Extending HCI Principles to Other Cultures and Countries

CSE 510

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한식당

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연관된 학부모라면 클릭

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연합뉴스  [긴급] 삼성 '임금등 가상현금' 특혜 제공로

- 넥플씨크 이사를 짐 벌고
- 실패한 할인 편리 판매
- 외도에 집중한 문화

상영원에 팀 챔피언주

- 골프에 집중한 문화
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Adapting user interfaces to a user’s geographic background can increase ...

- user satisfaction
- efficiency
- market share
We design technology for WEIRD users
Learning goals

Be able to answer

- What is culture?
- What are its effects on perception, preferences, and performance?
- What can go wrong if I don’t know about this?
- So how do I design for different cultures?
What is this intangible beast called culture?
What is culture?

- culture of shared values
- national culture: culture = country?
- organizational culture
- individual culture
Some dimensions of individual culture

Culture

- Perception
- Preferences
- Performance
- Behavior
- Consequences
- How-to

- Nationality
- Country of residence
- Former residence(s)
- Mother tongue
- Other languages
- Hobbies/Skills
- Age
- Gender
- Occupation
- Education
- Religion
- Politics
- Social structure
- Work environment
Cultural classifications

- goal: find a system of regularity to the way that ideas, information and concepts are shared
- does not define the individual
- shows tendencies within cultural groups
- cultural groups can be national, organizational, unions of national cultures...
Edward T. Hall

- investigated cultural differences in communication styles

High context cultures

- include much of the Middle East, Asia, Africa, and South America
- emphasis on interpersonal relationships
- development of trust before any business transaction
- words are less important than context (tone of voice, gestures, status)
- communication is more indirect and formal

Low context cultures

- North America and much of Western Europe
- communication is straightforward, and action-oriented
- “trust is good, a contract is better”
• investigated national culture and work-related cultural values

• measured differences across a multinational corporation (IBM)

• Outcome: four (later five) cultural dimensions

• Each country is represented by five scores, one for each of these dimensions

• Facilitates a comparison of national cultures, e.g., for intercultural business communication

• describes tendencies, not individuals!
Hofstede’s cultural dimensions

Small versus large Power Distance
- equality
- power and status
- upward mobility

Individualism versus Collectivism
- individualists are expected to develop and show their personality
- collectivists define themselves and act as members of a group
How does culture affect our perception?
Information perception and processing

- early in life our brains are particularly malleable
- cultural exposure affects how our brain develops
- this leads to measurable neuro-anatomical changes in the brain
- as a result, we differ in how we perceive, process and reason about information

[Nisbett and Masuda 2003; Norenzayan and Nisbett 2000, Gutchess et al. 2006; Goh et al. 2007]
Cognitive styles

Analytic thinkers (common in Westerners)
- detachment of objects from the context
- tendency to focus on objects’ attributes
- categorical rules to explain and predict behavior

Holistic thinkers (most East Asians, Mid-Easterners, South Americans, Africa, ...)
- context, attention to relationships between the focal object and the field
- explain events on the basis of such relationships

Effects:
- cultural routines seem to encourage the reliance on one system
- determines whether we scan web sites in a circular manner (East Asians), or sequentially traverse different areas (Westerners)

[Norenzayan et al., 2007; Nisbett, 2003]
Object recognition and focus

Westerners...

- attend to individual objects more than East Asians
- show increased activity in the lateral occipital complex, responsible for object recognition

East Asians...

- show greater neural engagement if the background of an image is changed
- can memorize foreground objects better than Westerners despite changes in the background

[Gutchess et al. 2006; Goh et al. 2007; Norenzayan et al., 2007; Nisbett, 2003]
Object classification

Westerners...
- are taught nouns first
- emphasize categories
- usually group objects according to their taxonomic classification

East Asians...
- acquire a broad vocabulary of verbs first
- organize objects based on their relationships to another (e.g. car and driver)

[Ji et al. 2004; Nisbett and Masuda 2003, Boroditsky 2009]
Object arrangement and spatial cognition

- people usually arrange objects according to their reading direction (e.g. for temporal ordering)

Geocentric frame
- base references on cardinal directions ("the student in the east of the classroom")
- temporal ordering follows cardinal directions (e.g., East to West)
- most populations in the world

Egocentric frame
- describe objects relative to the self ("the student on my left side")
- temporal ordering usually follows the reading direction
- industrialized populations (e.g., Japanese, English, Dutch...)

[Majid et al., 2004]
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<thead>
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- **Stimulus**
- absolute length
- relative length
- Are Americans and Japanese both equally good or bad at reproducing the line with a relative and absolute length?
- Is one cultural group better at one condition than the other?
- Why?
Japanese were better in reproducing the line in proportion to the size of the frame.

Americans were better in ignoring the frame and reproducing the absolute length of the line.
How does culture affect our user interface preferences?
Effects of culture on design preferences

• it is likely that our environment influences our user interface preferences (e.g. for orderliness, colorfulness, information density...)
• national culture can be a good predictor for preferences (to a certain extent)
Do user preferences really differ across countries?

