

# **Senses & Perceived Product Quality**

## **A Case Study of Las Vegas & The Slot Machine**



**ME 214 Final Presentation**  
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# 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:*

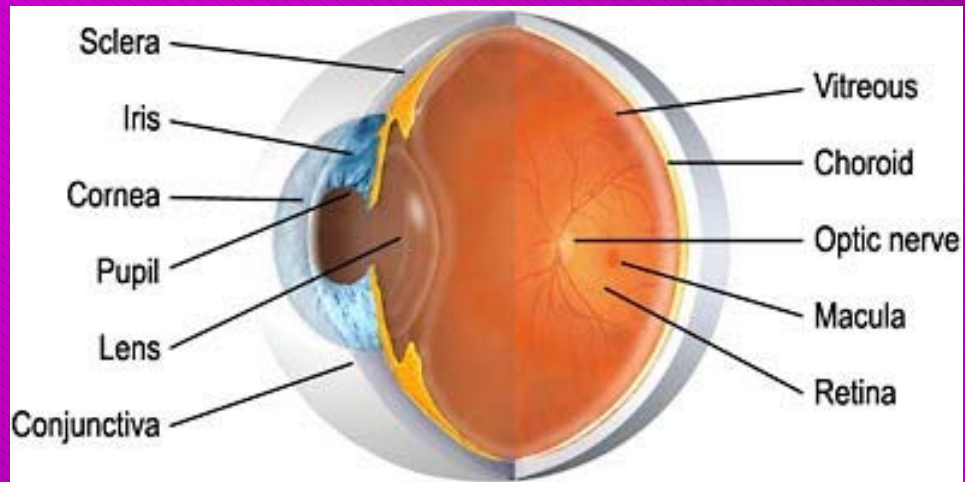
2 a : the faculty of perceiving by means of sense organs  
b : a specialized animal function or mechanism (as sight, hearing, smell, taste, or touch) basically involving a stimulus and a sense organ  
c : the sensory mechanisms constituting a unit distinct from other functions (as movement or thought)

# 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?

0	1	2	3	4
5				
N/A	Weak		Average	
Excellent				
Why? (i.e. size, shape, unique features, etc)				

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

0	1	2	3	4
5				
N/A	Hard		Average	
Very Easy				
Why? (i.e. size, shape, unique features, etc)				

3) Do you think this vacuum cleaner is reliable?

0	1	2	3	4
5				
N/A	Poor		Average	
Excellent				
Why? (i.e. size, shape, unique features, etc)				

# Hearing

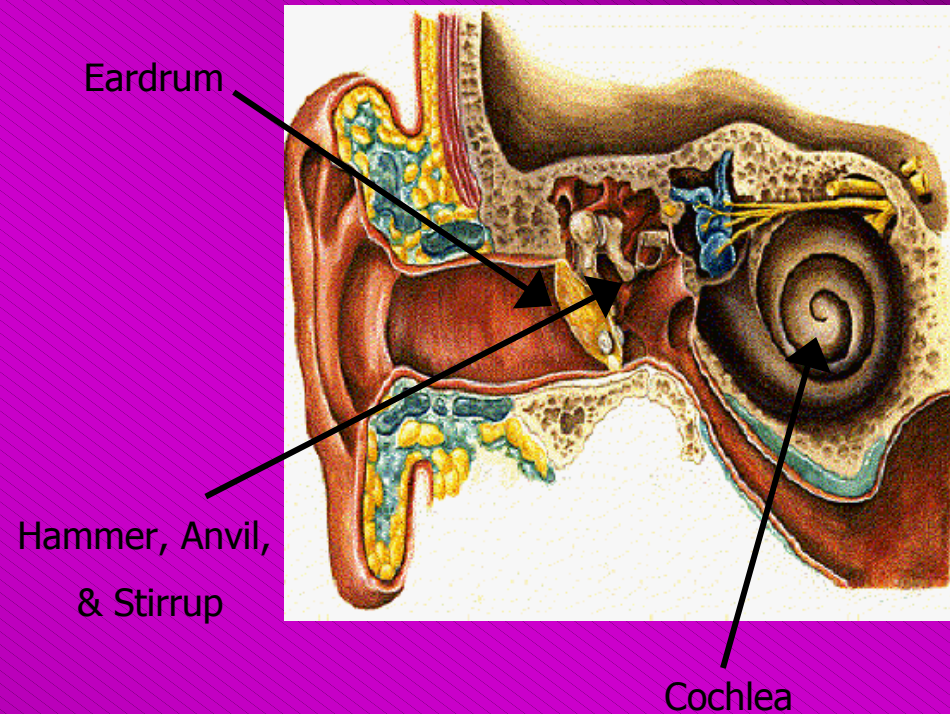
## ⌘ Sound collected in ears:

