

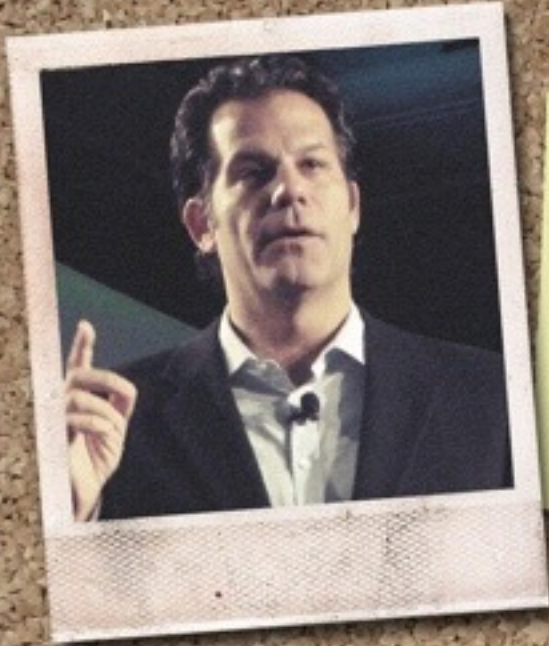
Right Brain / Left Brain



## **Interdisciplinary Course**

Hybridization - derived from heterogeneous sources; composite





Richard Florida  
-social theory  
-economic theory



Daniel Pink  
-business  
-technology  
-law



Jared Diamond

- physiology
- biophysics
- ornithology
- environmentalism
- ecology
- geography
- evolutionary biology
- anthropology



Daniel Pink

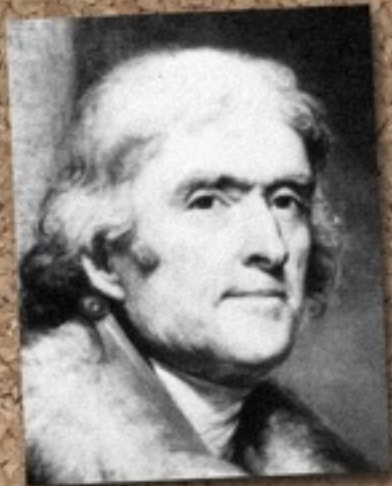
- business
- technology
- law





Alexander Hamilton

- law
- finance
- politics



Thomas Jefferson

- farming
- architecture
- politics
- inventor



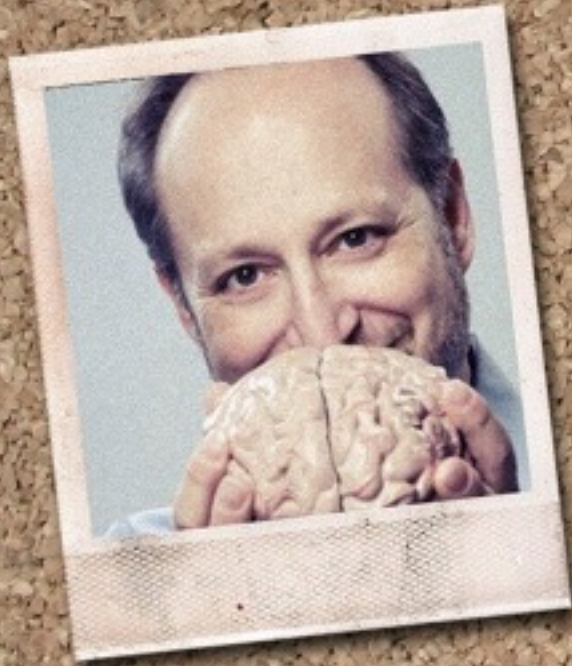
Jane Goodall  
- primatology  
- ethology  
- anthropology  
- environmentalism



Mihaly  
Csikszentmihalyi  
- psychology  
- sociology  
- anthropology



Guglielmo Marconi  
- scientist  
- inventor



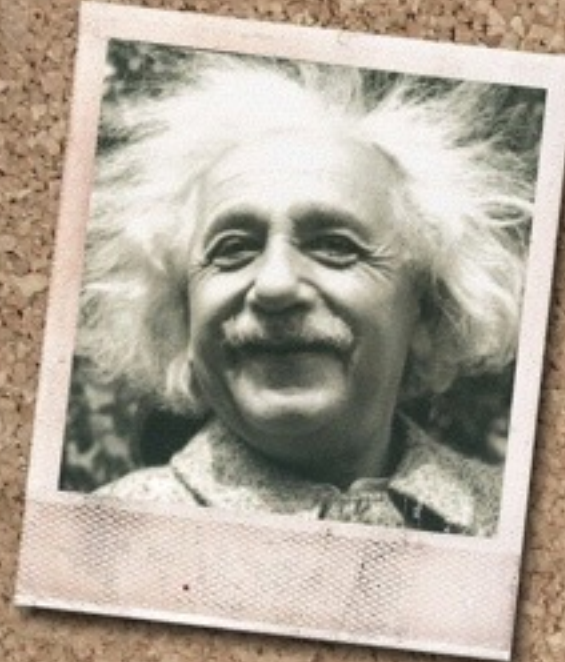
Norman Doidge

- physiology
- neuroscience
- psychiatry
- psychoanalysis



Albert Einstein

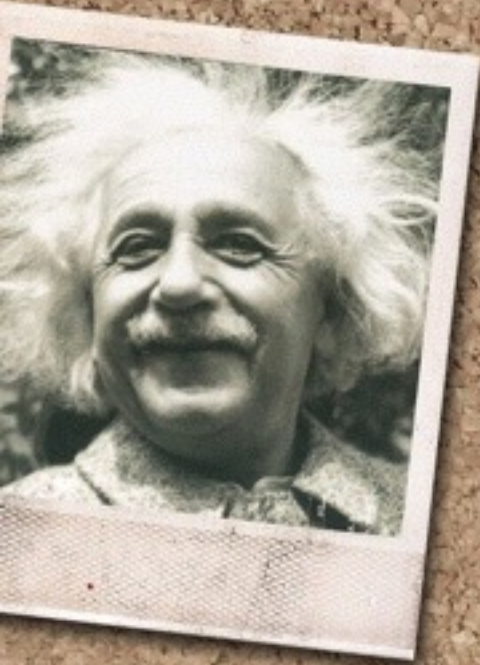
- theoretical physics
- philosophy
- politics



e  
is



Norman Bel Geddes  
- industrial design  
- exhibit design  
- theater design



Jonas Salk  
- medical research  
- virology  
- biophilosophy





Bel Geddes  
material design  
interior design  
landscape design



Joel Salatin  
- farming  
- environmentalism



John Stevens  
- civil engineering  
- project  
management

k  
research  
philosophy



Robert Moses  
- urban planning  
- politics



Malcolm Gladwell

- psychology
- social psychology
- social science



Bill Stumpf

- design
- ergonomics



Temple Grandin

- animal behavior
- animal science



- convergent thinking
  - divergent thinking
- (to use Csikzentmihali's terms)

## What Creative People Have in Common

- L-Directed Thinking (Algorithmic)
  - R-Directed Thinking (Heuristic)
- (to use Pink's terms)



The New York

"THIS BO

—Tom I

UPDATED  
WITH NEW  
MATERIAL

M

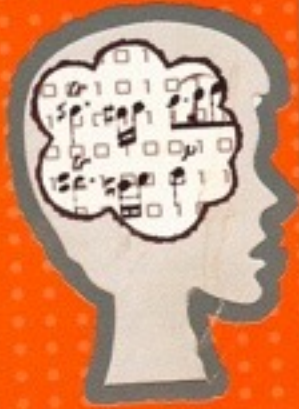
WH  
WIL

The *New York Times* and *BusinessWeek* Bestseller

"THIS BOOK IS A MIRACLE: Completely original and profound."  
—Tom Peters, author of *In Search of Excellence*

