

# Learning From Experience And Performing Learned Actions Are Easy; Novel Actions, Problem Solving, And Calculation Are Hard

Ephrathah Gebremichael

---

Designing with the Mind in Mind,

Jeff Johnson

# Overview

---

- The Three Brains
- The Two Minds
- Learning From Experience
- Performing Learned And Novel Actions
- Problem Solving And Calculation
- Implications For Design



# The Three Brains

## **Old Brain**

Divides things into three groups (edible, dangerous, and sexy) and regulates body's automatic functions (digestion, breathing)

## **Mid Brain**

Controls emotional responses

## **New Brain**

Responsible for intentional, purposeful, and conscious activity

# The Two Minds

## **Unconscious (old brain and middle brain) - System 1**

- Automatic
- Based on experience
- Executes learned actions
- Quick response

## **Conscious (new brain) - System 2**

- Controlled
- Based on new action
- Consciousness and self-awareness
- Slow response

There are 30 people in a warehouse. Some have turned into zombies, and some are still alive. If the ratio of zombies-to-living humans is 2:3, how many zombies are there?

There are 12 zombies and 18 humans.



# Learning From Experience



# Examples



Avoid 8am  
classes



Walk slow  
when walking  
on black ice



Lower your  
expectations  
for Lowry food





# Limitations





Swan



Also a swan



# Performing Learned Actions

01

Knowing the  
lyrics to your  
favorite song

02

Swiping into  
the dining  
hall

03

Making  
ramen  
noodles

04

Walking to  
your dorm



# Performing Novel Actions

01

Knowing your  
Wooster  
password  
backwards

02

Driving on  
the left side  
of the road

03

Reciting the  
alphabet  
backwards

# Problem Solving And Calculation

- John's cat is not black and likes milk. Sue's cat is not brown and doesn't like milk. Sam's cat is not white and doesn't like milk. Mary's cat is not yellow and likes milk. Someone found a cat that is yellow and likes milk. Whose cat is it?

# Implications for User- Interface Design



# Design Rules

---

1. Prominently indicate the system status and user's progress toward their goal
2. Guide users toward their goals
3. Tell users explicitly and exactly what they need to know
4. Do not make users diagnose system problems
5. Minimize the number and complexity of settings
6. Let people use perception rather than calculation
7. Make the system familiar
8. Let the computer do the math

# Questions?