Mapping User Interface Design to Culture Dimensions

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Introduction

- E+M-Commerce: global distribution of products and services
- User diversity: demographics; individual needs/wants; goals, tasks, roles
- User-interface design issues: complex and challenging; can improve performance and appeal
- Cross-cultural issues: new challenge; what is relationship of culture dimensions to user-interface components?
User-Interface and Information-Visualization Design

- User-interface components
  - **Metaphors:** Essential concepts in words, images, sounds, touch
  - **Mental Models:** Organization of data, functions, tasks, roles, or people at work or play, static or mobile
  - **Navigation:** Movement through mental models via windows, dialogue boxes, buttons, links, etc.
  - **Interaction:** Input/output techniques, feedback
  - **Appearance:** Visual, verbal, acoustic, tactile

- Information visualization:
  - Tables and forms
  - Charts
  - Maps
  - Diagrams
In a global economy, should every Website look like this?
Are mobile devices and services in Asia right for the rest of the world?

- Does everyone have one-hour train commutes?
  - USA (auto) commutes = 15.4-31.2 min. (USA Today, 6 Aug. 2001)

- How does “usability” and “user experience” differ among cultures?
Which Website for Saudi Arabia is Better?

- How/what to represent the target culture?
- Should designs impose foreign values?
Business Challenges

- Determine optimum characteristics: Relies on market and user data
- Assist and appeal to target markets: Achieves short-term and long-term success
- Avoid too many variations: Wastes time and money
Globalization Development Process

- **Plan:** Include global issues in all steps
- **Research:** Investigate global sets of users, issues
- **Analyze:** Determine global criteria, targets
- **Design:** Visualize global alternatives
- **Implement:** Use tools that facilitate global variations
- **Evaluate:** Test prototypes with global user sets
- **Document:** Include global guidelines, specs
Globalization Guidelines Topics

- Users: Demographics; needs/wants; tasks, roles
- Technology: Platforms, access, support
- Business: Models, success metrics
- Metaphors
- Mental models
- Navigation
- Interaction
- Appearance
Guidelines Considerations: Appearance Details for Color

- Follow perceptual guides for legibility, warm/cool, 5±2 variations; warning/danger colors
- Respect national, cultural, religious usage:
  - Sacred examples: White/blue/gold (Western) vs. green/blue (Arab) vs. yellow (Buddhist)
- Consider attitudes toward high- vs. low-chroma (pastel) colors
Example: Color Sets

- Sacred Colors

- High- vs. Low-Chroma Colors
Color preferences: National Flag Colors
Finnish Backgrounds for USA?
Dimensions of Culture Theorists

- Kluckhohn and Strodtbeck: Value Orientations
- David Victor: Cultural Features
- Edward Hall: Context and Time
- Fons Trompenaars (including Parson’s Pattern Variables): *Riding the Waves of Culture*
- Geert Hofstede: Cultural Dimensions
Kluckhohn and Strodtbeck: Value Orientations, 5 Existential beliefs

- Character of human nature (good, evil, mixed; changeable or given)
- Relationship to nature (mastery, harmony, mastered by)
- Time (past, present, future orientation)
- Human action (doing, being, becoming)
- Relationships to others (individualism, lineality, collectivity)
Victor, Hall, Trompenaars: Theoretical Bases

- Structure of language and culture
- Context: focus on verbal/ nonverbal communication; information in explicit code or in physical environment
- Time: focus on past/ present/ future; one/ many things at a time
- Additional existential dimensions
Culture Dimensions: Geert Hofstede

- Hofstede examined IBM employees in 50 countries, 1978-83
- Statistically valid data and analysis
- His focus....
Hofstede’s 5 Dimensions of Culture

- 1. Power-distance
- 2. Collectivism vs. individualism
- 3. Femininity vs. masculinity
- 4. Uncertainty avoidance
- 5. Long- vs. short-term time orientation
Culture vs. UI : Power Distance, 1/2