UPDATED  
WITH NEW  
MATERIAL

# A WHOLE NEW MIND



WHY RIGHT-BRAINERS  
WILL RULE THE FUTURE

DANIEL H. PINK

Left-Brain and  
Right Brain Function



## Neurology Timeline

400 BCE

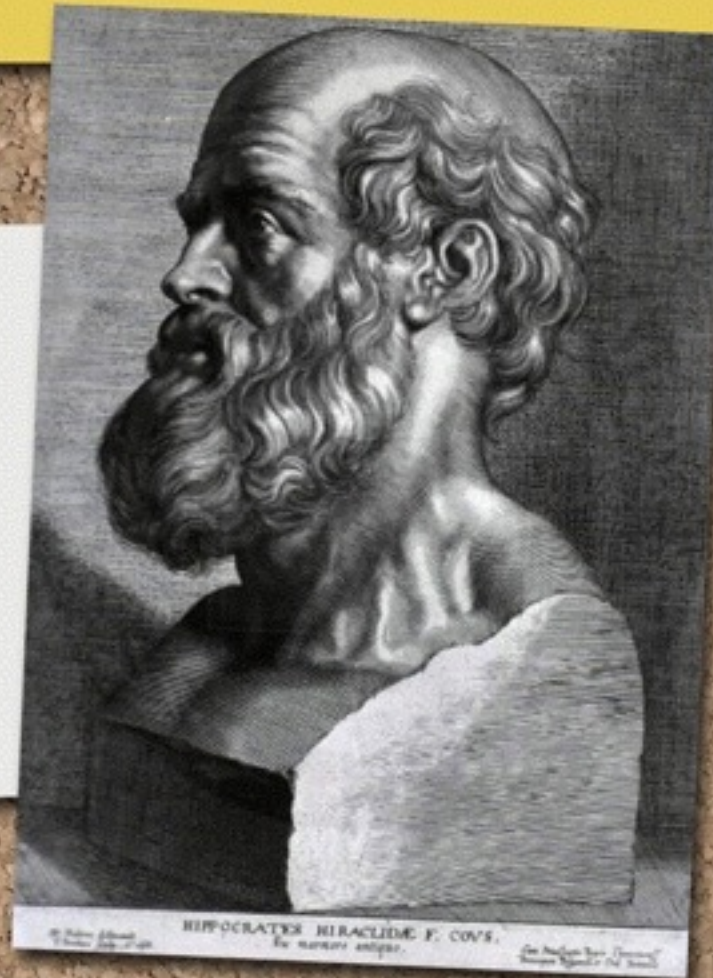
375 BCE

350 BCE

325 BCE

300 BCE

**Hippocrates** thought that the left side of the body was the superior side because it contained the heart.



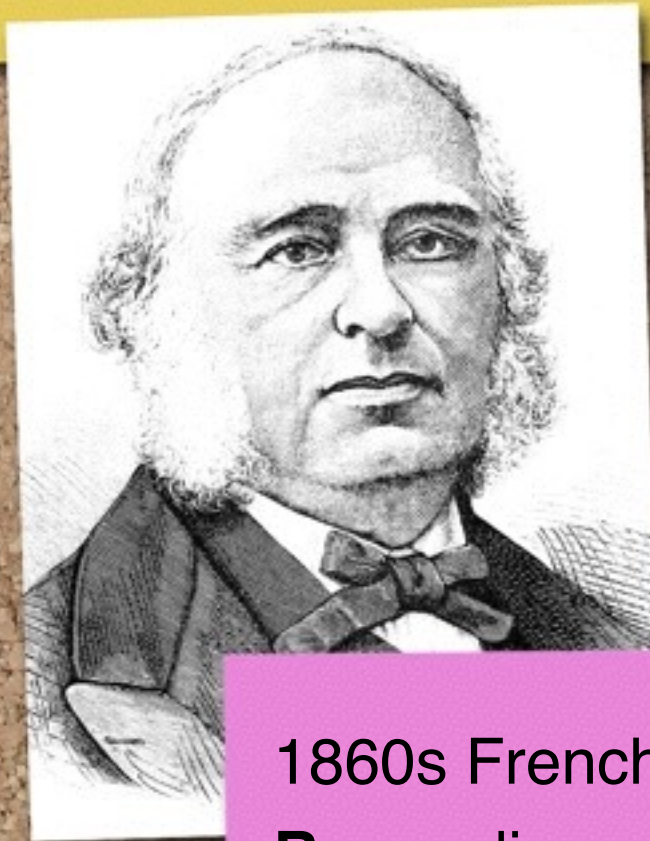
1800

1825

1850

1875

1900



1860s French neurologist **Paul Broca** discovered that the left hemisphere of brain controlled the ability to speak language.

AINERS  
UTURE

L. PINK



1870s German neurologist **Carl Wernicke** discovered that the left hemisphere also controlled ability to understand language.

1825

1850

1875

1900

1925

1950



1900

1925

1950

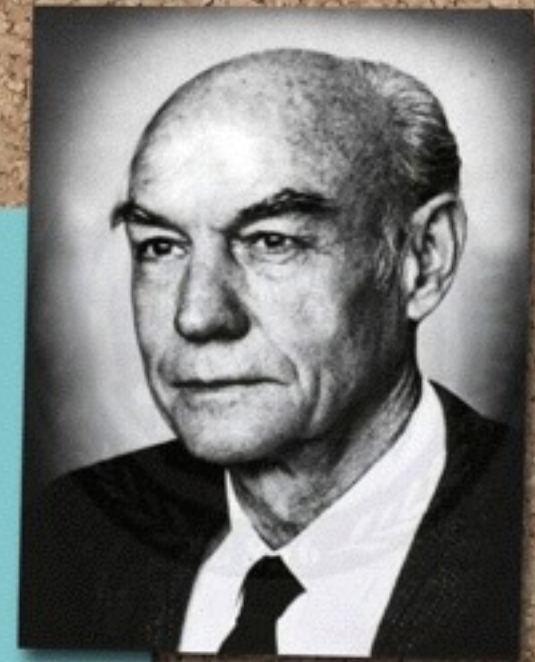
1975

2000

~~Left side of brain makes us  
human - Right side of brain  
“subordinate”, “illiterate”,  
“retarded”~~

1950s American neurologist Roger W. Sperry disproved this.

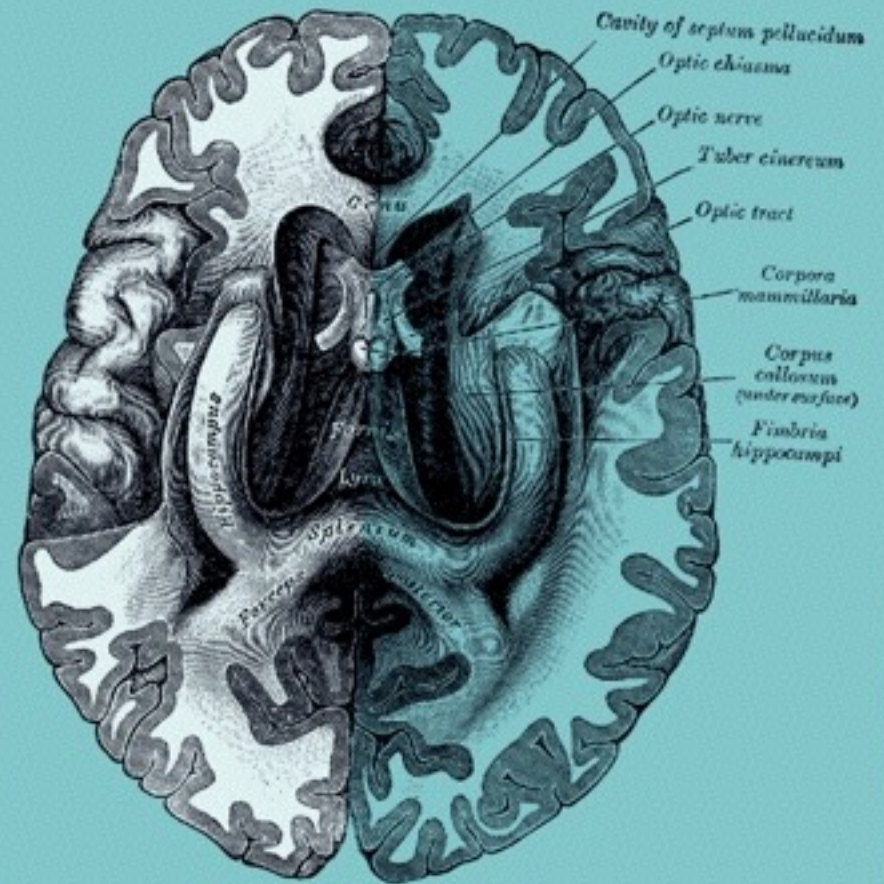
“There appear to be two modes of thinking rather separately in the left and right hemisphere respectively... The so-called subordinate or minor hemisphere... was found to be in fact the superior cerebral member when it comes to performing