- ☒ 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

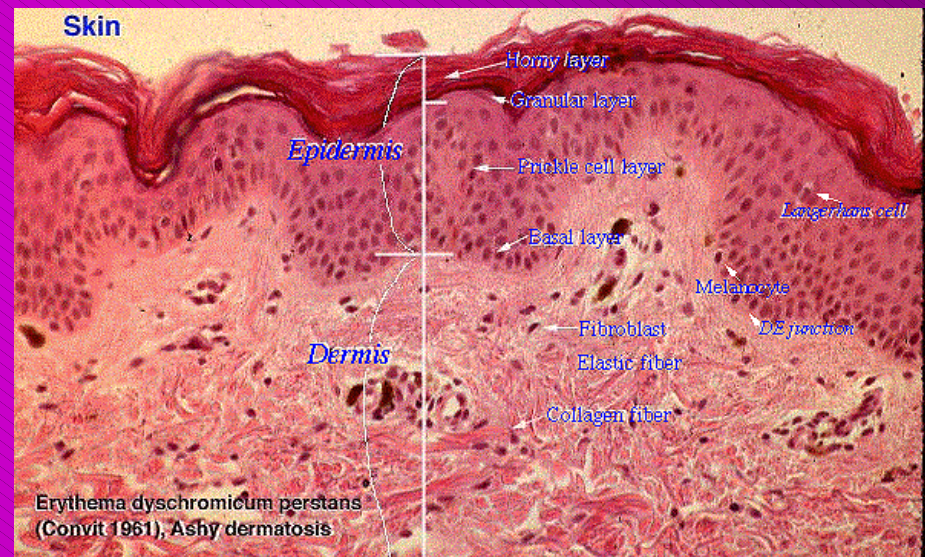
⌘ Most sensitive:

☑ Finger tips

☑ Tongue

☑ Lips

⌘ Touch associated to texture of objects.



# Touch - Product Experimentation & Analysis



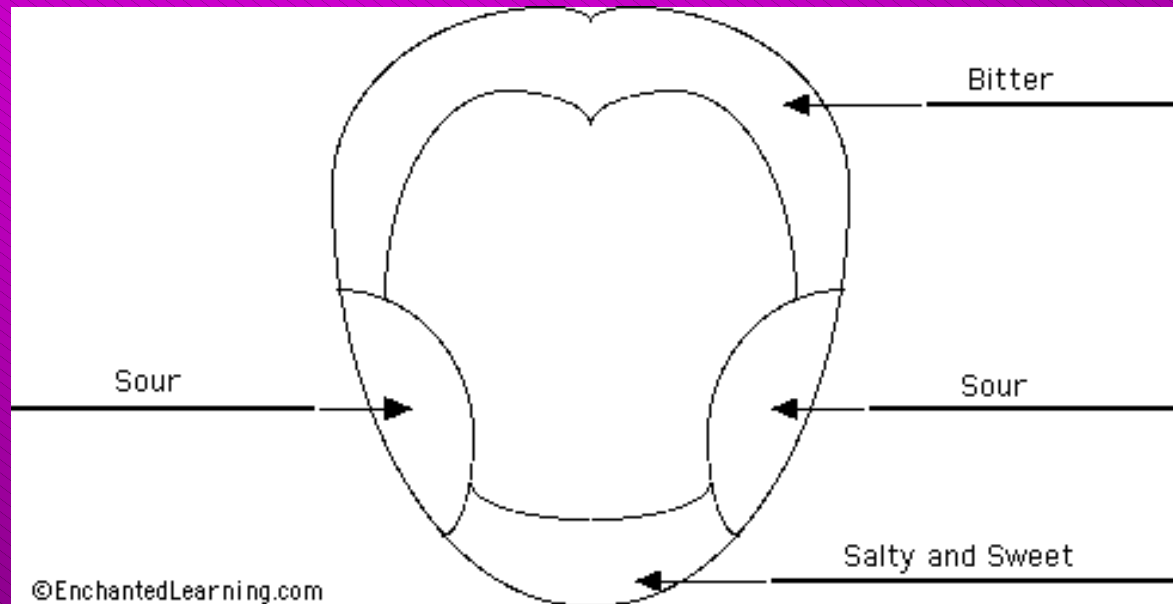
- ⌘ User's perception versus designer's perception.
- ⌘ Prototype experimentation is key as confirmed by Peter Skillman.