- **Metaphors**
  - **High**: Institutions, buildings with clear hierarchy: schools, government, monuments, *etc.*
  - **Low**: Institutions, buildings with equality, options: Summerhill, 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: Power Distance, 2/2

- **Interaction**
  - **High:** Severe error messages: “Entry Forbidden,” “You are wrong;” wizards or guides lead usage
  - **Low:** Supportive error messages, cue cards

- **Appearance**
  - **High:** Images of leaders, nations; official music, anthems; formal speech
  - **Low:** Images of people, daily activities; popular music; informal speech
Culture vs. UI: Individualism vs. Collectivism, 1/2

- Metaphors
  - **Individualist:** Action-oriented, tools
  - **Collectivist:** Relationship-oriented

- Mental Models
  - **Individualist:** Product- or task-oriented
  - **Collectivist:** Role-oriented

- Navigation
  - **Individualist:** Individual paths; popular choices, celebrity choices; stable across roles; customizable
  - **Collectivist:** Group-oriented, official choices; changes per role
Culture vs. UI: Individualism vs. Collectivism, 2/2

- **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 Power Distance Index</th>
<th>High Power Distance Index</th>
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</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Collective</td>
</tr>
<tr>
<td>• USA</td>
<td>• USA</td>
</tr>
<tr>
<td>• Germany</td>
<td>• Japan</td>
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<tr>
<td>• Finland</td>
<td>• Brazil</td>
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<tr>
<td>• Costa Rica</td>
<td>• Korea</td>
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<tr>
<td>• Italy</td>
<td>• Mexico</td>
</tr>
<tr>
<td>• South Africa</td>
<td>• Singapore</td>
</tr>
</tbody>
</table>

Countries with a low Individualism Index:
- Italy
- South Africa
- Costa Rica
- Japan
- Brazil
- Korea
- Mexico
- Singapore

Countries with a high Individualism Index:
- USA
- Germany
- Finland
- Israel

Countries with a low Power Distance Index:
- France
- Brazil
- Korea
- Mexico
- Singapore

Countries with a high Power Distance Index:
- USA
- Germany
- Finland
- Israel

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De Technische Universiteit Eindhoven

verzorgt ingenieurs-, ontwerpers- en lerarenopleidingen en postacademische cursussen.

Het onderwijs stelt op de eigen onderzoekactiviteiten en is ontworpen om docenten en studenten te gebruiken moderne informatie- en communicatiemiddelen.

De TUE geeft leiding aan vooraanstaande Nederlandse onderzoeksinstituten en heeft een sterke positie in internationale netwerken.

Voor technologie-intensieve bedrijven is de TUE een natuurlijke partner.
Glacier Bay National Park

Electronic Visitors Center

Welcome Visitors!

Click here for my welcome letter.

Tomie Patrick Lee
Superintendent

Visiting Glacier Bay

When to Come
How to Get Here
Barrett Cove Services
Visitor Services Directory

Activities in the Park
Camping
Cruses and Tours

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National Parks of Costa Rica

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National Parks of Costa Rica: Link to What’s Cool
Culture vs. UI: Masculinity vs. Femininity, 1/2

- **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, polychronic
Culture vs. UI: Masculinity vs. Femininity, 2/2

- **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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<tbody>
<tr>
<td>Feminine</td>
<td>Masculine</td>
</tr>
<tr>
<td>Norway, Sweden</td>
<td>Japan, Italy, Germany, South Korea, Singapore, Finland, South Africa, USA, Austria</td>
</tr>
</tbody>
</table>

- Austria
- USA
- Japan
- Italy
- South Africa
- Norway
- Sweden
- Singapore
- South Korea
- Finland

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Excite: For Japanese Men: Cars/Stock Information
Japanese Excite for Women:
Pale Colors and Recipe
Swedish Excite Interface: No Special Website for Women
Culture vs. UI: Uncertainty Avoidance, 1/2

- **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
Culture vs. UI: Uncertainty Avoidance, 2/2

