **Power-distance**: the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally
► **Individualism**: the degree to which individuals are integrated into groups
► **Masculinity**: the distribution of roles between the genders
► **Uncertainty avoidance**: a society’s tolerance for uncertainty and ambiguity
► **Long-term orientation**: how a society deals with virtue regardless of truth

Culture vs. UI: Power Distance

► **Metaphors**
  - High: Institutions, buildings with clear hierarchy: schools, government, monuments, etc.
  - Low: Institutions, buildings with equality options: play/games, public spaces, etc.
► **Mental Models**
  - High: Reference data with no relevancy ranking
  - Low: Less structured data with relevancy
► **Navigation**
  - High: Restricted access, choices; authentication; passwords
  - Low: Open access, multiple options, sharable paths

Culture vs. UI: Individualism vs. Collectivism

► **Interaction**
  - Individualist: Keyword searches; active-oriented; multiple devices; customizable;
  - Collectivist: Limited, official devices; role driven
► **Appearance**
  - Individualist: Images of products, people; low context; hyperbolic, dynamic speech; market-driven topics, imagery, language; customizable; direct, active verbs
  - Collectivist: Images of groups, organizations; images of roles; high context; official, static terminology; institution-driven topics, imagery, language; passive verbs
Power Distance vs. Individualism-Collectivism

<table>
<thead>
<tr>
<th>Low</th>
<th>Power Distance Index</th>
<th>High</th>
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<tbody>
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Singapore Management University

Culture vs. UI: Masculinity vs. Femininity

- **Metaphors**
  - **Masculine**: Sports-oriented; competition-oriented; work-oriented
  - **Feminine**: Shopping carts; family-oriented

- **Mental Models**
  - **Masculine**: Work/business structures; high-level, "executive views"; goal-oriented
  - **Feminine**: Social structures; detailed views; relationship-oriented

- **Navigation**
  - **Masculine**: Limited choices, synchronic
  - **Feminine**: Multiple choices; multi-tasking, polychronically

Culture vs. UI: Masculinity vs. Femininity

- **Interaction**
  - **Masculine**: Game-oriented; mastery-oriented; individual-oriented
  - **Feminine**: Practical, function-oriented; co-operation-oriented; team oriented

- **Appearance**
  - **Masculine**: "Masculine" colors, shapes, sounds
  - **Feminine**: "Feminine" colors, shapes, sounds; acceptance of cuteness

Power Distance vs. Masculinity

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<thead>
<tr>
<th>Low</th>
<th>Power Distance Index</th>
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<td>* Sweden</td>
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</table>
Culture vs. UI: Uncertainty Avoidance

► Metaphors
  - **High**: Familiar, clear references to daily life; representation
  - **Low**: Novel, unusual references; abstraction

► Mental Models
  - **High**: Simple, clear articulation; limited choices; binary logic
  - **Low**: Tolerance for ambiguousness, complexity; fuzzy logic

► Navigation
  - **High**: Limited options; simple, limited controls
  - **Low**: Multiple options; varying, complex controls

Wagamama: only noodle

Giraffe: Food from around the world
Culture vs. UI: Long-Term Orientation

Metaphors
- **Long**: Stable family, Father; Mafia, IBM in 1950s
- **Short**: Interchangeable roles, jobs, objects

Mental Models
- **Long**: Love/devotion; social coherence, responsibility, support
- **Short**: Liberty; social incoherence/irresponsibility, efficiency

Navigation
- **Long**: Tolerance for long paths, ambiguity; contemplation-oriented
- **Short**: Bread-crumbs, taxonomies; quick-results; action-oriented

Interaction
- **Long**: Preference for face-to-face communication, harmony; personalized messages; more links to people; live chats; interaction as “asking”
- **Short**: Distance communication accepted as more efficient; anonymous messages tolerated; conflict encouraged; performance critical communication

Appearance
- **Long**: Cultural markers: flags, colors, atonal images; soft focus; warm, fuzzy images; pictures of groups inviting participation, suggestions of intimacy and close social distance
- **Short**: Minimal and focused images; short borders, lines, edges; concentration on showing product

Moscow Tourism

Thailand Tourism

Glocalization

Ability Differences: We’re all disabled

When?
- Environment: in a foreign country, in a bouncing vehicle, in the dark
- Non-optimal health: lack of sleep, drunk, fever
- Injury: hit a finger with a hammer
- At the two extremes of our lives
- Changing role of information technology: new products, unfamiliar interface

Disability conditions:
- Transient: Noisy room
- Temporary: Broken arm
- Permanent: For most, this one is labeled a disability
People with no useful vision

► Do not use a mouse
► Relay on audio equivalence to understand content → but how do you present layout?
► Braille signs are provided to present information where audio is unavailable (but only 10% blind persons read Braille)

