Senses & Perceived Product Quality
A Case Study of Las Vegas & The Slot Machine

ME 214 Final Presentation
3-7-02

Presented by:
Hao-Fan Kong Chen
Ercan Dede
Stephanie Kubik
Presentation Outline

- Senses As They Pertain to Product Quality
  - Sight
  - Hearing
  - Touch
  - Taste
  - Smell
- Senses Flow Chart
- Las Vegas & The Slot Machine
- Conclusions
- Recommendations for Product Design
Senses As They Pertain to Product Quality

- Allow us to experience products on many levels.
- All we learn and do involves the five senses.
- Stimulus for recalling past experiences and emotions or anticipating what will happen in the future.
- Immediate perception of product quality.

Merriam-Webster Dictionary Definition:
2 a : the faculty of perceiving by means of sense organs b : a specialized animal function or mechanism (as sight, hearing, smell, taste, or touch) basically involving a stimulus and a sense organ c : the sensory mechanisms constituting a unit distinct from other functions (as movement or thought)
Sight

- 70% of body’s sense receptors clustered in eyes.

- Eyes gather light:
  - Iris
  - Pupil
  - Lens
  - Retina

- Brain interprets images and associates meaning.
Sight - Product Experimentation & Analysis

Appearance allows a designer to differentiate their product from others.

Products can succeed or fail based on sight/appearance alone.

---

Good Products, Bad Products Quality Research

This survey is part of a project for ME 214 Good Products, Bad Products. Thank you for participating in this survey.

1) Do you think this vacuum cleaner is powerful?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Weak</td>
<td>Average</td>
<td>Excellent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why? (i.e. size, shape, unique features, etc)

2) Do you think this vacuum cleaner is easy to use?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Hard</td>
<td>Average</td>
<td>Very Easy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why? (i.e. size, shape, unique features, etc)

3) Do you think this vacuum cleaner is reliable?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Poor</td>
<td>Average</td>
<td>Excellent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why? (i.e. size, shape, unique features, etc)
Hearing

Sound collected in ears:
- Eardrum
- Hammer, Anvil, & Stirrup
- Nerve cells triggered

Brain interprets sound and associates meaning.

Three primary characteristics:
- Pitch
- Quality
- Loudness
Hearing - 
Product Experimentation & Analysis

- Familiar sounds are comforting.
- Sound impresses “positive” or “negative” feelings on consumer - relates to perceived quality.
Touch

- Skin is largest organ of body:
  - Weighs 6 to 10 pounds

- 3 primary touch receptors:
  - Pressure
  - Pain
  - Temperature

- Most sensitive:
  - Finger tips
  - Tongue
  - Lips

- Touch associated to texture of objects.
Touch -
Product Experimentation & Analysis

- User’s perception versus designer’s perception.
- Prototype experimentation is key as confirmed by Peter Skillman.
**Taste**

- Adults have 10,000 taste buds in mouth on average.
- Taste buds replaced every 7 to 10 days.

**Types**
- Sweet
- Sour
- Bitter
- Salty

© EnchantedLearning.com
**Smell**

- Nasal cavity directs smells to receptors.
- Neurons in nose replaced about every 30 days.
- Basic categories:
  - Mint
  - Floral
  - Ethereal
  - Musk
  - Resinous
  - Foul
  - Acrid
- Smell associated with long-term memory.

3-7-02
Taste & Smell - Product Experimentation & Analysis

- Understand fundamental quality of product.

- Bad vs. good - most consumers can tell.

- Good vs. very good - Most consumers cannot tell.
Senses Flow Chart

Physical Experience

Eyes
- Sight
  - Image

Ears
- Sound
  - Loudness
  - Pitch
  - Quality

Skin
- Touch
  - Temperature
  - Pressure
  - Pain

Nose
- Smell
  - Resinous
  - Ethereal
  - Floral
  - Acrid
  - Foul
  - Mint
  - Musk

Mouth
- Taste
  - Bitter
  - Salty
  - Sour
  - Sweet

Brain

Perceived Experience

Least Intimate Sense

Most Intimate Sense
Las Vegas & The Slot Machine
Immediate Perception of Quality

Sensory Experience on Many Levels
Liberty Bell Slot Machine

What’s in a name?

Sight, Sound, Touch

Invented by Charles Fey 1894
Sound - bells, buzzers, & falling coins

Sight - chrome & spinning wheels

Touch - lever & coins
Consumer reaction?

Newer models accentuate these features even more
Summary -
Slot Machines & Perceived Quality

- Sight - chrome, lights, spinning wheels.
- Sound - bells, buzzers, falling coins with varying pitch.
- Touch - coins, levers, buttons with various textures.
- All senses convey perceived quality by consumer and demand real quality by manufacturer.
- “Loose” slot, rhythm, the senses, and perceived slot quality.
  - Consumer drawn in by senses, stimulated by the rhythm of machine, and kept there by the infamous “loose” slot.
- Did the designer do her job? - Two-thirds of all casino revenue in the US.
Conclusions

- Senses allow consumers to experience products on many levels.

- In terms of perceived product quality:
  - Starts with sight
  - Path diverges from there

- Senses provide an immediate perception of product quality
  - This relates to the other Adams topics (Craftsmanship, Human Fit, Elegance & Sophistication, Emotions, etc.)
Recommendations for Product Design

Let’s make some sense of it all!

Proposed Four Step “Sense Design Process”

Identify senses being used in a product using Sense Flow Chart.
- Intimacy
- Distancing

Initial design exploiting multi-layered and multi-sensory input or features.
- E.g., The slot machine

Build prototypes and perform experimentation.
- Don’t limit your ideas - Have fun!

Refine design with regards to sensory stimulus based on feedback.