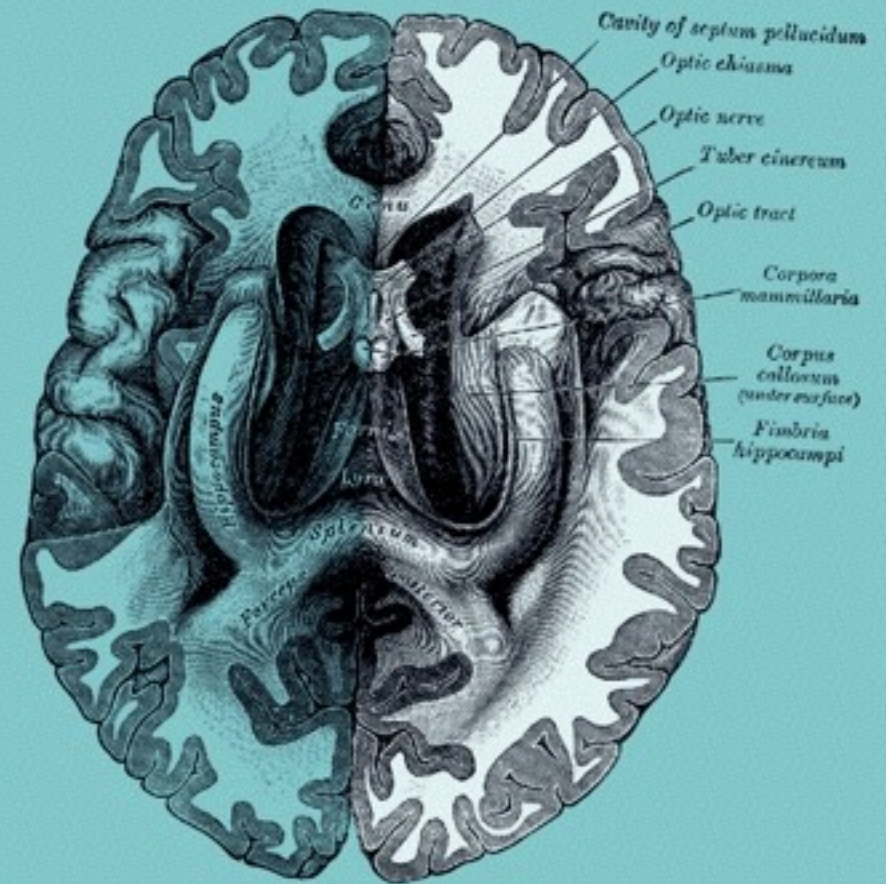
## Left Hemisphere

- reason linearly
- excels in analysis
- handles words and language



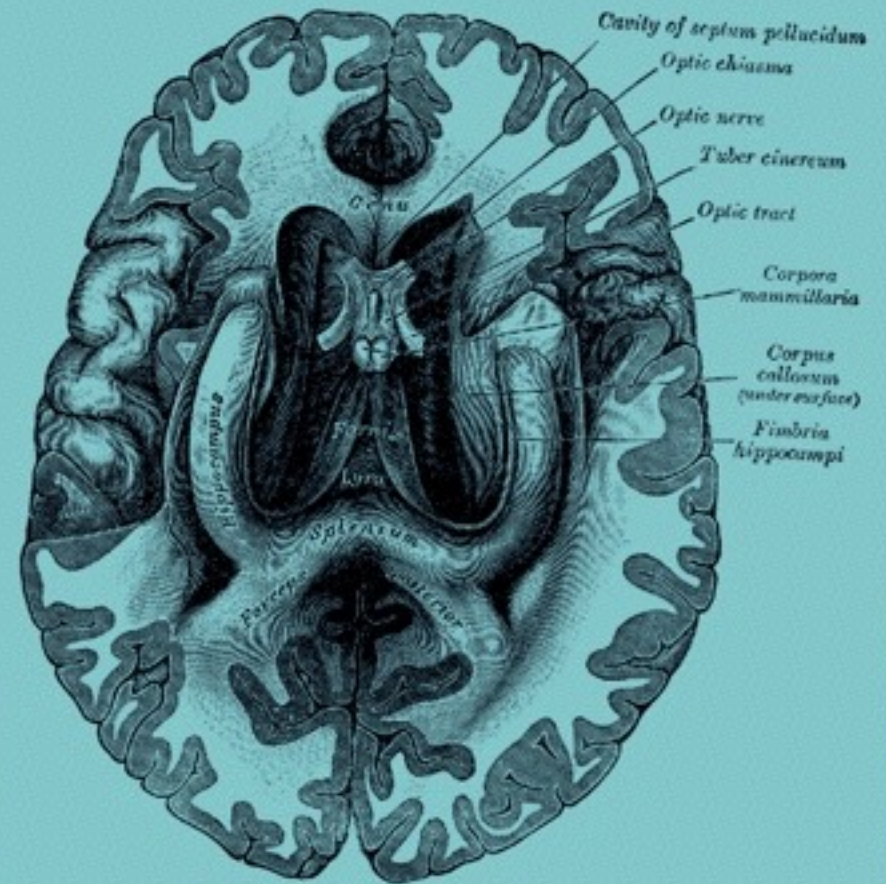
## Right Hemisphere

- reasons holistically
- recognize patterns
- interprets emotions and nonverbal expression
- handles spatial and visual information



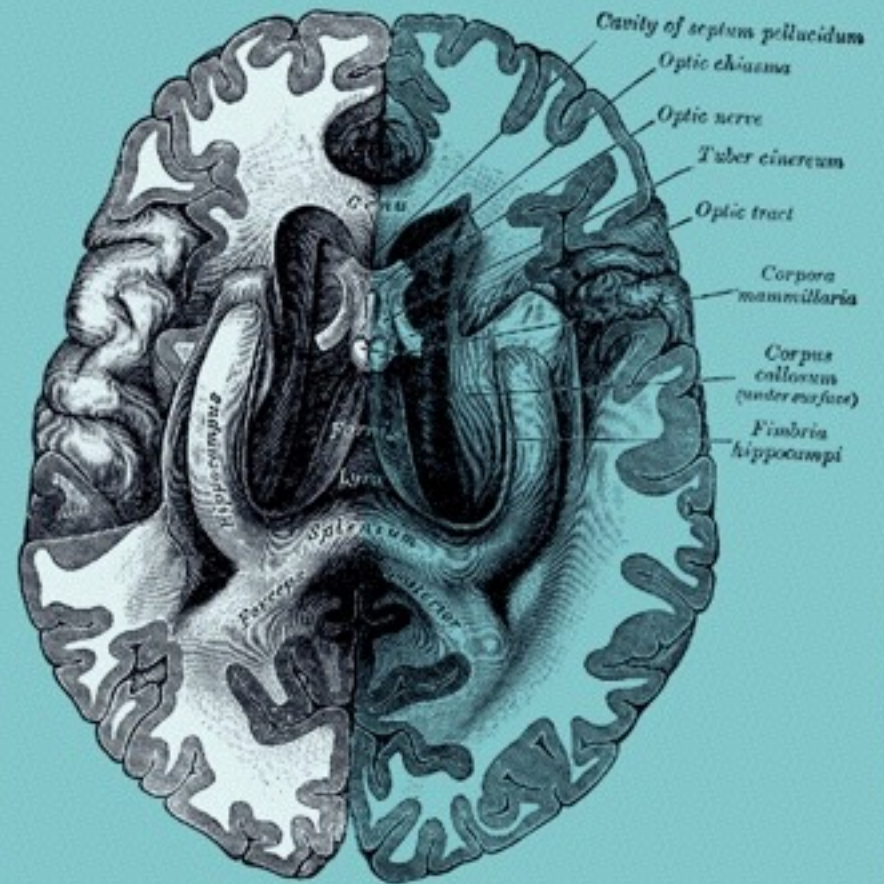
## Brain is Contralateral

left hemisphere controls right side of body  
right hemisphere controls left side of body



