

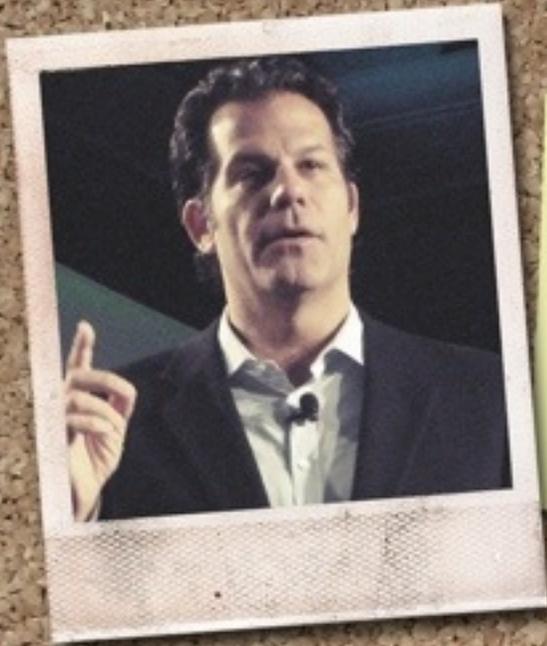
Right Brain / Left Brain



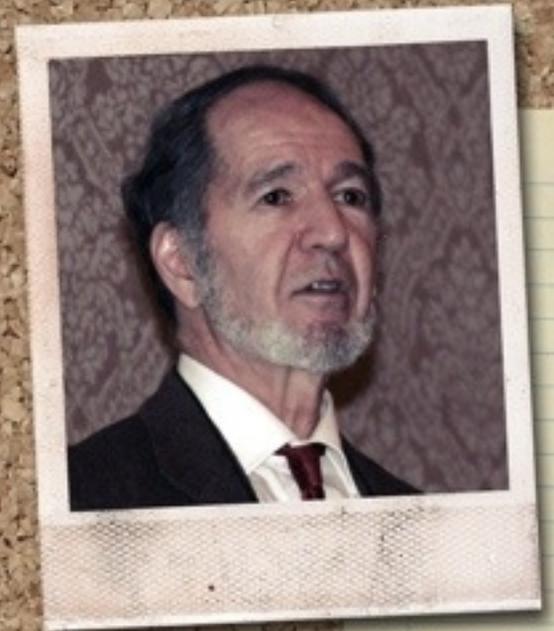
Interdisciplinary Course

Hybridization – derived from heterogeneous sources;
composite



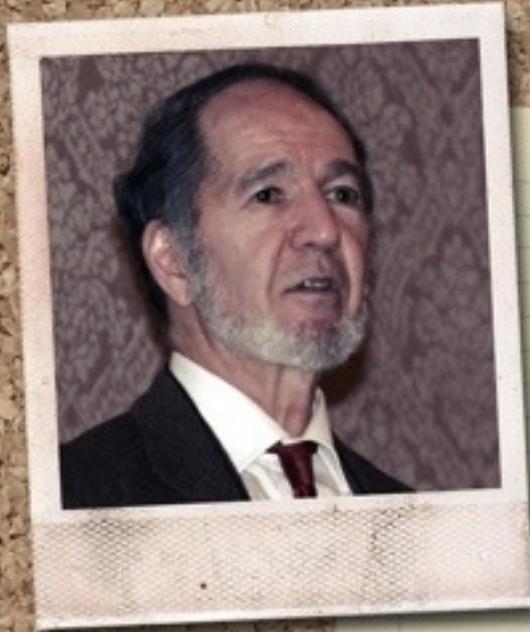


Richard Florida
-social theory
-economic theory



Daniel Pink
-business
-technology
-law





Jared Diamond

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



Daniel Pink

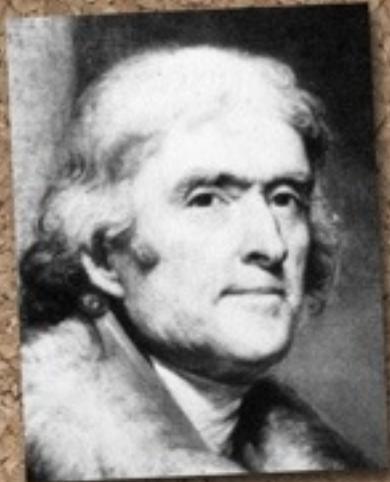
- business
- technology
- law





Alexander Hamilton

- law
- finance
- politics



Thomas Jefferson

- farming
- architecture
- politics
- inventor

sm

ology





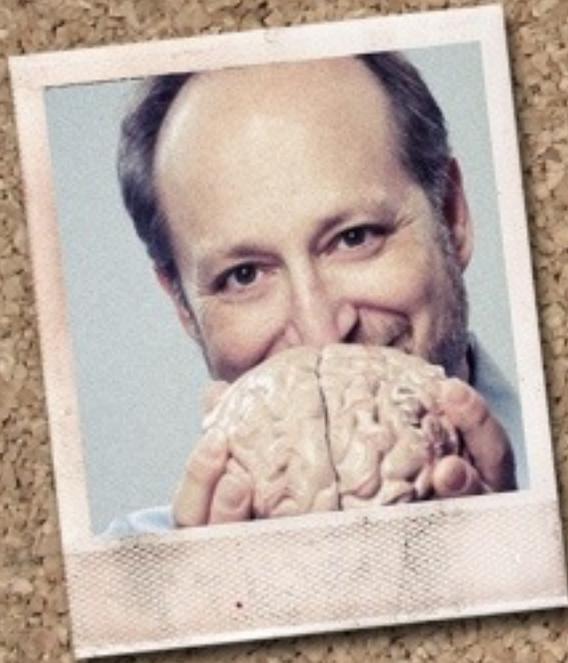
Jane Goodall
- primatology
- ethology
- anthropology
- environmentalism



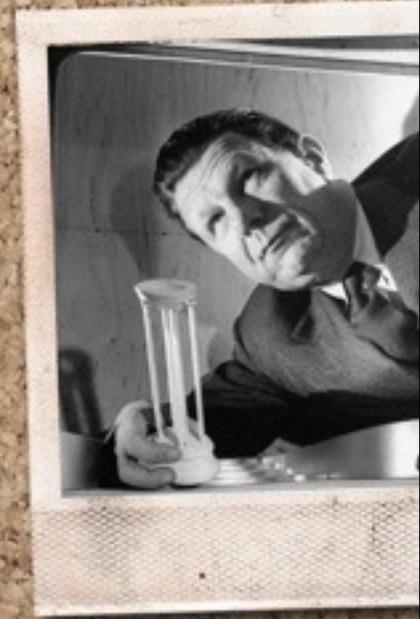
Mihaly
Csikszentmihalyi
- psychology
- sociology
- anthropology