# Taste

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

## ⌘ Types

- ☒ Sweet
- ☒ Sour
- ☒ Bitter
- ☒ Salty

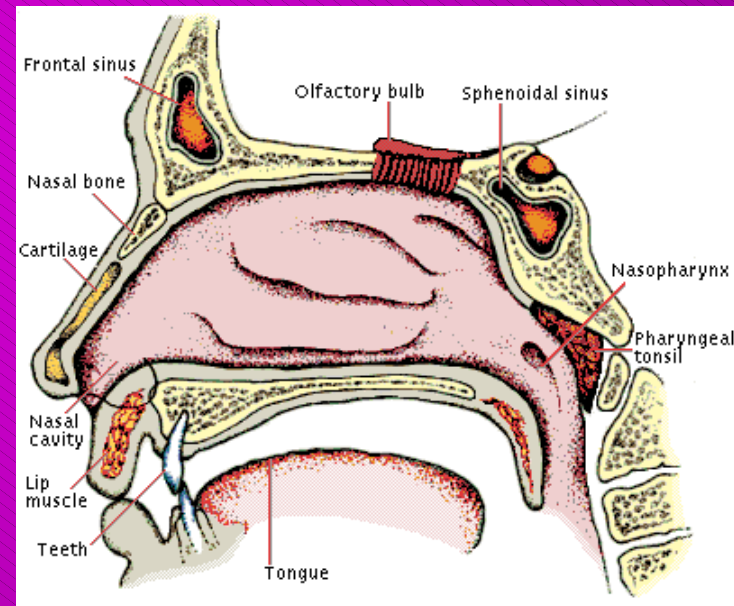


# Smell

- ⌘ 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.