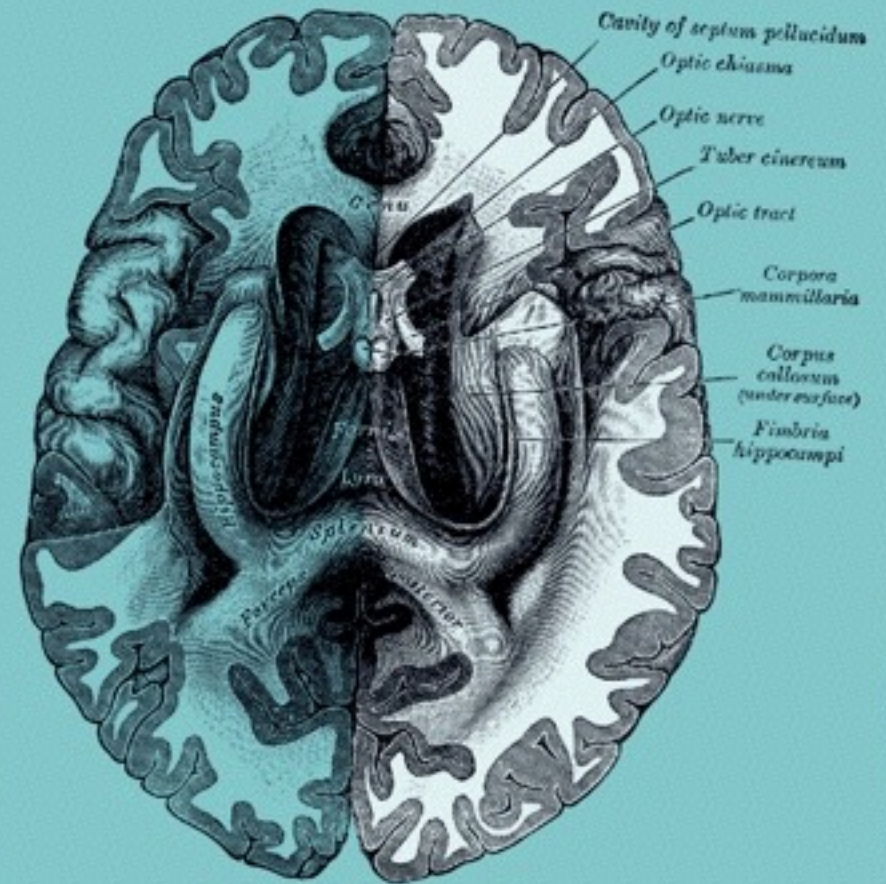
Left Hemisphere is Serial

- talking
- reading
- writing

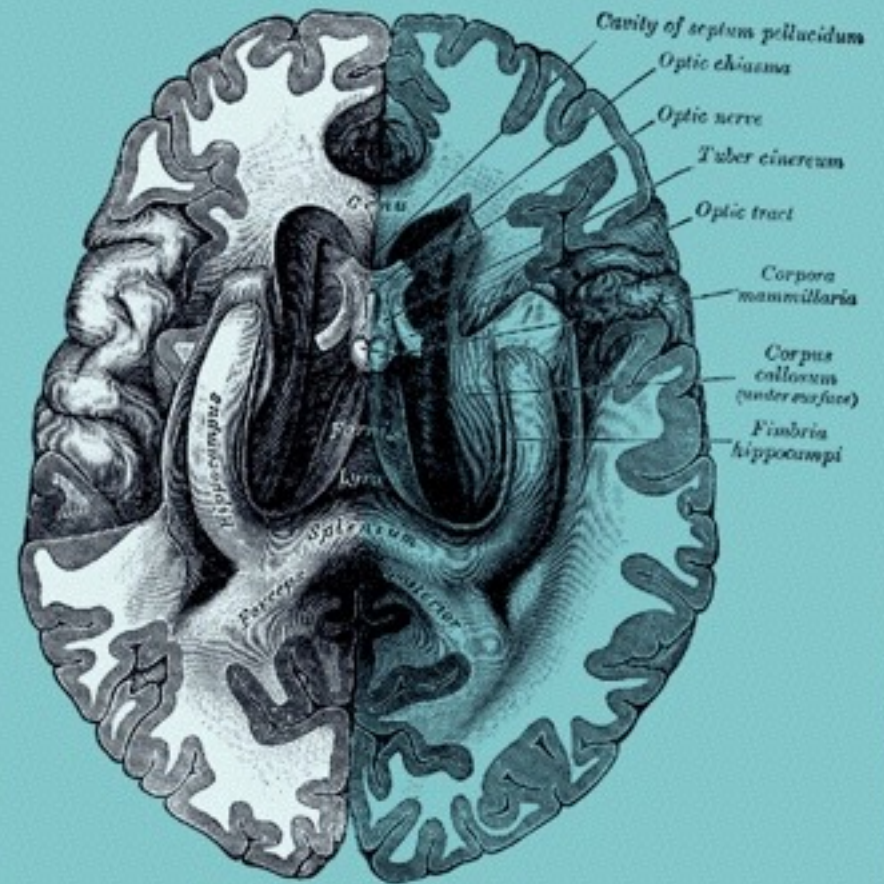


Right Hemisphere is Simultaneous

- face recognition
- orientation
- image register

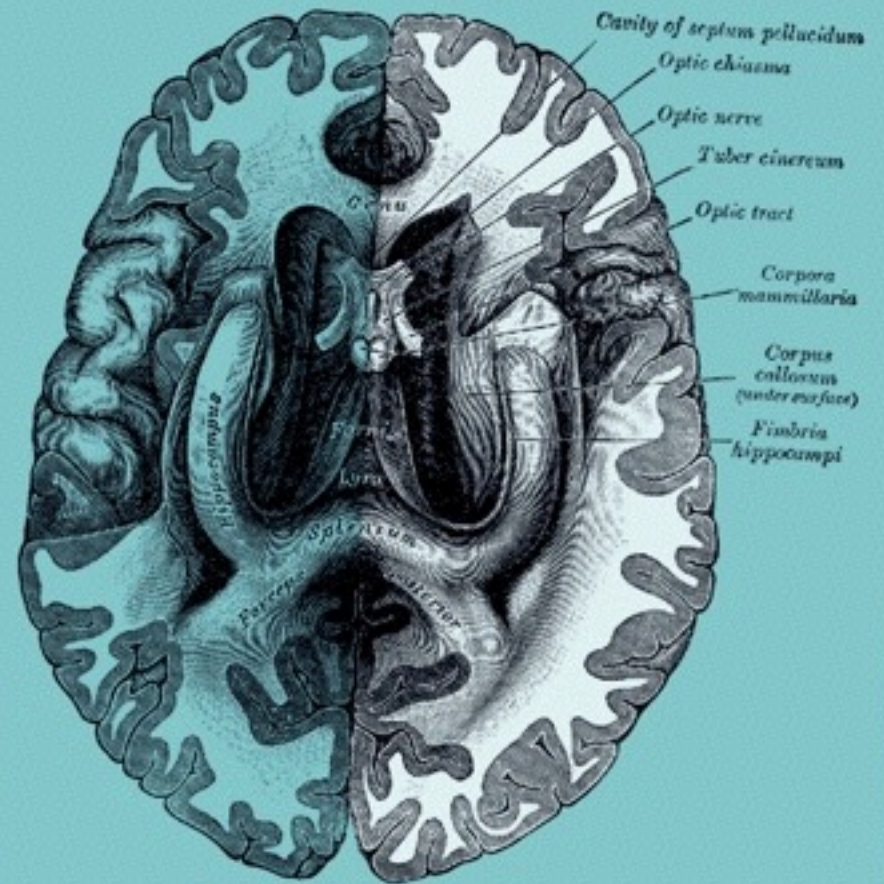


Left Hemisphere is Literal



## Right Hemisphere Reads Emotion.

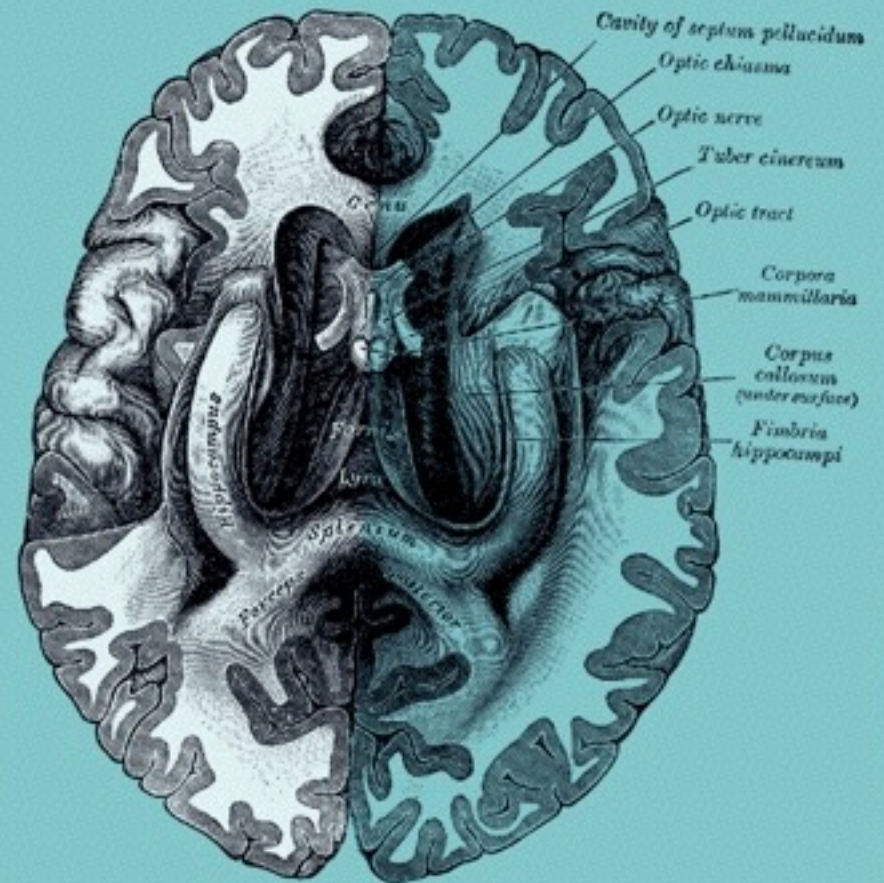
- nuance
- metaphor



## Left Hemisphere Analyzes Detail

- logical
- analytical
- computer-like

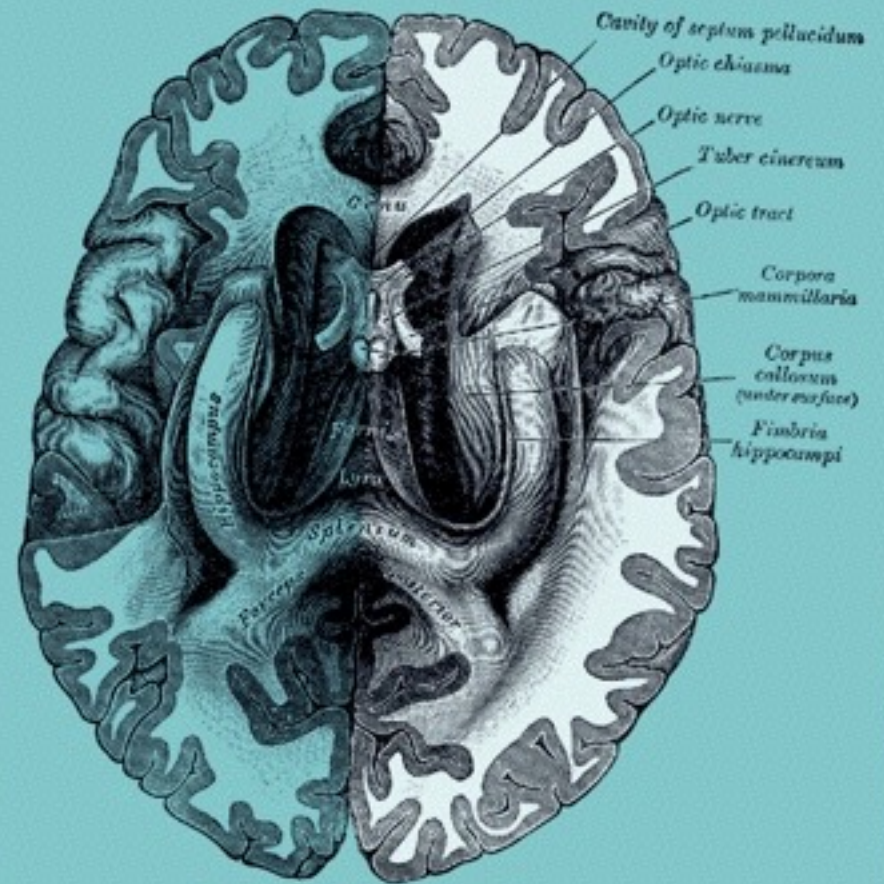
(Sperry)





Right Hemisphere Sees Big Picture.  
- “rapid complex synthesis”

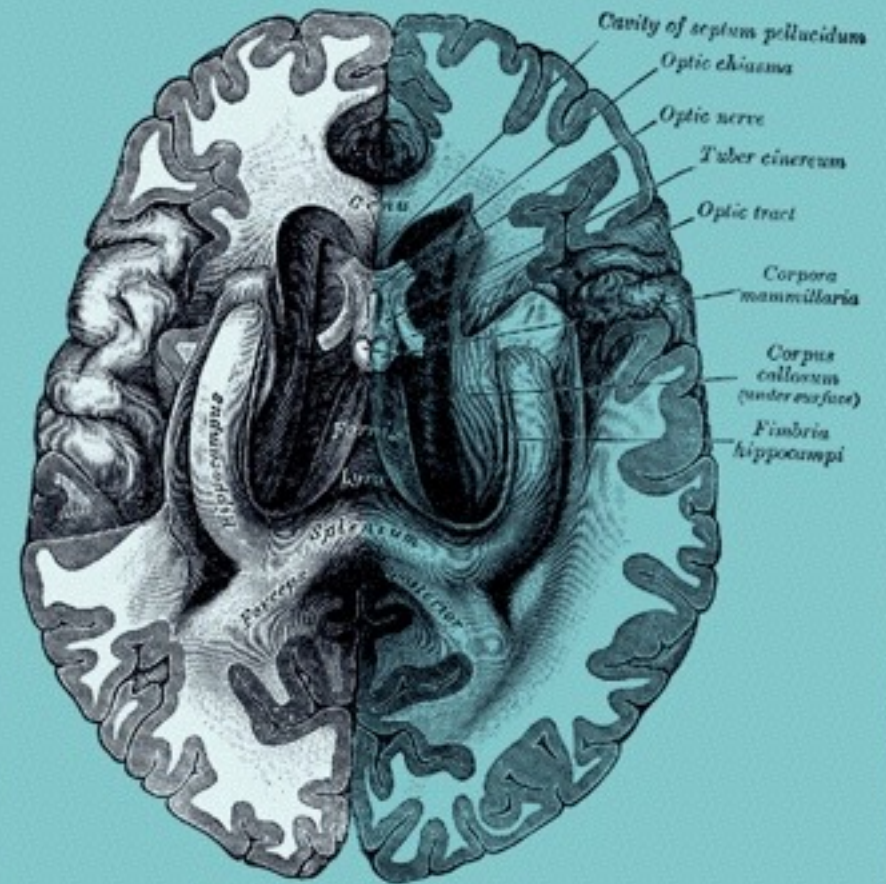
(Sperry)