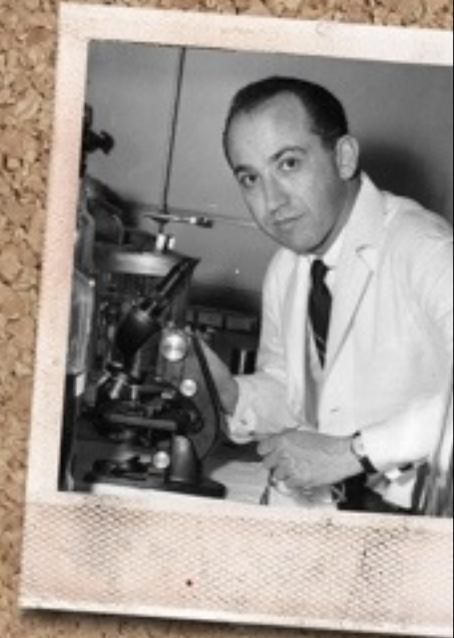
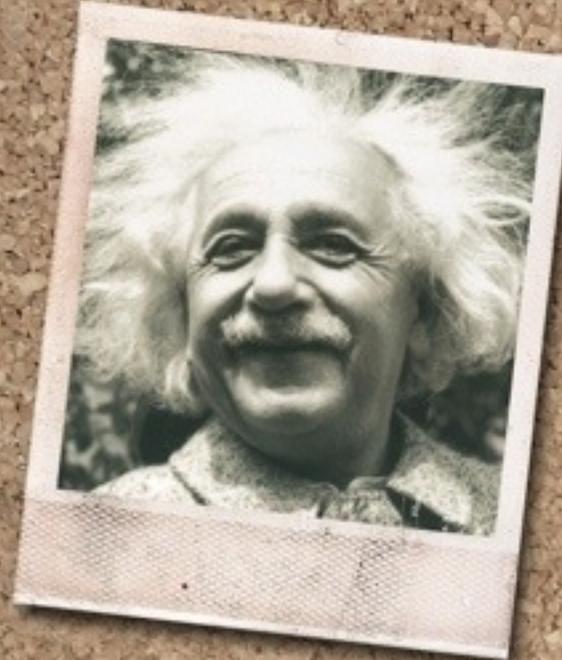
Guglielmo Marconi
- scientist
- inventor



Norman Doidge
– physiology
– neuroscience
– psychiatry
– psychoanalysis



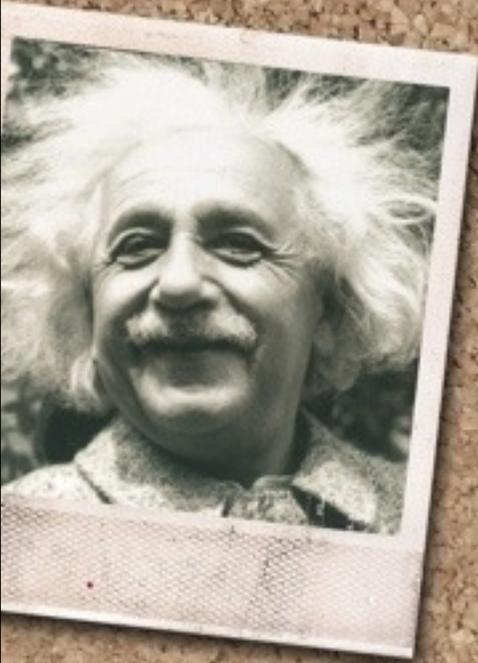
Albert Einstein
– theoretical physics
– philosophy
– politics



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



Jonas Salk
- medical research
- virology
- biophilosophy



Bel Geddes
material design
product design
interior design

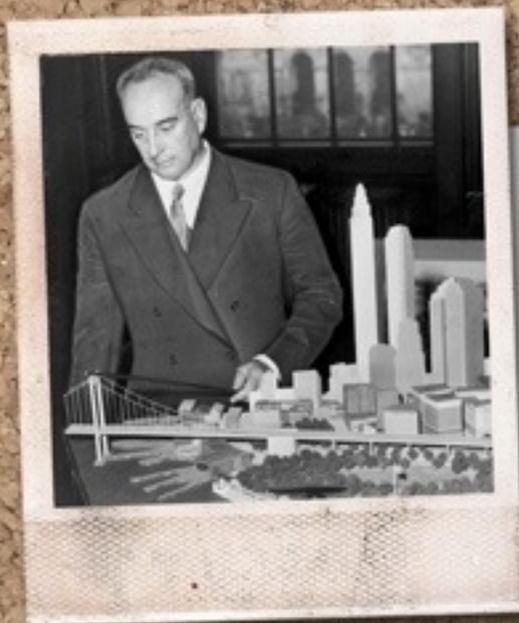


Joel Salatin
- farming
- environmentalism



John Stevens
- civil engineering
- project
management

work
research
philosophy



Robert Moses
- urban planning
- politics



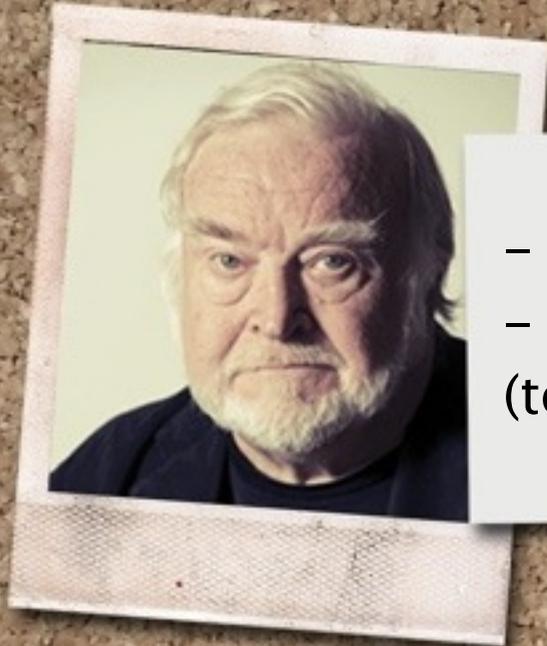
Malcolm Gladwell
– psychology
– social psychology
– social science



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)