# Taste & Smell - Product Experimentation & Analysis

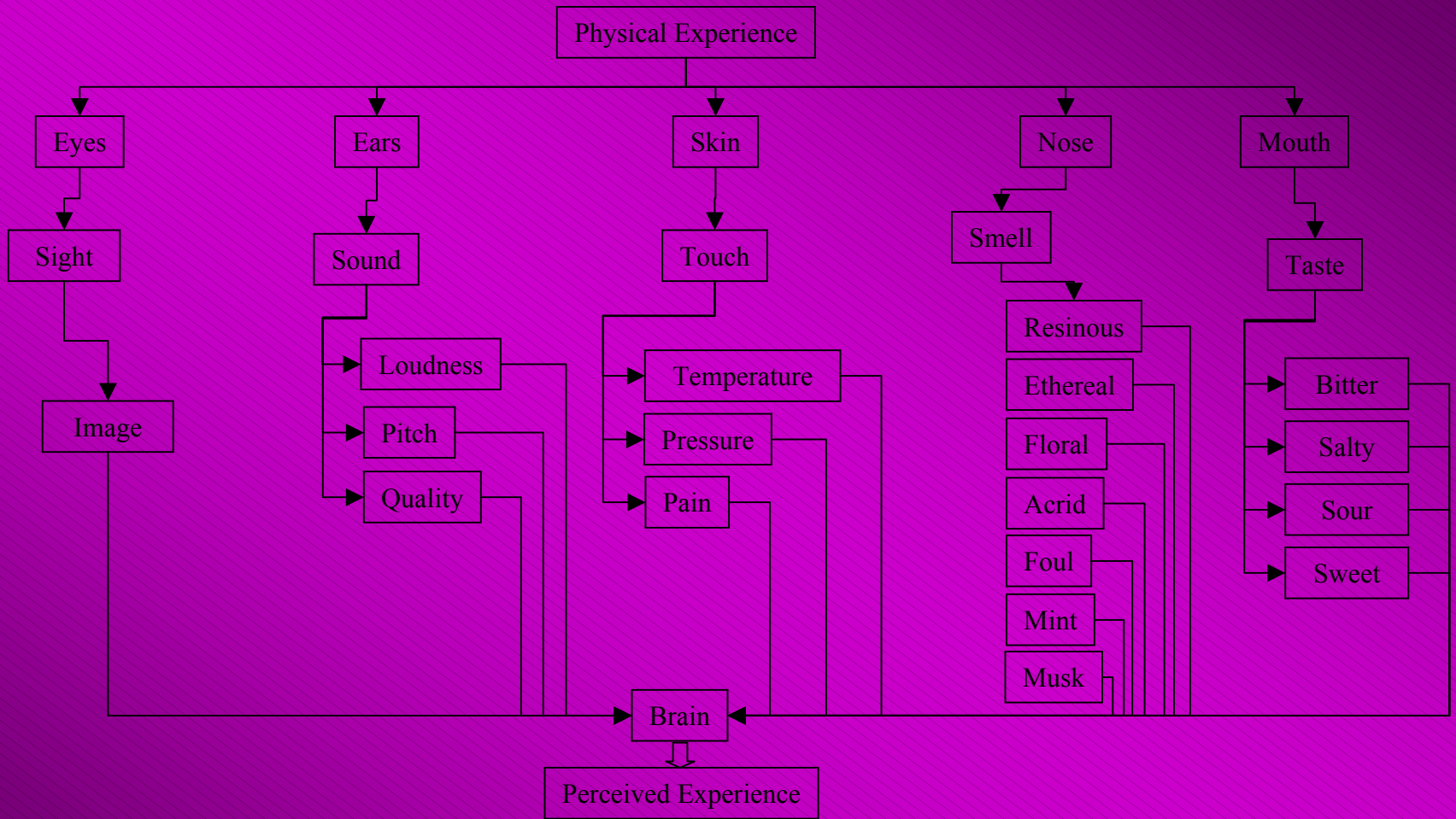
- ⌘ Understand fundamental quality of product.
- ⌘ Bad vs. good - most consumers can tell.
- ⌘ Good vs. very good - Most consumers cannot tell.



Vs.

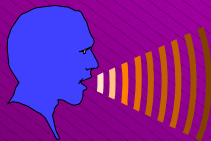
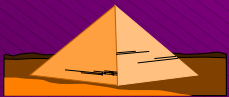


# Senses Flow Chart



Least Intimate Sense

Most Intimate Sense

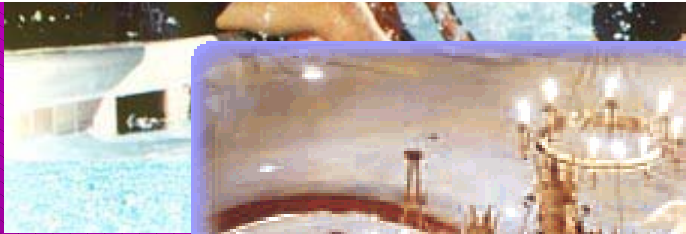


# Las Vegas & The Slot Machine





Immediate Perception of Quality



Sensory Experience on Many Levels

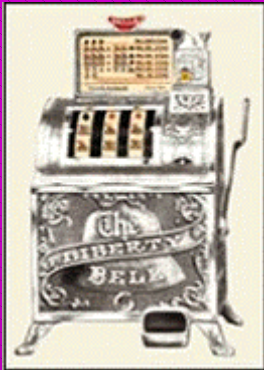
# Liberty Bell Slot Machine

What's in a name?



Sight, Sound, Touch

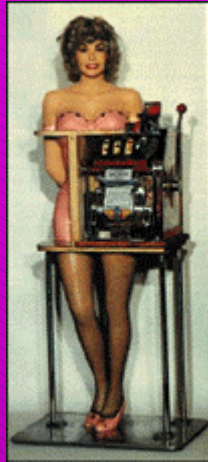
Invented by Charles Fey 1894



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

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- ⌘ 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.