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<tbody>
<tr>
<td>Thailand</td>
<td>Rwanda</td>
<td>Switzerland</td>
<td></td>
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- **bright colors**
- interface areas color-coded
- high image-to-text ratio
- medium support
- step-by-step guidance through dialogs

- **saturated, contrasting colors**
- interface areas color-coded
- high image-to-text ratio
- wizard/maximum support
- nested tree navigation

- **monotone colors**
- minimalist
- low image-to-text ratio
- low support
- nested tree navigation

[Reinecke and Bernstein 2011b]
Effects of culture on trust

• visual appeal and perceived usability is a first step towards trust
• both are dependent on culture!
• we trust web sites that correspond to our understanding of a professional look
If culture affects perception and preferences, does it also affect our performance?
Effects of culture on performance

- US users were found to perform better with the US version of a website than with a Greek or Italian version

- multinational users perform better with interfaces that cater for their ambiguous cultural background, than if presented a US interface

[Choong and Salvendy 1998, Sheppard and Scholtz 1999; Badre 2000; Ford and Gelderblom 2003; Reinecke and Bernstein, 2011]
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How does culture affect our behavior?
autonomous decision-making

value self-expression

collective decision-making

The diagram illustrates various aspects such as autonomous decision-making, value self-expression, and collective decision-making.
[Reinecke et al., CSCW’13]
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**1 participant**

**Participant 1**

**NOVEMBER 2012**
- Wed 21
- Thu 22
- Fri 23

- [ ]
- [ ]
- [ ]

[Reinecke et al., CSCW’13]
Seeing others’ answers affects choices
fraction of consensus options

Collectivists

Individualists

[Reinecke et al., CSCW’13]
Culture influences ...

- perception
- visual preferences
- performance
- behavior
What happens if we don’t design for culture?
Problems gaining market share
Problems gaining market share

- Problems gaining market share
- Culture
- Perception
- Preferences
- Performance
- Behavior
- Consequences
- How-to
Problems gaining market share
Problems persuading users

- Less than 2% of Japan’s online population uses Facebook
- In the US it is more than 60%.
Convincing users to like your site

- people leave your web site much easier than your room in real life
- if your user interface is not intuitive and trustworthy to them, they won’t use it
- different cultures have different expectations about the buying process (anonymity vs. personal advice, building a relationship, etc.)
- credit cards are not everywhere as common as in the US (Islamic law even forbids their use)

[Tan et al., N/A; Bloch 1995]
Safety Problems

- developers unconsciously embed their own cultural values into software
- problems occur if users and developers differ in their cultural background
- Eastern Minds in Western Cockpits [Li et al., 2007]
- Columbian Avianca Airlines crashes: partly a result of national culture [Helmreich 1994]
So how DO we design for different cultures?
So how DO we design for different cultures?

Two problems:
- status quo
  - lack of access to diverse participant populations ->
- not knowing how UIs should look like
Internationalization & Localization

Localization: adaptation of the software application to meet the language, cultural and other requirements of a specific target market (the “locale”).

- numeric, date and time formats
- use of currency
- symbols, icons and colors
- text and graphics
- varying legal requirements

Internationalization: enable the software application to be easily localized.

- use of Unicode
- avoid dependence of code on user interface string values
- CSS support for vertical text or other non-Latin typographic features
Localization

Switzerland

Willkommen bei Coca-Cola Schweiz

Uganda

China

Culture | Perception | Preferences | Performance | Behavior | Consequences | How-to
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HCI research on designing for diverse cultures and countries is still in its infancy.

Why?
Solution #1

Travel. Get direct access to diverse participant populations.
Testing in different cultures

Think aloud method

• Bollywood method: Indian users are asked to imagine a dramatic situation similar to those in Bollywood movies [Chavan, 2005]

• thinking aloud affects the performance of Easterners more than Westerners [Kim 2002]

Providing choices

• Easterners chose a moderate middle version when asked to provide reasons for their choice more often than if they didn’t have to provide reasons [Briley et al. 2000]
Solution #2

Mechanical Turk
Turkers are not that diverse.
Solution #3

LabintheWild.

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Trust us; you will love this test!
Take this test to see how well you can spot (un)trustworthy websites. This experiment takes around 12 minutes.

Participate now!

How fast is your memory?
See how quickly you can retrieve information you have just memorized. This experiment takes around 10 minutes.

Participate now!

What is your website aesthetic?
Compare your visual preferences to people around the world. This experiment takes around 10 minutes.

Participate now!

Test your social intelligence!
Test how well you can read emotions of others just by looking at their eyes. This experiment takes around 10 minutes.

Participate now!

Are you more Eastern or Western?
In this test, you will learn whether you are more sensitive to a focal object (as most Americans) or more attuned to the context (as many Japanese). This experiment takes around 6 minutes.

Participate now!

Looking for more studies?
We have joined forces with TestMyBrain and GamesWithWords! Learn about your brain, test your language sense, and participate in other studies on LessWeird.org.

Participate now!
6-99 years old

> 200 countries

diverse occupations

73% attend(ed) college
With the help of LabintheWild, we’ve been able to find differences in

- visual preferences (website design)
- website trustworthiness
- motor abilities
- perception
- attitudes
- color differentiation abilities
Discussion of instance papers:

- Quick summary of both papers including research questions
- What did we find?
- What would we have found if we had only studied WEIRD users?
- Which demographics matter? (country, age, education level?)
- What do the findings enable us to do? (Design implications)
- What other methods would be appropriate to use to answer the research questions posed in these papers?
- How would the findings differ if we used other methods?
Keep in mind that you are a most likely very WEIRD :)