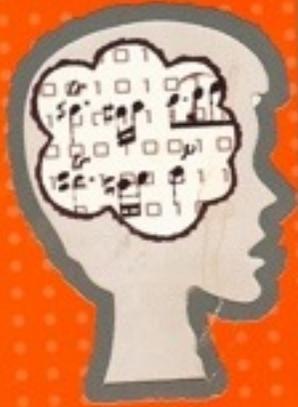


The *New York Times* and *BusinessWeek* Bestseller

"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

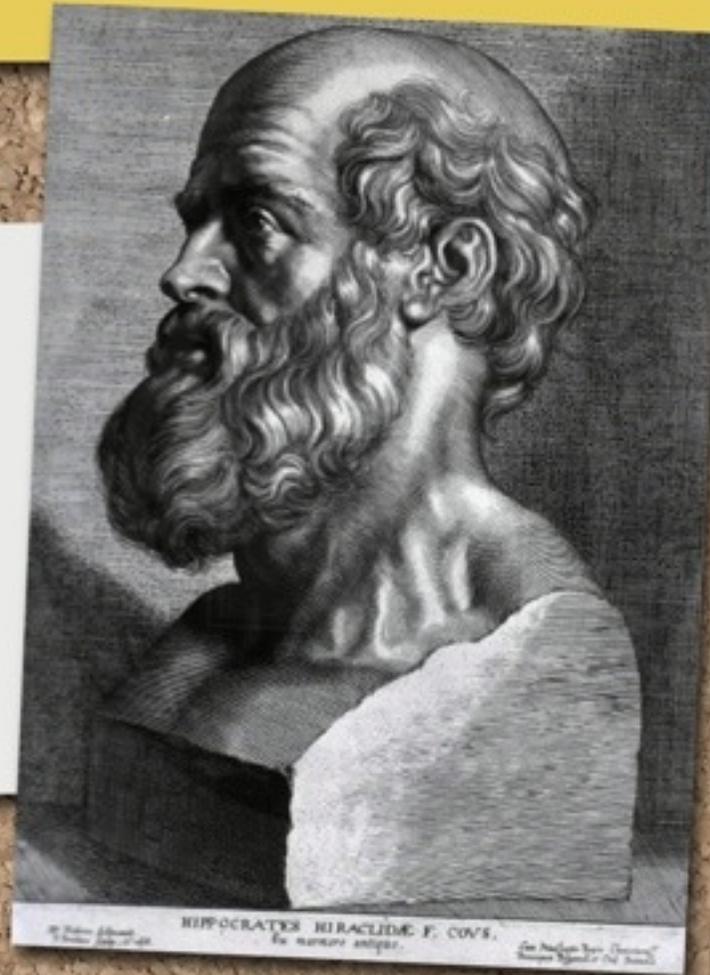
375 BCE

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.

WINERS
UTURE

H. 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

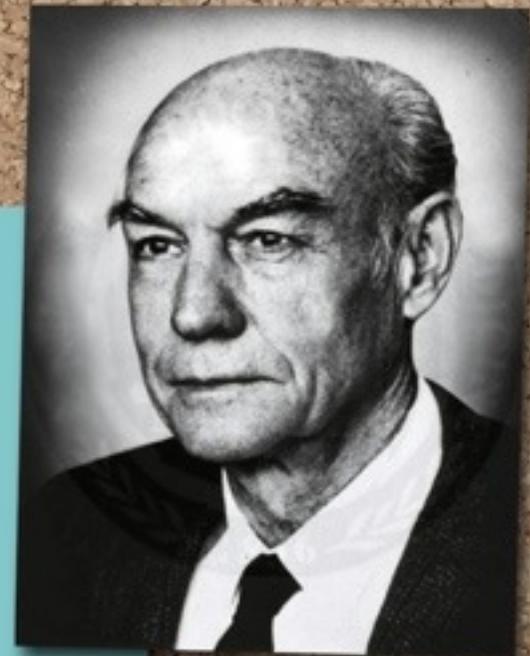
1975

2000

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

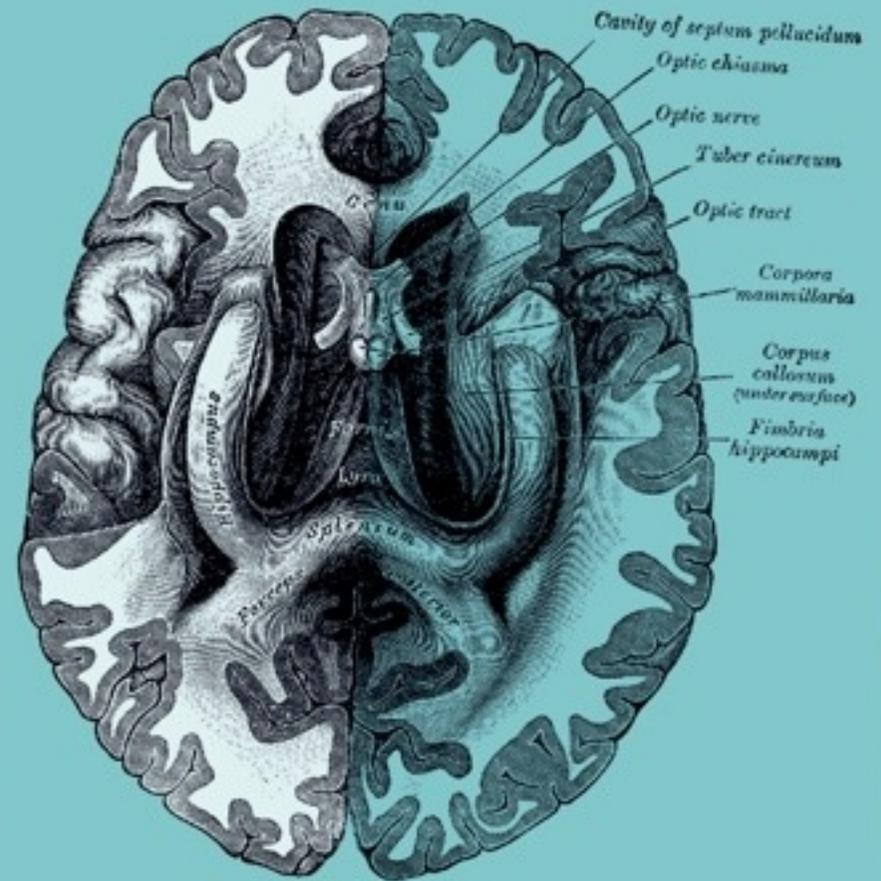
1950s American neurologist Roger W. Sperry disproved this.