► All content must be accessible from keyboard only
► Images, photos and graphics are unusable without meaningful description (so just putting ALT tag is not really a remedy)
► Colors are unusable
► Navigation may be difficult / confusing as many are based on 2D model
► Varies on whether they’re congenitally blind or not

People with limited cognition

► Users may have difficulty focusing on or comprehending sections of text
► Complex layouts or inconsistent navigational schemes may be confusing
► May need content in >1 form
► Animated images and other irrelevant information distract from main information (for those with ADHD, children, older persons)

► Simplify the layout as much as possible
► Provide clear and consistent site navigation
► Organize information into manageable “chunks”
► Use icons, illustrations, arrows, audio, video or other multimedia to enhance textual information

Accessibility

► Access to physical spaces for people with disabilities has long been an important legal and ethical requirement
► Now becoming increasingly so for information spaces.
► Legislation requires software to be accessible.
  ▪ Americans with Disabilities Act (ADA)
  ▪ Section 508
► EU and W3C have declarations and guidelines on ensuring that everyone can get access to information that is delivered through software technologies (EuroAccessibility initiatives, WCAG).

Exclusions

► Physical
  ▪ Inappropriate siting of equipment
  ▪ Input and output devices making excessive demands on user abilities.
► Conceptual
  ▪ complicated instructions or obscure commands
  ▪ users cannot form a clear mental model of the system.
► Economical
  ▪ people cannot afford some essential technology.
► Social
  ▪ equipment is unavailable at an appropriate time and place
► Cultural
  ▪ making inappropriate assumptions about how people work and organize their lives

Overcoming barriers to access

► Two main approaches:
  ▪ Universal/inclusive design
  ▪ Assistive technology
► Universal design
  ▪ goes beyond the design of interactive systems and applies to all design endeavours.
  ▪ grounded in a certain philosophical approach to design encapsulated by an international design community
  ▪ if a design works well for people with disabilities, it works better for everyone
► Inclusive design is more pragmatic → doesn’t claim to cover the whole population

Principles of Universal Design

1. Equitable Use: The design does not disadvantage or stigmatize any group of users.
2. Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.
Principles of Universal Design

3. Simple, Intuitive Use: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.

4. Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.

Principles of Universal Design

5. Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. Low Physical Effort: The design can be used efficiently and comfortably, and with a minimum of fatigue.

Principles of Universal Design

7. Size and Space for Approach & Use: Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user’s body size, posture, or mobility.

Assistive Technology

- Technology designed to be utilised in device or service to increase, maintain, or improve functional capabilities of individuals with disabilities
- Provide user with alternative technology to operate the system
  - allowing them to operate the system through an alternative interface (e.g. input device).
  - allowing them to modify some parts of the system.

<table>
<thead>
<tr>
<th>Accessible technology</th>
<th>Assistive technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenient (doesn’t require people to own additional device)</td>
<td>Necessary for people with multiple disabilities</td>
</tr>
<tr>
<td>Removes the stigma of special aids</td>
<td>Sometimes more commercially/practically viable</td>
</tr>
</tbody>
</table>

Assistive technologies

- Screen readers to read application content
- Screen enlargers which allow people to set and move the area of focus
- Voice input is increasingly available - not just for text entry - also as substitute for mouse/keyboard control
- Keyboard filters can compensate for tremor, erratic motion, slow response time
- Assistive listening devices, TTY/TDD, and visual alerting systems
- Augmentative or Alternative Communication (AAC) devices
- Text summarization software
- Color adjuster/overlay (for people with dyslexia)

“Section 508”

- Section 508 of the Rehabilitation Act Amendments of 1998
  - Apply to Electronics and Information Technology procured, developed, used, maintained by Federal departments and agencies
  - Provides same level of access to those with disabilities as to those without unless doing so would pose an undue burden on the federal department or agency
- Types of products covered by section 508 include:
  - Software applications and operating systems
  - Web based information or applications
  - Telecommunications functions
  - Video or multi-media products
  - Self contained closed products
  - Computers
Web Accessibility: The Bigger Picture

**WCAG**

- Web Content Accessibility Guidelines, v.2
  - Cooperatively developed international standard
  - POUR – A website should be Perceivable, Operable, Usable and Robust
  - 4 general principles, 12 guidelines, 61 success criteria
  - Clear criteria → 1.4.3 The visual presentation of text and images of text has a contrast ratio of at least 4.5:1
  - Flexible, adaptable → 2.2.2. Blinking is allowed if <3/s or can be stopped

- Developed by WAI (Web Accessibility Initiatives)
  - Standards making body for the Web
  - International, multi-stakeholder development
  - Formal process for broad public review

**WCAG 2.0 suite of documents**

- **Guidelines**
  - Principles
  - Success Criteria
  - Techniques

- **Techniques for WCAG 2.0**
  - Instruction for Developers
  - Detailed Reference
  - Understanding WCAG 2.0

- **WCAG 2.0**
  - Principles
  - Success Criteria
  - Techniques