Isn’t it illogical?
- People appear to obey **politeness norms** with computers
- People appear to prefer responses from computers that match their own **personality type**
  - Includes quality of interaction and **competence**
- People like to be **flattered** by computer responses
- People appear to apply **gender stereotypes** to computers
- People appear to orient their reactions to the computer, not the programmer(s).

Theories and Concepts of Emotion
- **Three Components of Emotion**
  1. **Physiological** - arousal comes from brain (particularly the limbic system) and autonomic nervous system (ANS)

Plutchik believes that emotions have four dimensions:
- Positive or negative
- Primary or mixed
- Polar opposites
- Varying intensity

Eight Basic Emotions
Guess the emotions?

Emotional design
► Also called: Hedonic Design, Affective Design, Empathetic Design
► Focuses on the influence of emotions on the way we interact with objects.
► Niels Engelsted:
  ▪ Affect (environmental response)
  ▪ Emotion (based on memory)
  ▪ Sentiment (long-term, love and hate)
► Donald Norman:
  ▪ Visceral Design (evolutionary responses)
  ▪ Behavioral Design (bodily activity)
  ▪ Reflective Design (mental activity)

Norman’s Emotional Design
That initial impact, its appearance
visceral
Look and feel, total experience
reflective
behavioral
My identity, my ideology, my taste

Affect
► Abstraction of emotion/mood in terms of pleasure - displeasure and activated - non-activated
► Affected by emotion, mood and attitudes:
  ▪ mood: unattributed, undifferentiated, longer term, low intensity.
  ▪ attitude: affect permanently associated with a person
► Attitudes influence information processing
  ▪ Strong attitudes tend to discard information easily
► Mood influences information processing style
  ▪ Top-down (positive) versus bottom-up (negative)
  ▪ Negative mood predisposes towards interpretation of ambiguous stimuli as threatening.
  ▪ Negative mood decreases and positive increases perception of self control

Core Affect

Affective Computing
► Computing that relates to, arises from, or deliberately influences emotions (Picard, 1997).
► Different types of computational approaches:
  ▪ recognize/measure human emotions (recognition).
  ▪ interpret human emotion (perception, processing).
  ▪ represent human emotion
  ▪ elicit emotions (cognitive modeling, motivations, feedback).
  ▪ represent system emotion.
  ▪ emotional influence on behavior and functioning (adaptation, attention, actions).
  ▪ show system emotions (expression).
  ▪ influence human emotion (induction).
► Form not important: robot, emoticon, text
Affect recognition and measurement

► Implicit (automated affect recognition)
  ▪ Physiological: Galvanic Skin Response, Heart rate, muscle tone, EEG
  ▪ Behavior-based: Facial expression analysis, body posture, gestures, sound, speech, mouse movement, keyboard presses.

► Explicit (affective feedback)
  ▪ Ask affective feedback: Free text, questionnaires, emotion words, experience sampling, experience clips
  ▪ Affect dimension-based: Affect questionnaires, Self Assessment Manikin, AffectButton, prEmo, EmoCards.
  ▪ Facial-expression-based: Emoticons, basic emotion icons
  ▪ Text-based (actual in between explicit and implicit): websites, blogs, documents, tags

Affect and Design

► An affective impression is the user’s appraisal of the affective qualities of the HCI.
► Affective qualities of websites and screens include beauty, overview, title, shape, structure, texture, menu, main images, and color (Zhang and Li, 2004).
► Lavie and Tractinsky (2004) identified aesthetic aspects that affect users’ affect:
  ▪ “classical aesthetics” (emphasizes orderly and clear design)
  ▪ “expressive aesthetics” (shows creativity and originality and by the ability to break design conventions).

Flow and Design

► The user’s perception of the medium as playful and engaging (“in the zone”)
  ▪ It can be defined as a continuous variable, ranging from lack of flow to intense flow.
► Characteristics of designing for flow
  1. Right level of challenge, concentration and required skill
  2. Clear goals and feedback
  3. Users should always feel in control
  4. Time is transformed (speed up or slow down)

Culture-sensitive design

► 7-10 culturally universal emotions, but each culture has its own rules governing how, when, and where to express emotions.
► Why is it important to be culturally sensitive when designing UI (or anything really)?
► 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: Power Distance

► **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

- **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

- **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>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
</tr>
<tr>
<td>Korea</td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Power Distance Index</th>
<th>Individualism</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td></td>
</tr>
</tbody>
</table>

Singapore Management University

Tel Aviv 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, polychronic
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

- **Masculine**
  - **High**: Austria, USA
  - **Low**: Japan, Italy, South Africa

- **Masculinity Index**
  - **High**: South Korea, Singapore
  - **Low**: Norway, Sweden

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

Culture vs. UI: Uncertainty Avoidance

- **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
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-crumb trails, 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
Glocalization