“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



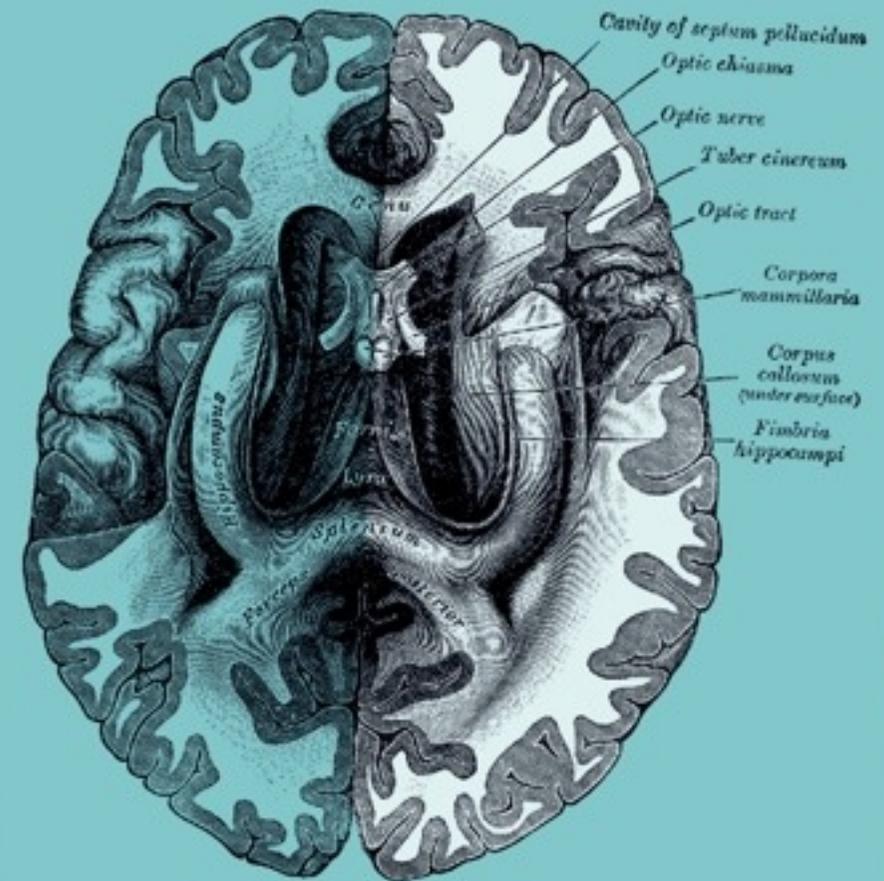
Left Hemisphere

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



Right Hemisphere

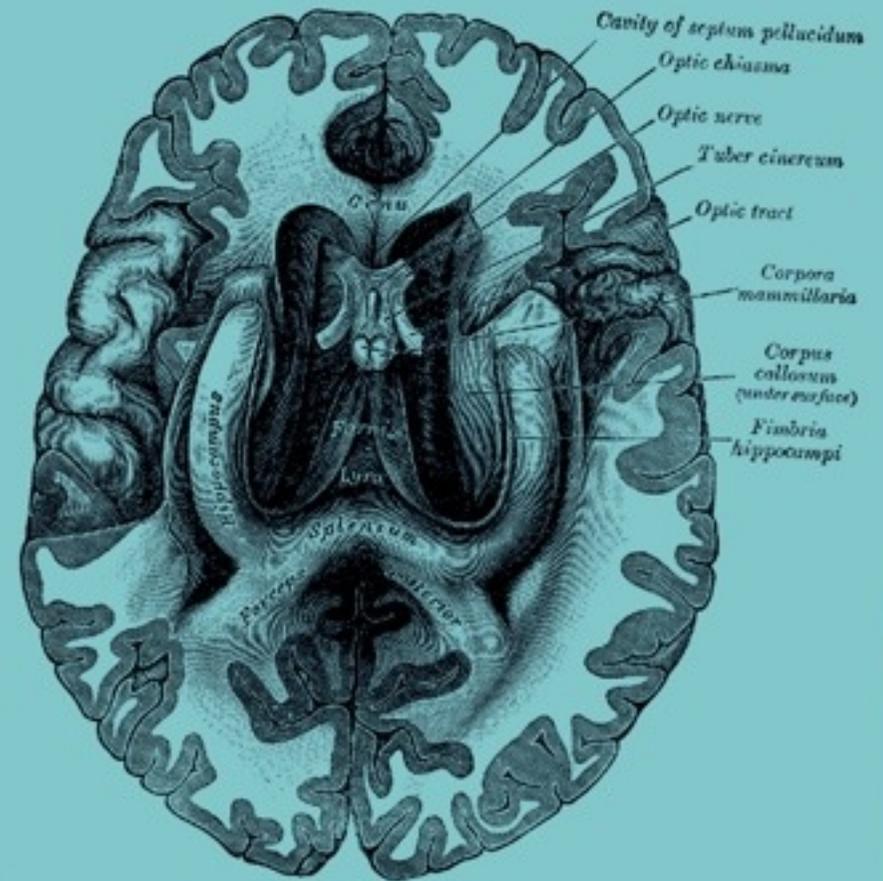
- reasons holistically
- recognize patterns
- interprets emotions and nonverbal expression
- handles spatial and visual information



Brain is Contralateral

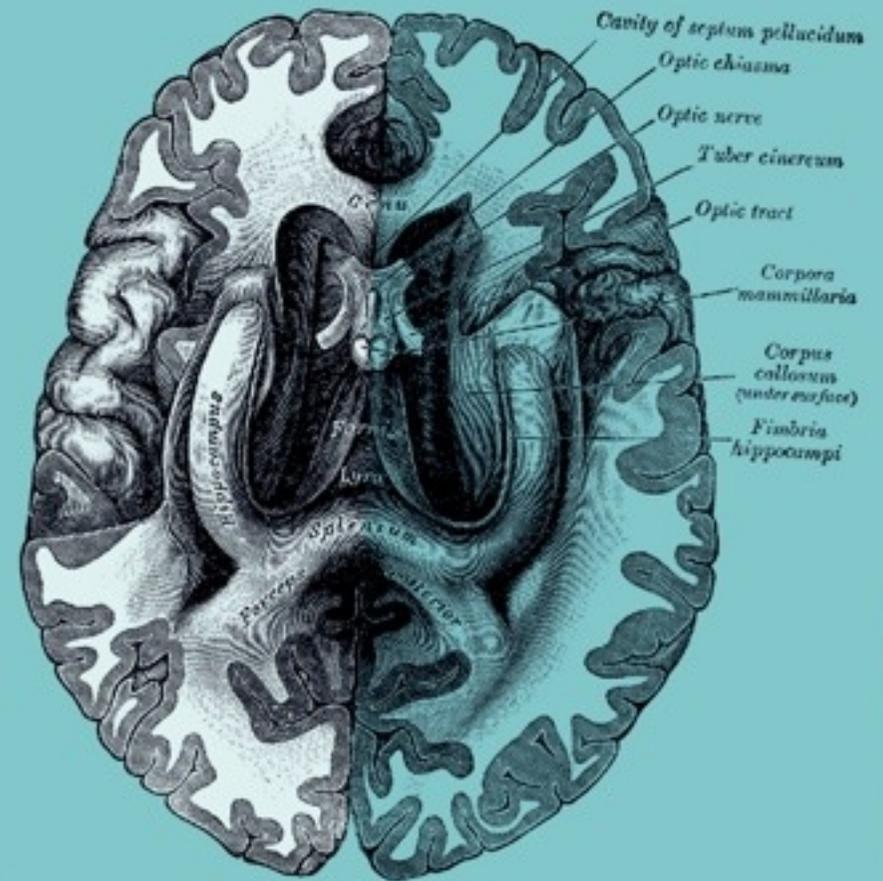
left hemisphere controls right side of
body