- **Interaction**
  - **High**: Precise, complete, detailed input and feedback of status
  - **Low**: General, limited, or ambiguous input and feedback of status

- **Appearance**
  - **High**: Simple, clear, consistent imagery, terminology, sounds; highly redundant coding
  - **Low**: Varied, ambiguous, less consistent imagery, terminology, sounds
Sabena: Limited Choices
British Airways: Many Choices

- Book Online
  - Find Flights, Fares & Book Online

- Special Offers
  - From the US
  - From the UK
  - From elsewhere

- Flight Info
  - Schedules
  - Arrivals & Departures
  - Airport Information

- Executive Club
  - Our Frequent Flyer Programme

- On Holiday
  - City Miniguide
  - Our Guide to London
  - British Airways Holidays

- Worldwide
  - Our website in your country: UK US

- Highlights
  - Information on how British Airways is counteracting the Millennium Bug
  - Book online now and you could win a three-night trip to New York with £500
Culture vs. UI: Long-Term Orientation, 1/2

- Metaphors
  - Long: Stable family, Father: Mafia, Chinese state businesses, IBM in 1950s
  - Short: Interchangeable roles, jobs, objects

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

- Navigation
  - Long: Tolerance for long paths, ambiguity; contemplation-oriented
  - Short: Bread-crumb trails, taxonomies; quick-results; action-oriented
Culture vs. UI: Long-Term Orientation, 2/2

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 tolerated, even encouraged; performance critical in communication

Appearance

- **Long**: Cultural markers: flags, colors, national 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 task or product
Siemens German Website: Western

Produkte & Lösungen

Siemens Chinese Website: Eastern
## Research Objective: Map Culture Dimensions to UI Components

<table>
<thead>
<tr>
<th>Culture Dimension</th>
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Additional Sources of Insight

- Dimensions of persuasion, trust, intelligence
- How do culture dimensions relate to user-interface components?
  - Discussion based on Marcus and Gould (Emilie Gould, goulde@rpi.edu) HCII 2001 tutorial and work of participants:
    - Cynthia Abat
    - Daniela Busse
    - Makoto Imamura
    - Rana El Kaliouby
    - Michael Paetan
    - Mark Trammel
    - Everyl Yankee
Dimensions of Persuasion

- Reciprocation
- Consistency
- Social validation
- Liking
- Authority
- Scarcity

Dimensions of Trust

- Attraction: Attractive people trusted more
- Dynamism: Activity, e.g., moving hands, text
- Expertness: Relevant skills
- Faith: Belief in predictable future
- Intentions: Revealed objectives and goals
- Localness: Presumed similar values, behavior
- Reliability: Dependable, predictable, consistent

Dimensions of Intelligence

- Verbal/Image comprehension
- Word/image fluency
- Numerical/graphical fluency
- Spatial visualization
- Associative memory
- Perceptual speed
- Reasoning
- Image: Self/Other awareness

Gardner, *Frames of Mind*, 1985
Even Cognition Culture-Biased?

- Nisbett, et al: Basic patterns of thought are cultural
- Western “rational” vs. Eastern simultaneous conflicts
- Tests conducted on Japanese, USA participants

Conclusion

- Needed: Relation of culture dimensions to user-interface components
- Needed: Specifications per target markets
- Needed: Global user-interface and information-design tools
- Future: Tools, templates, libraries of clip content
A Challenge: Bone vs. Bottle

Themes based on presentation by Donald Day, IWIPS 1999
Selected References, 1/2

- Hofstede, *Cultures and Organizations*, 1991, 97
Selected References, 2/2

- DelGaldo and Nielsen, ed., *International User Interfaces*, 1996
- Nielsen, ed., *Designing User Interfaces for International Use*, 1990
Other Info Sources

- Proceedings: HCII, IWIPS, CHI, etc.
- Corporate Websites: IBM, Microsoft, Sapient, etc.
- LISA Localization Industry Primer: www.LISA.org
- ISO standards documents
- AM+A Bibliography and URL list
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