Left Hemisphere Handles  
Convergent Thinking

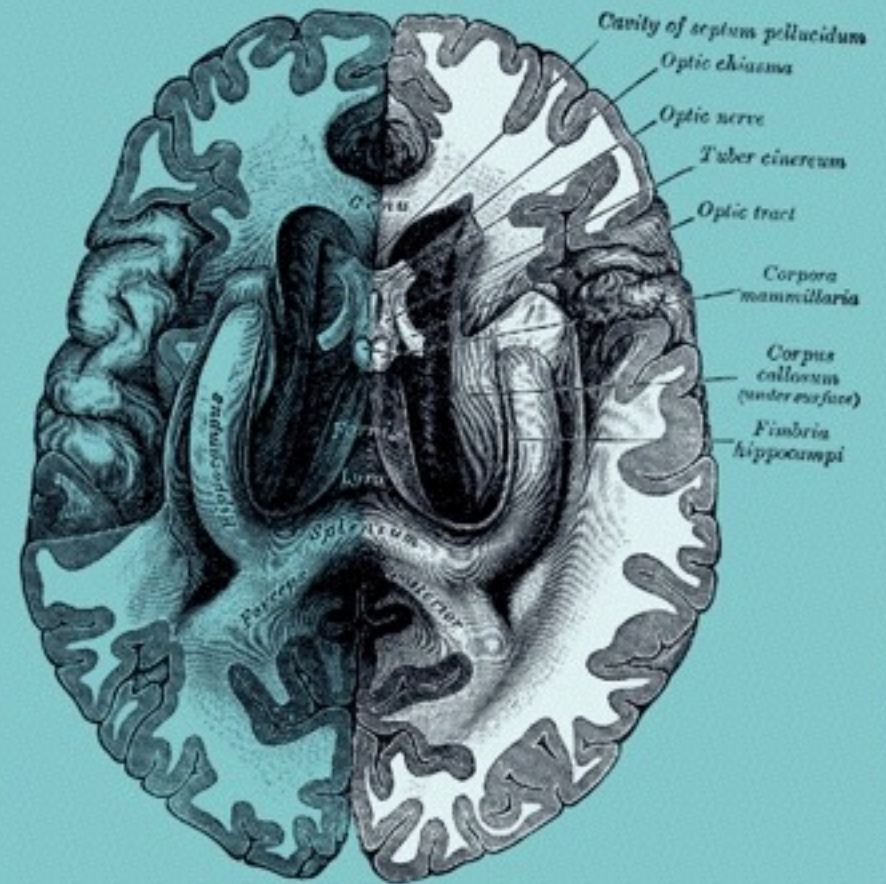
- “Solving well-defined problems  
that have one correct answer”

(Csizentmihali)



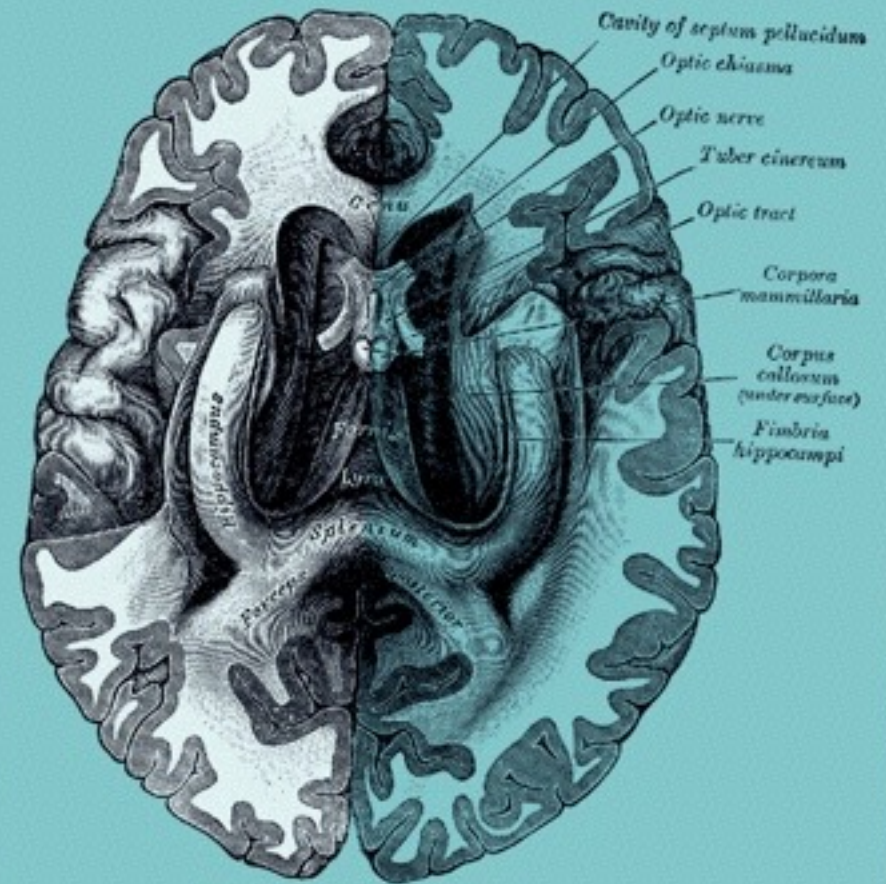
Right Hemisphere Handles Divergent Thinking.  
- “ability to generate a great quantity of ideas, flexibility”

(Csizentmihali)