right hemisphere controls left side of
body



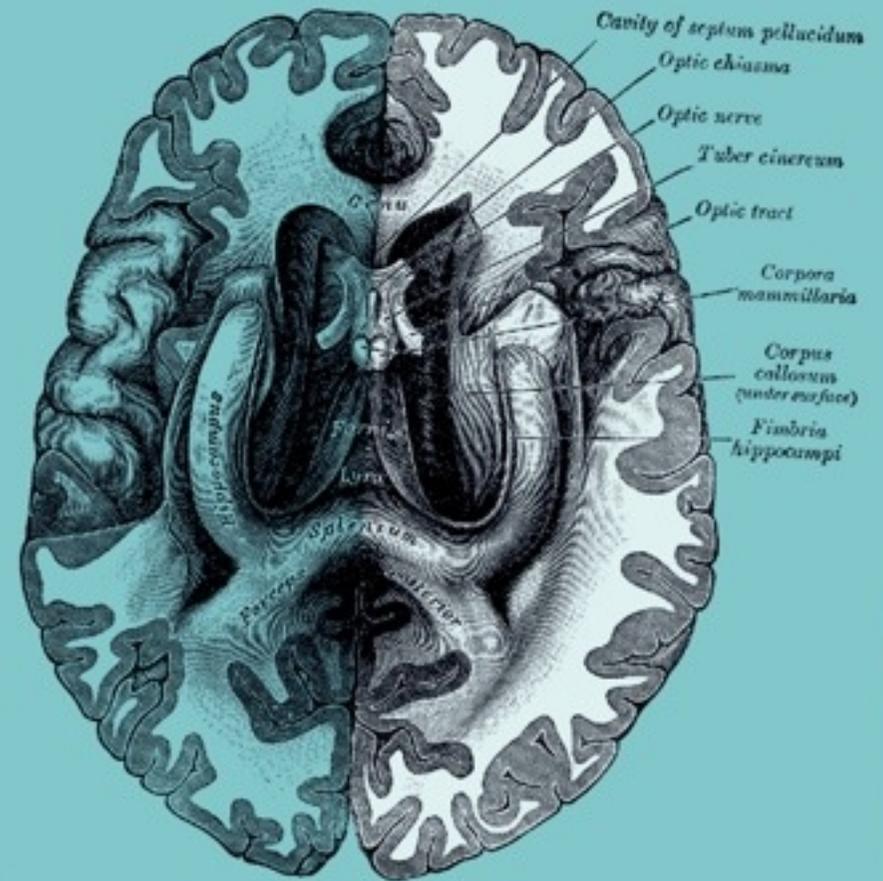
Left Hemisphere is Serial

- talking
- reading
- writing

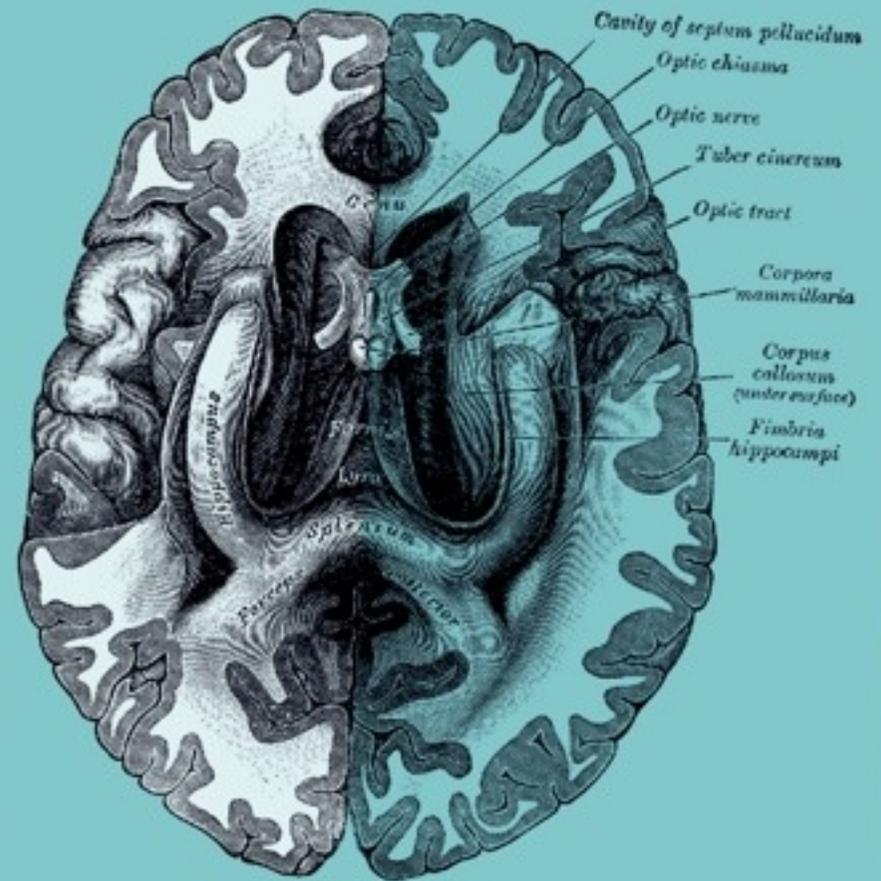


Right Hemisphere is Simultaneous

- face recognition
- orientation
- image register

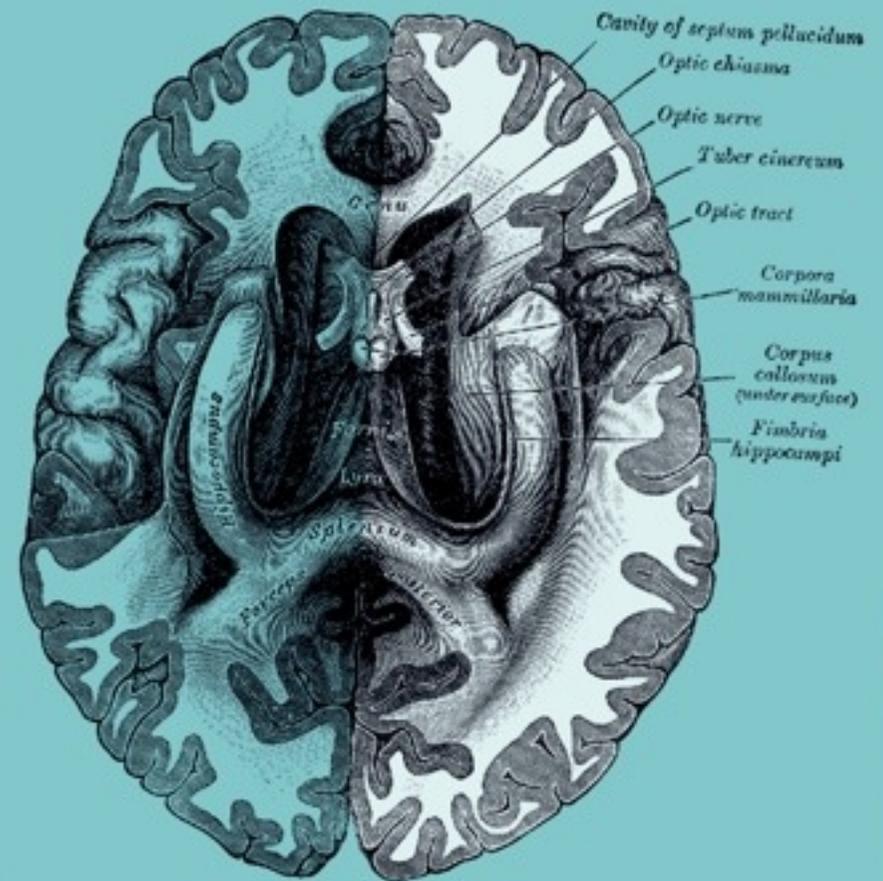


Left Hemisphere is Literal



Right Hemisphere Reads Emotion.

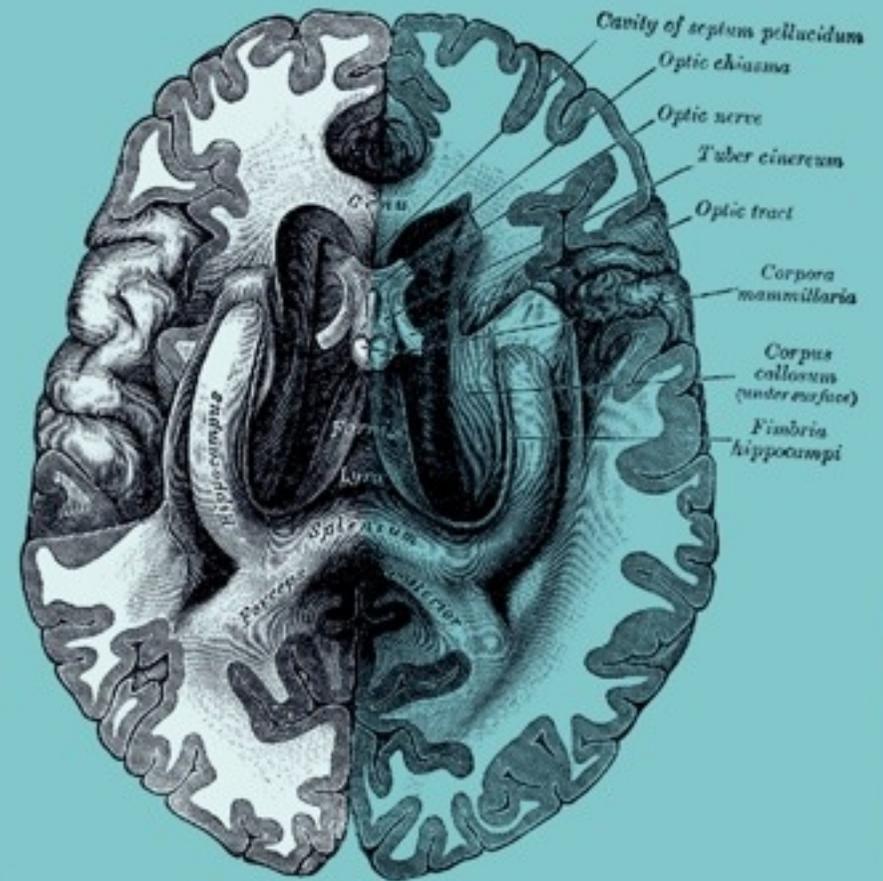
- nuance
- metaphor



Left Hemisphere Analyzes Detail

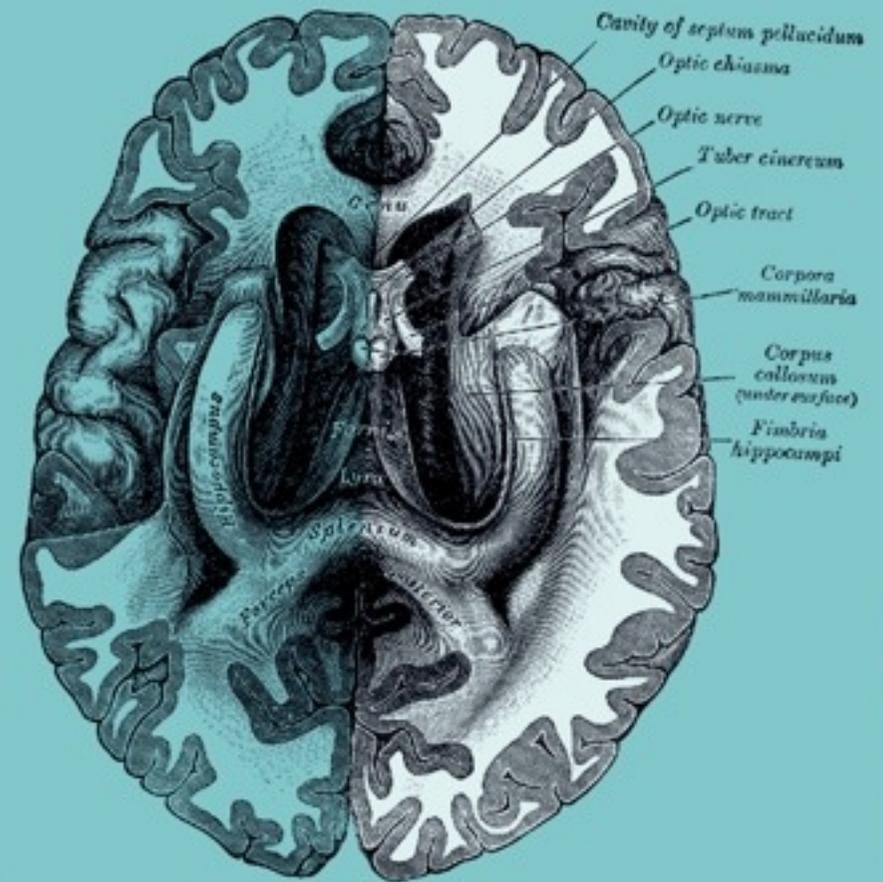
- logical
- analytical
- computer-like

(Sperry)