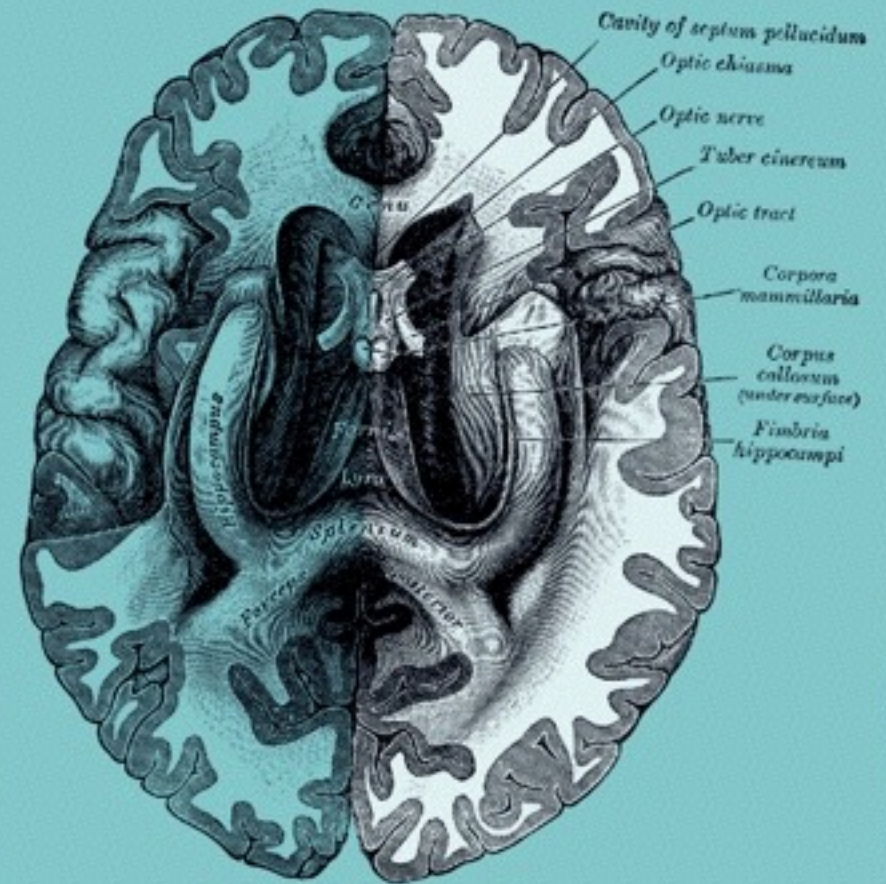
## Left Hemisphere

- logic
- sequence
- literalness



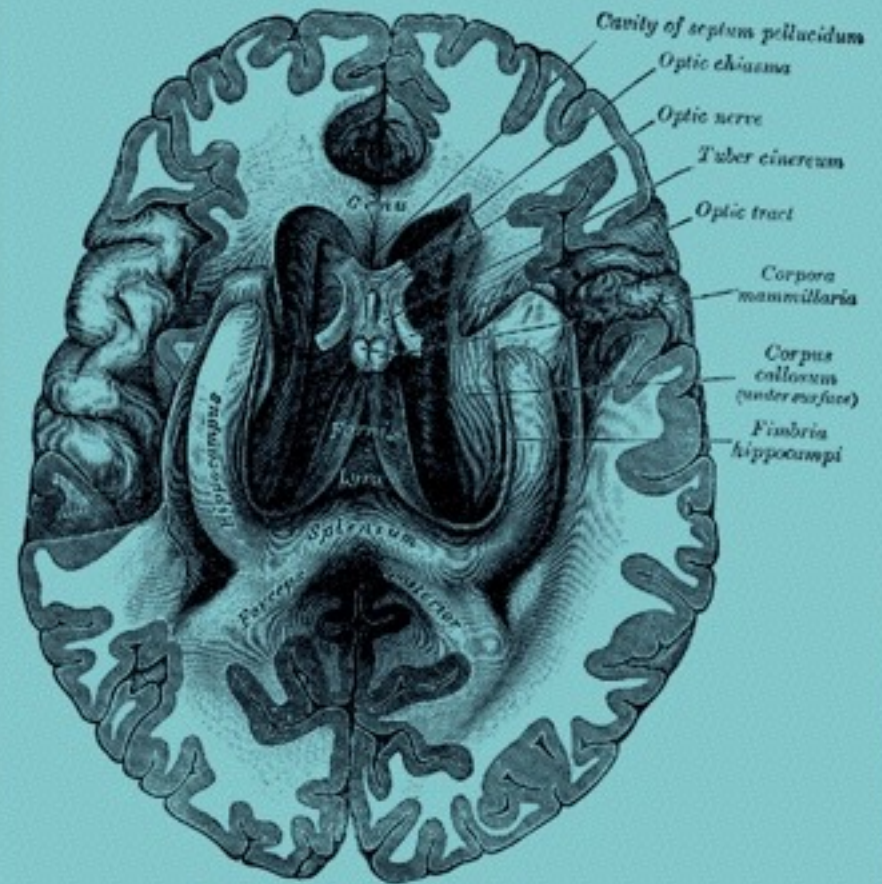
## Right Hemisphere

- synthesis
- emotional expression
- context
- big picture



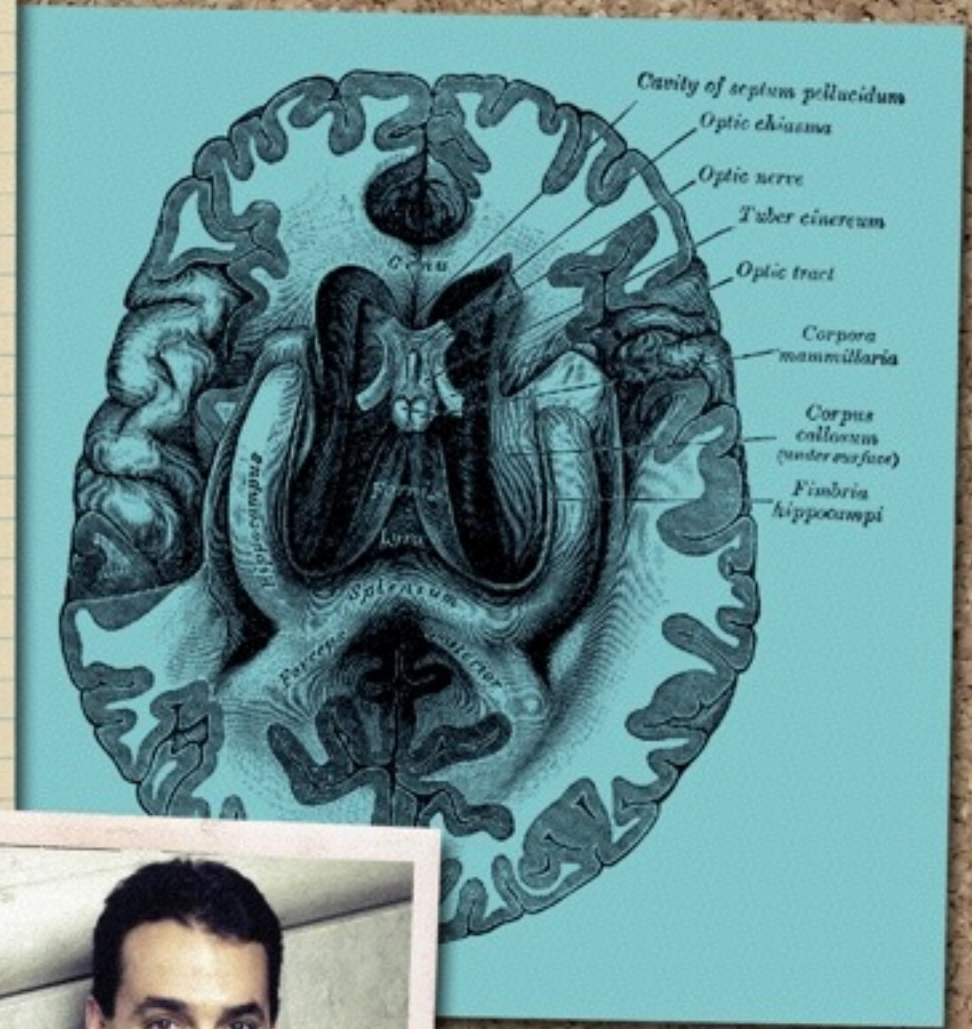
“However Tempting it is to talk of right and left hemispheres in isolation, they are actually two half-brains, designed to work together as a smooth, integrated whole in one entire complete brain. The left hemisphere knows how to handle logic and the right hemisphere knows about the world. Put the two together and one gets a powerful thinking machine. Use either on its own and the results can be bizarre or absurd.”

- Chris McManus, Right Hand Left Hand  
p.181



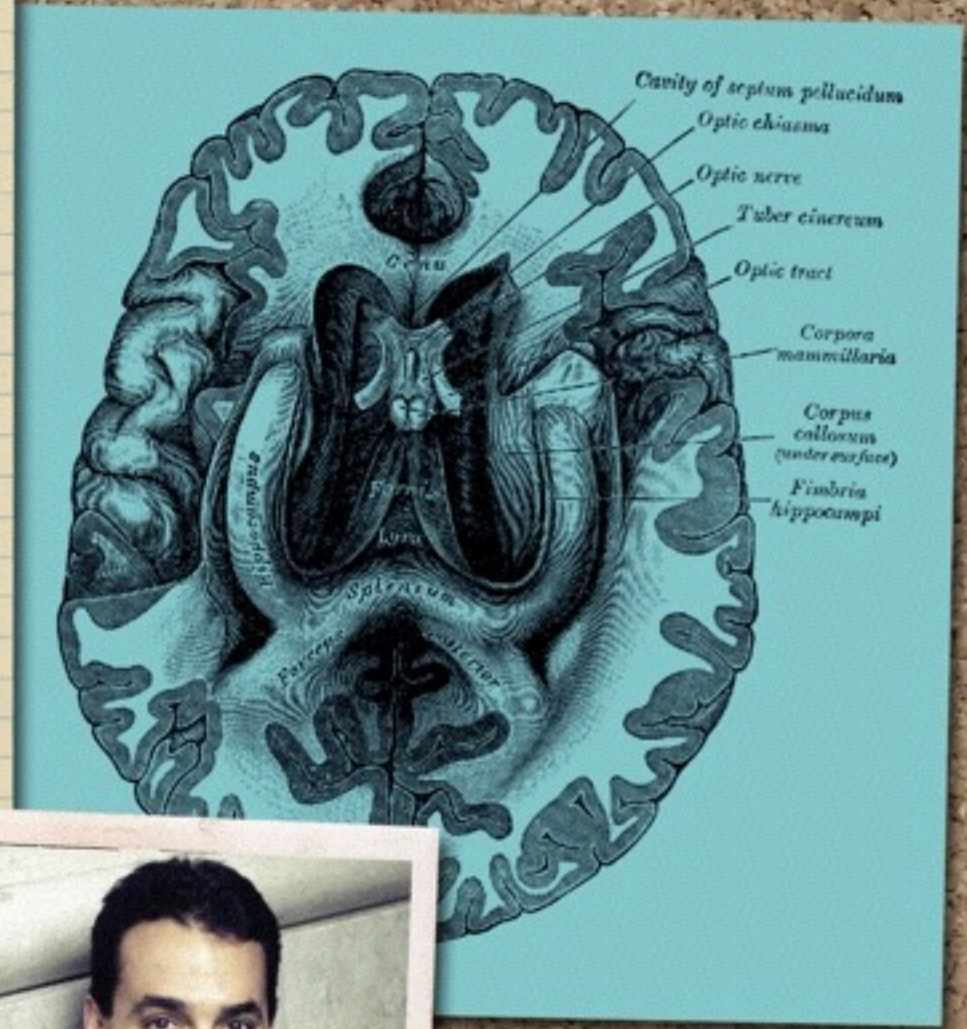
“Some people seem more comfortable with logical, sequential, computer-like reasoning. They tend to become accountants and engineers. Other people are more comfortable with holistic, intuitive and non-linear reasoning. They tend to become inventors, entertainers, and counselors.”

- Daniel Pink, [A Whole New Mind](#)  
p.26

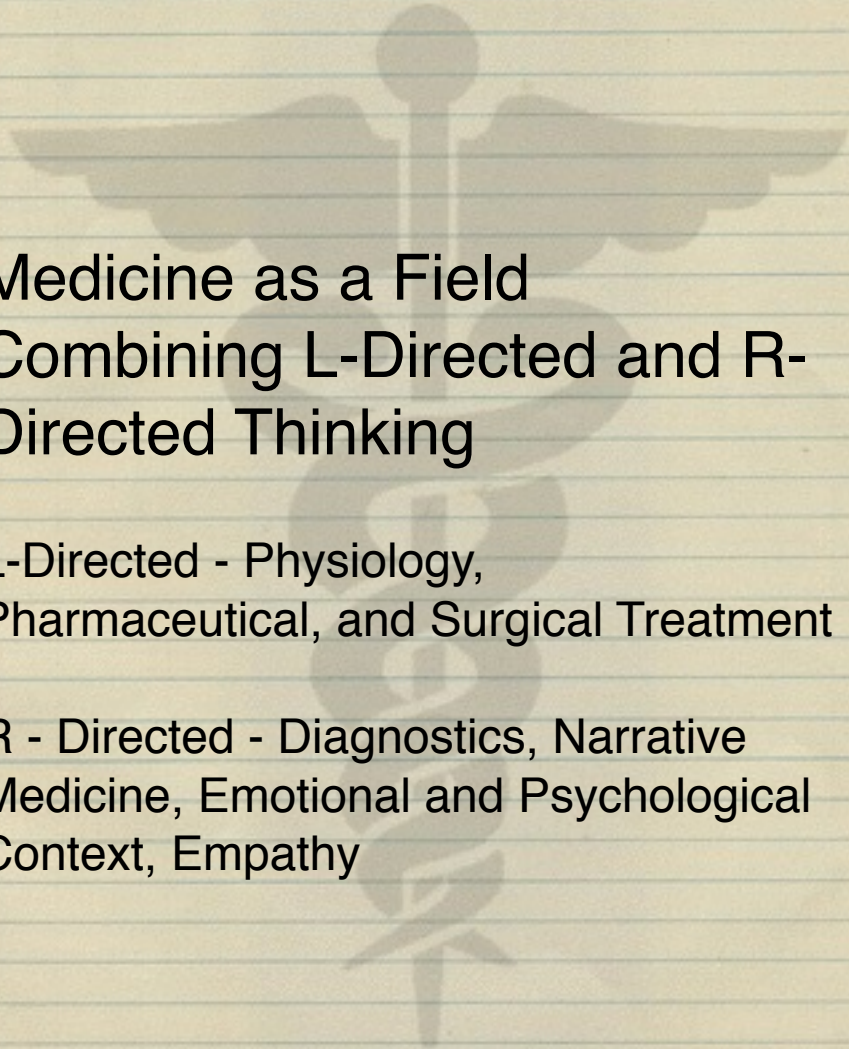


## Movement Toward R-Directed Thinking

abundance  
asia  
automation







## Medicine as a Field Combining L-Directed and R- Directed Thinking

L-Directed - Physiology,  
Pharmaceutical, and Surgical Treatment

R - Directed - Diagnostics, Narrative  
Medicine, Emotional and Psychological  
Context, Empathy



**Columbia Medical School**

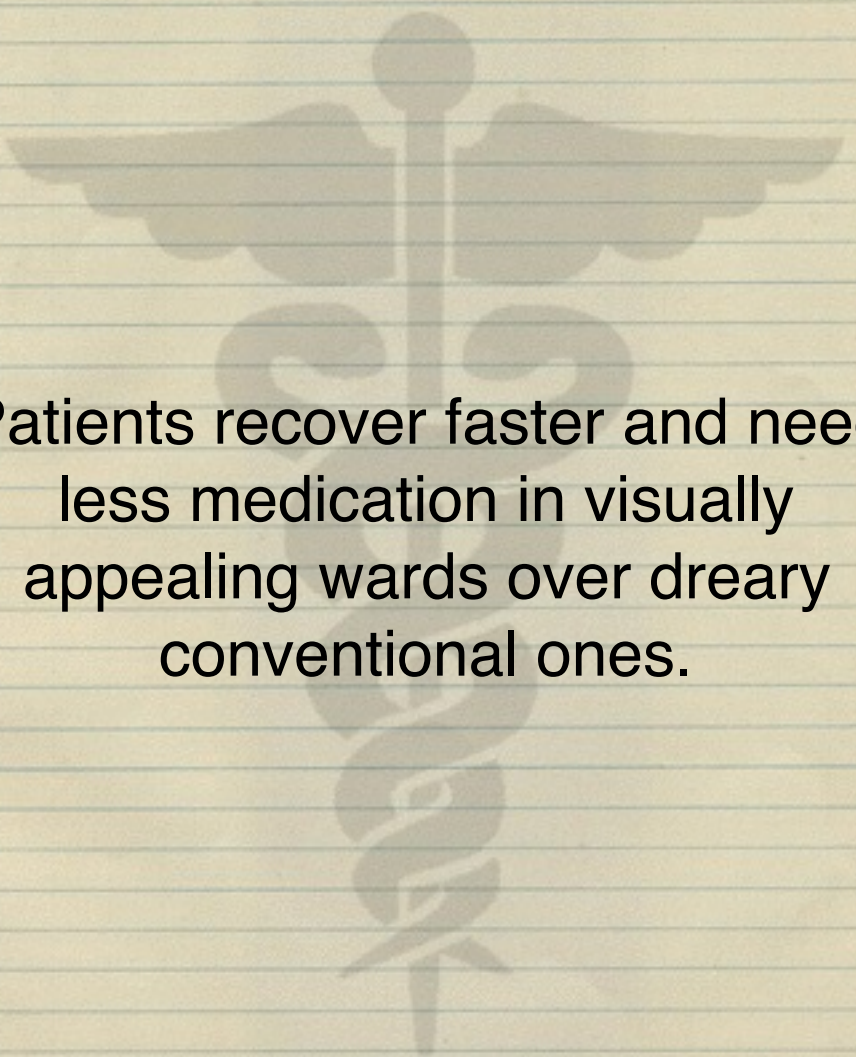
“Narrative Medicine” - diagnosis based  
in patient’s story

**Yale School of Medicine**

honing powers of observation at Yale  
Center for British Art

**UCLA Medical School**

hospital overnight program to develop  
“students’ empathy with patient”



Patients recover faster and need less medication in visually appealing wards over dreary conventional ones.

## Education as a Field Combining L-Directed and R- Directed Thinking

“Rational capacities depend on narrative imagining... Most of our experiences, our knowledge and our thinking is organized as stories.”

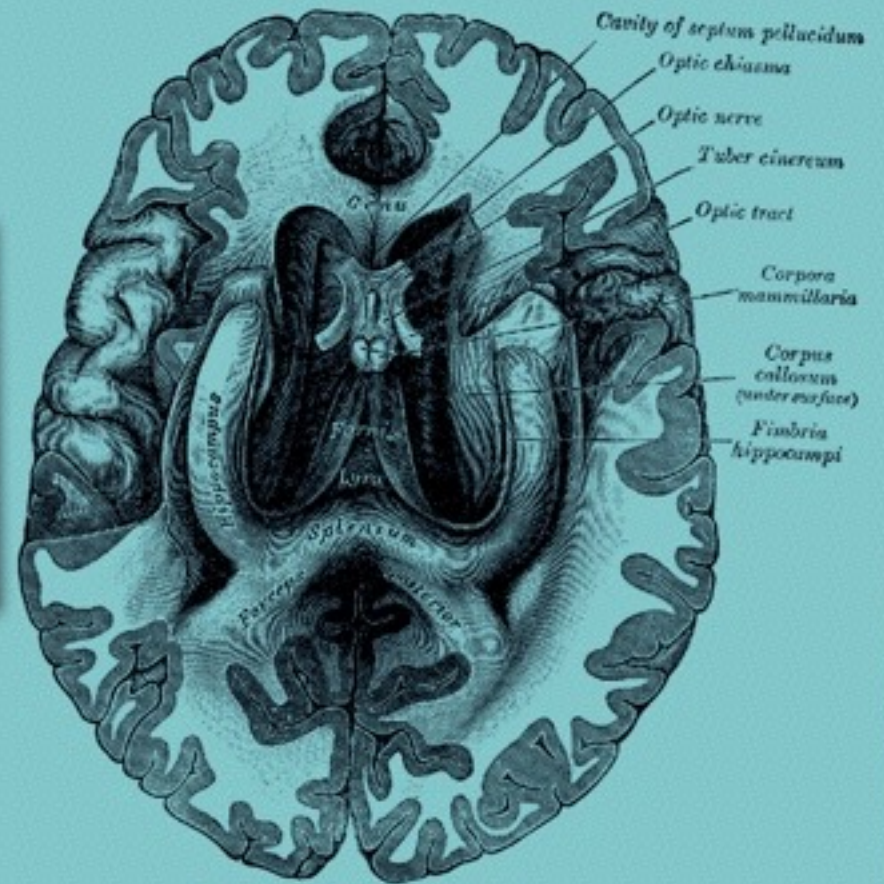
Mark Turner, The Literary Mind p. 4 - 5

## **Yale Psychology Professor Robert Sternberg Proposes An Alternative SAT**

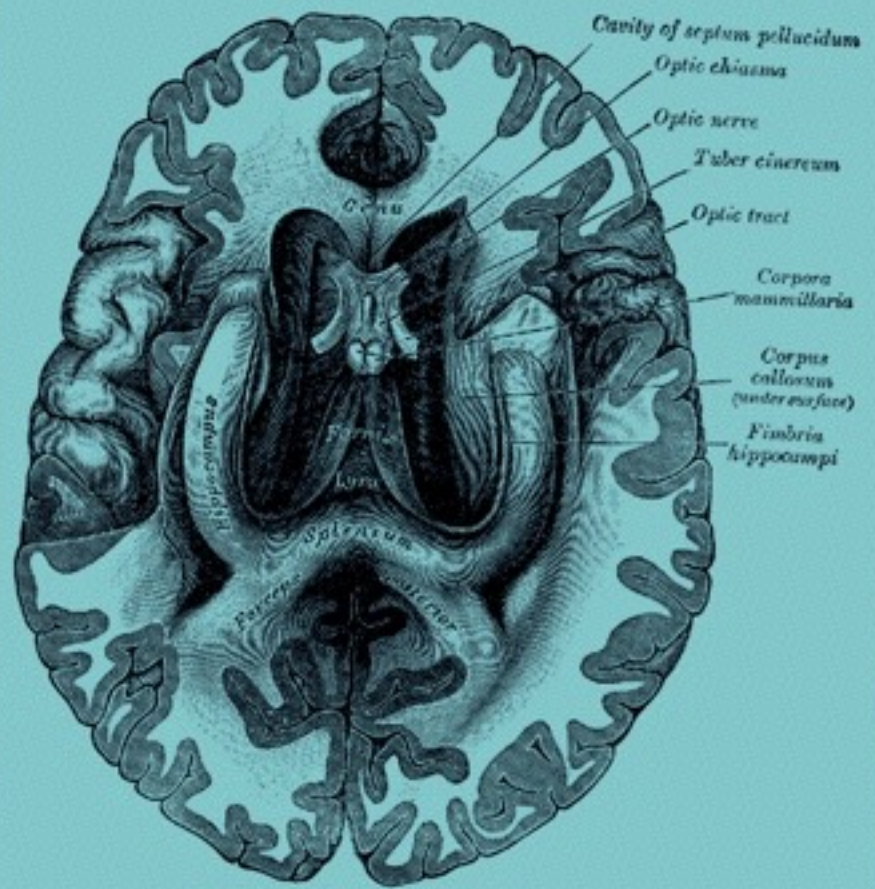
- craft humorous captions for cartoons
- write narrative stories
- face “real-life” challenge

Twice as successful as SAT in predicting how well students perform in college.