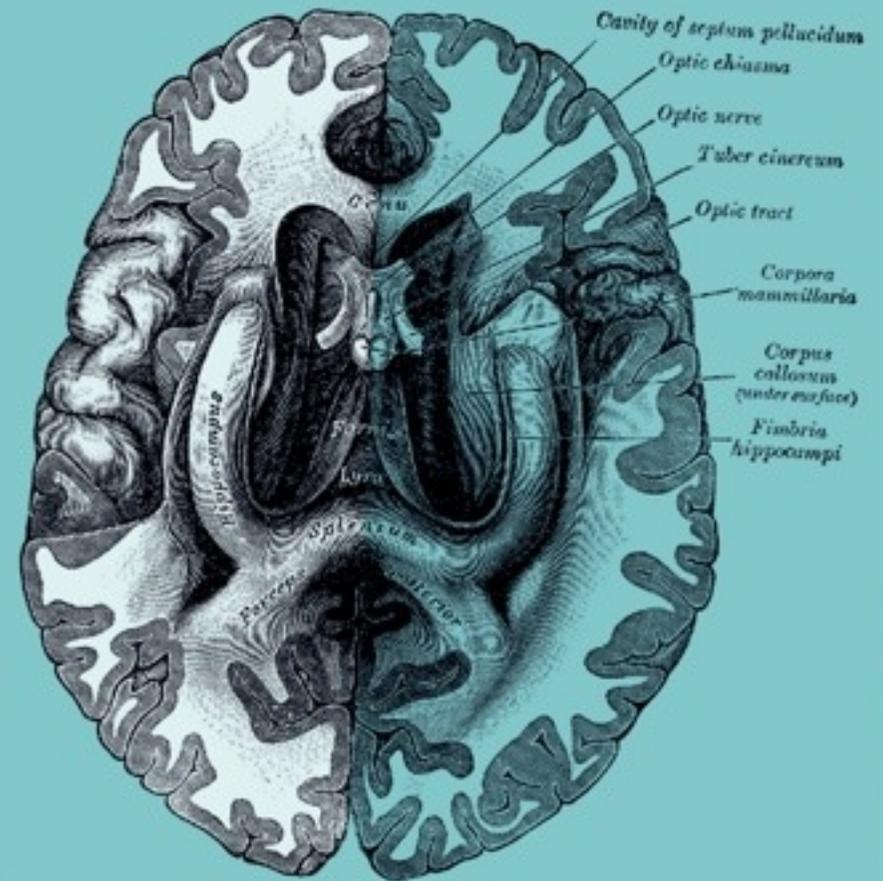


Right Hemisphere Sees Big Picture.
– “rapid complex synthesis”

(Sperry)

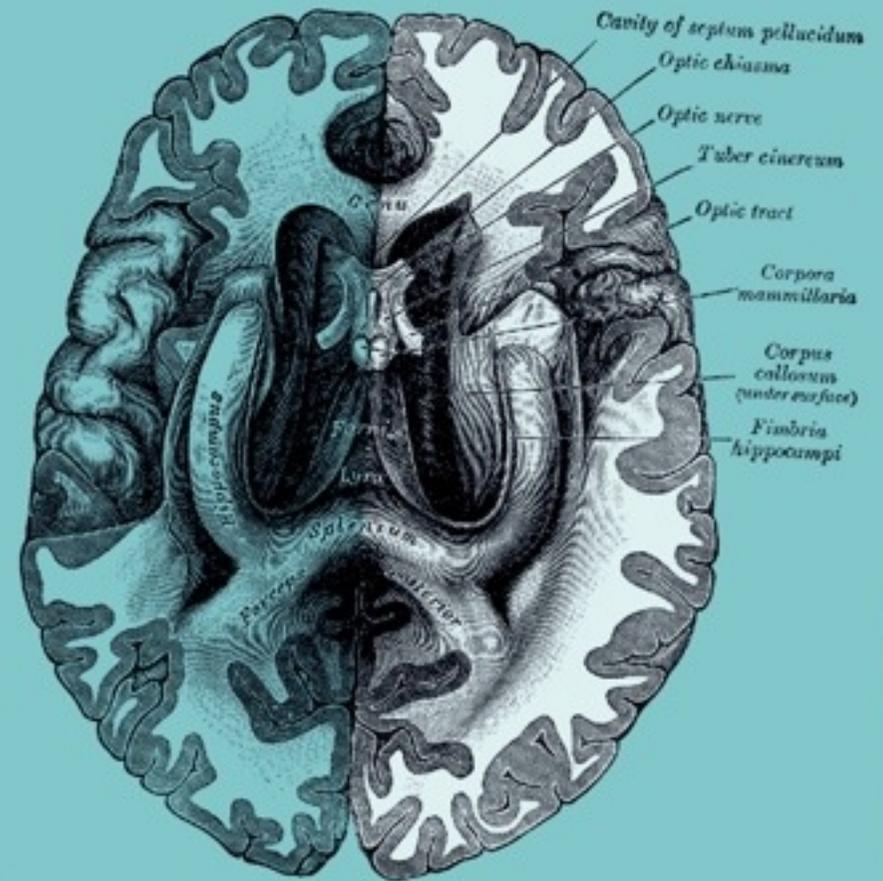


Left Hemisphere Handles
Convergent Thinking
– “Solving well-defined
problems that have one correct
(Csizentmihali)



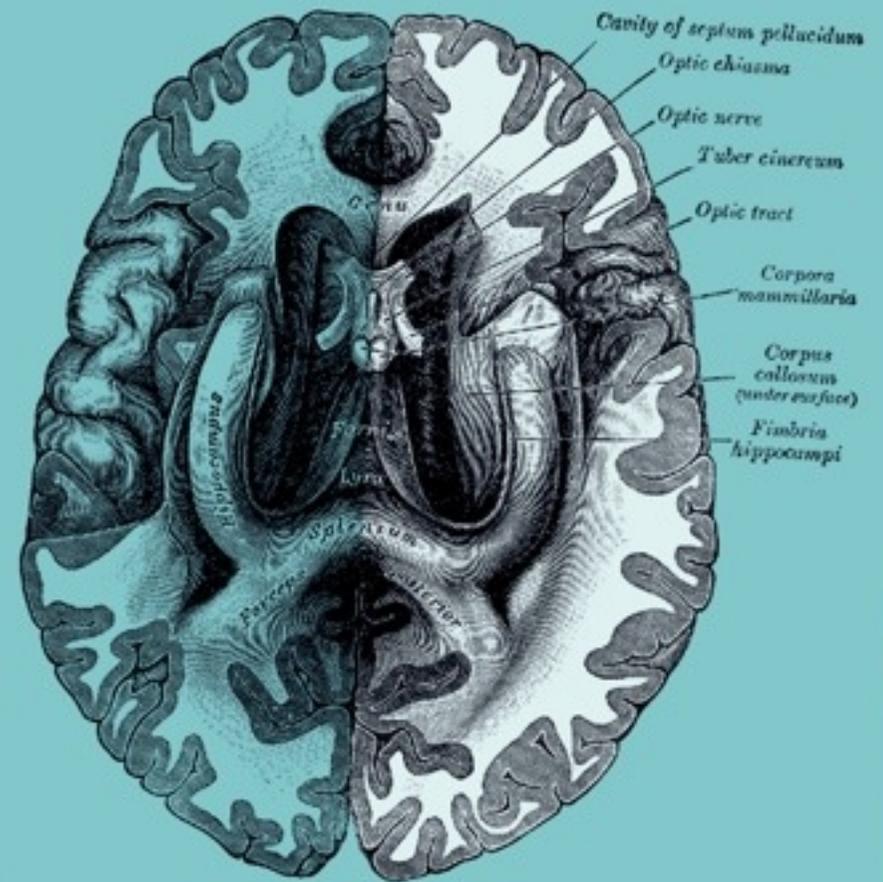
Right Hemisphere Handles
Divergent Thinking.
– “ability to generate a great
quantity of ideas, flexibility”