Creative Problem Solving  
Requires Use of Both Sides  
of the Brain



# Csitzentmihali's Personality Dualities of Creative People



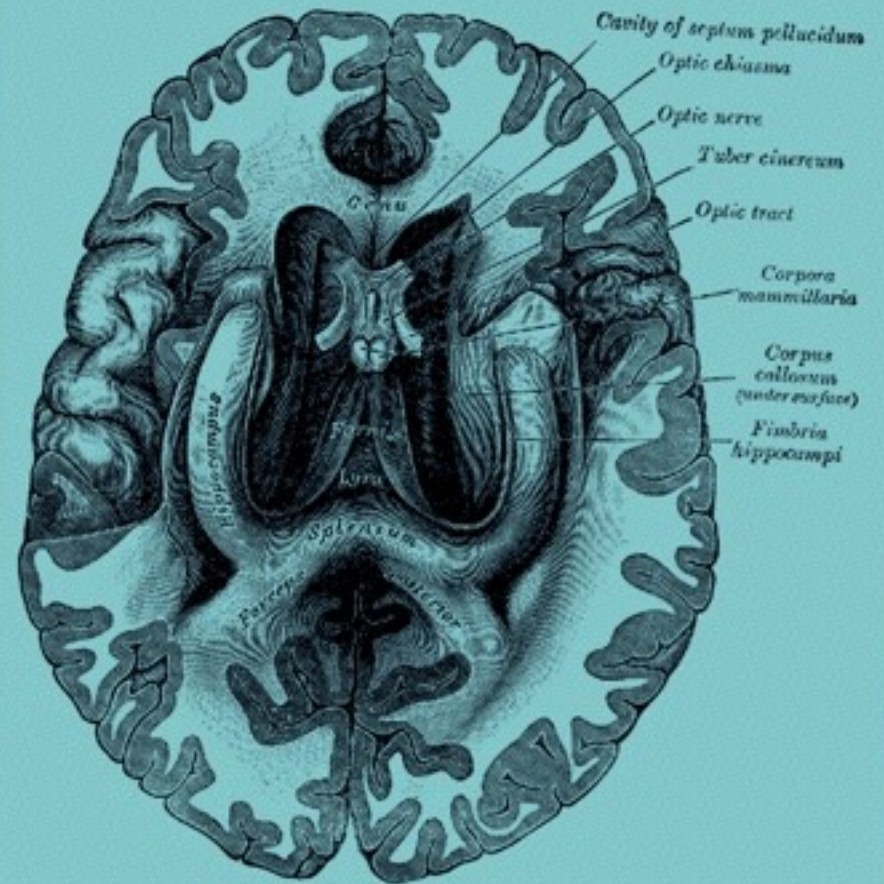
# Csitzentmihali's Personality Dualities of Creative People

## Left Brain

- convergent thinking
- discipline
- rooted in reality
- logical
- objective

## Right Brain

- divergent thinking
- playfulness
- imagination/fantasy
- emotional
- passionate







## **Moving Between Right & Left Sides of Brain**

- preschool kids who like to draw (right side activity) in play time
- carrot/stick motivation (logical left side activity) could have negative motivational impact on creative play (right side activity)



Experiment where people are given candle, matches, and box of tacks

Experiment where people are  
given candle, matches, and box  
of tacks

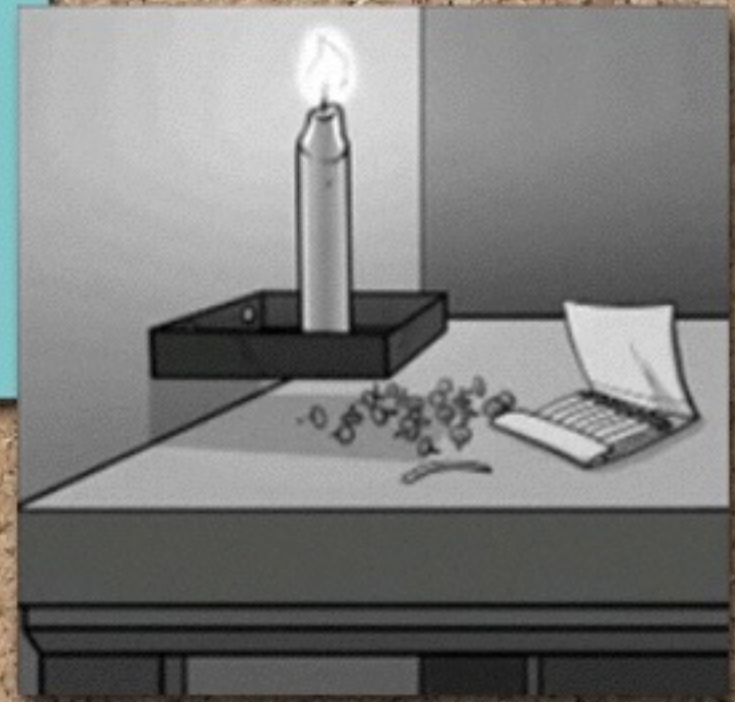
**Group 1** - just asked to solve problem

**Group 2** - offered \$5 if they were among the  
first 25 to get solution



first 25 to get solution

Group 2 took an average of **3 1/2** minutes longer to solve the problem.



## **Results of Strong R-Directed Thinking**

Self-made millionaires are four times as likely to be dyslexic than the rest of the population.

Dyslexics struggle with L-Directed Thinking and often compensate by acquiring extra strong R-Directed capabilities.

“Dyslexics think differently. They are intuitive and excel at problem solving, seeing the big picture and simplifying... They are poor reciters, but inspired visionaries.”

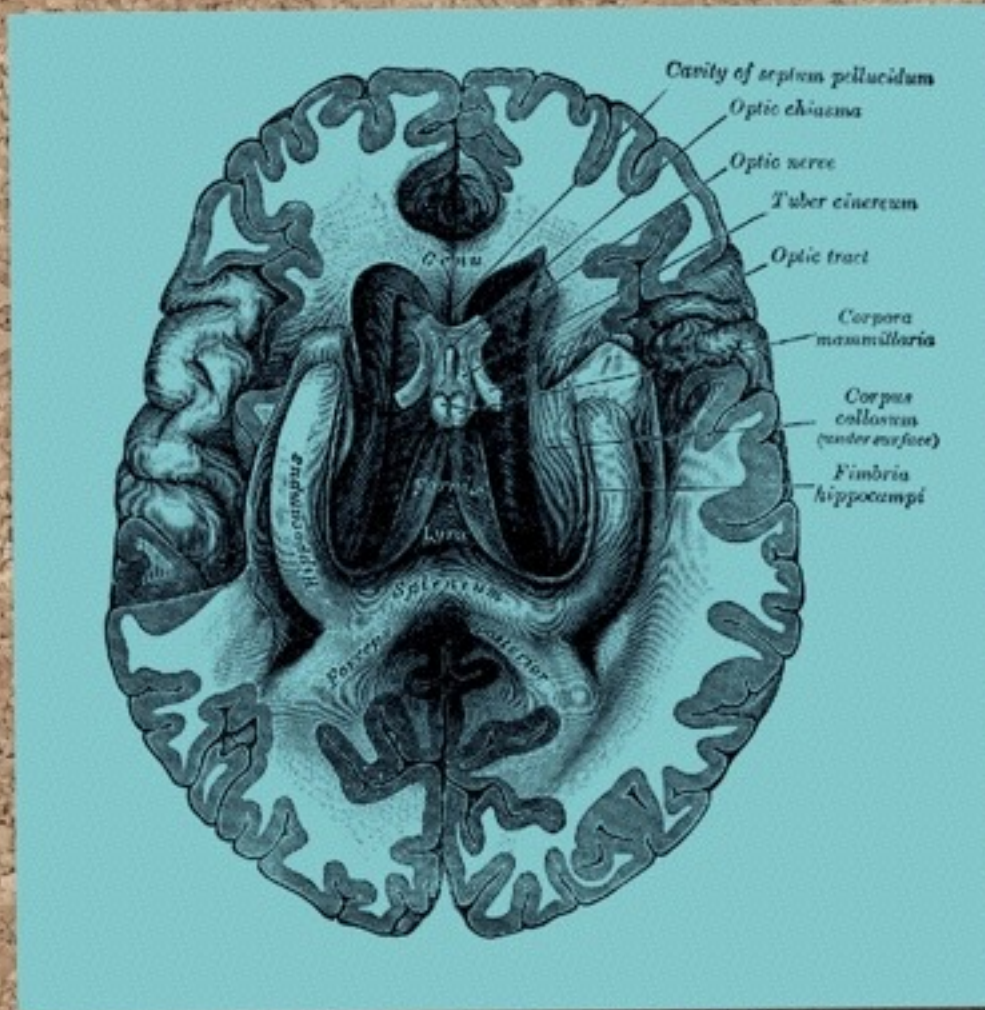
- Sally Shaywitz, Yale neuroscientist and specialist in dyslexia



**Aphasics** (people with damage to their brain's left hemisphere that compromise their ability to speak and read language) are exceptionally good lie detectors

Nancy Etcoff, psychologist at Massachusetts General Hospital, found they can spot liars 70 percent of the time from facial expressions.





**Balancing When and How You Use Right and Left Brain Functions**  
in your project  
in class as a whole