(Csizentmihali)



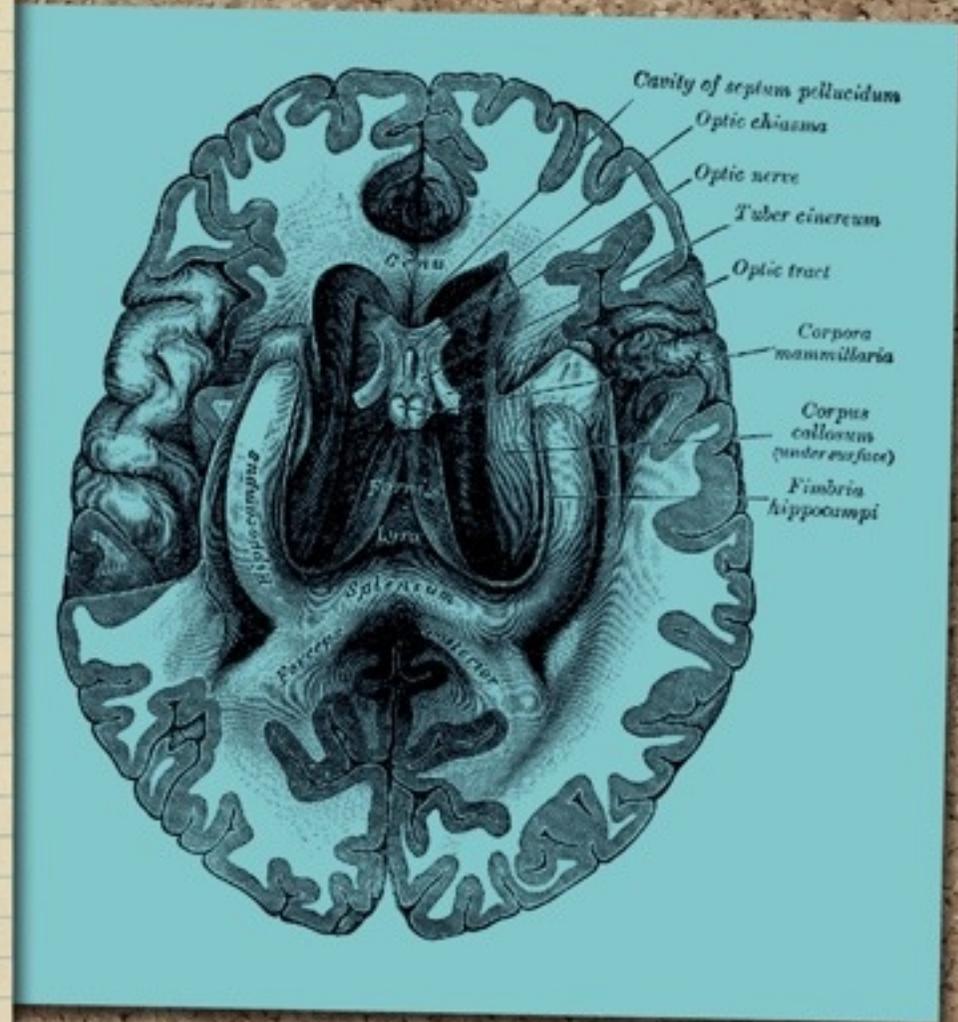
Right Hemisphere

- synthesis
- emotional expression
- context
- big picture



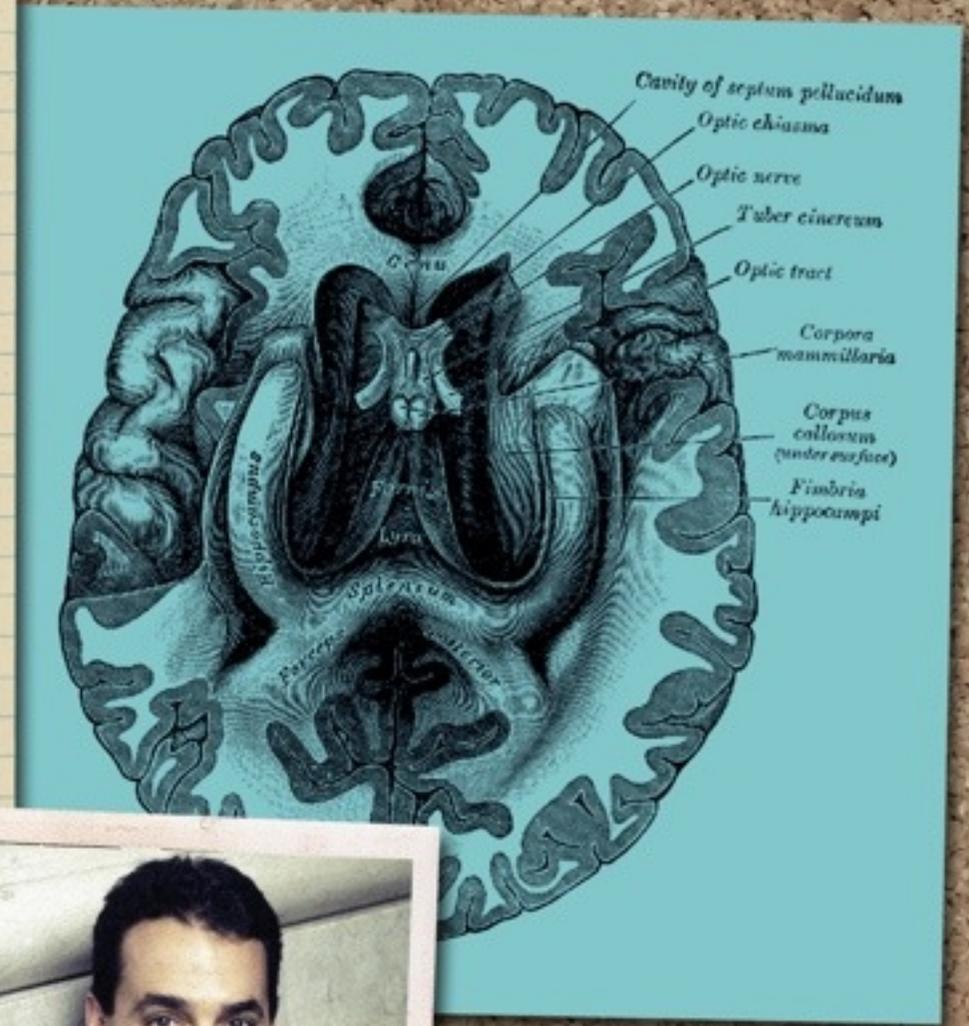
“However Tempting it is to talk of right and left hemispheres in isolation, they are actually two half-brains, designed to work together as a smooth, integrated whole in one entire complete brain. The left hemisphere knows how to handle logic and the right hemisphere knows about the world. Put the two 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



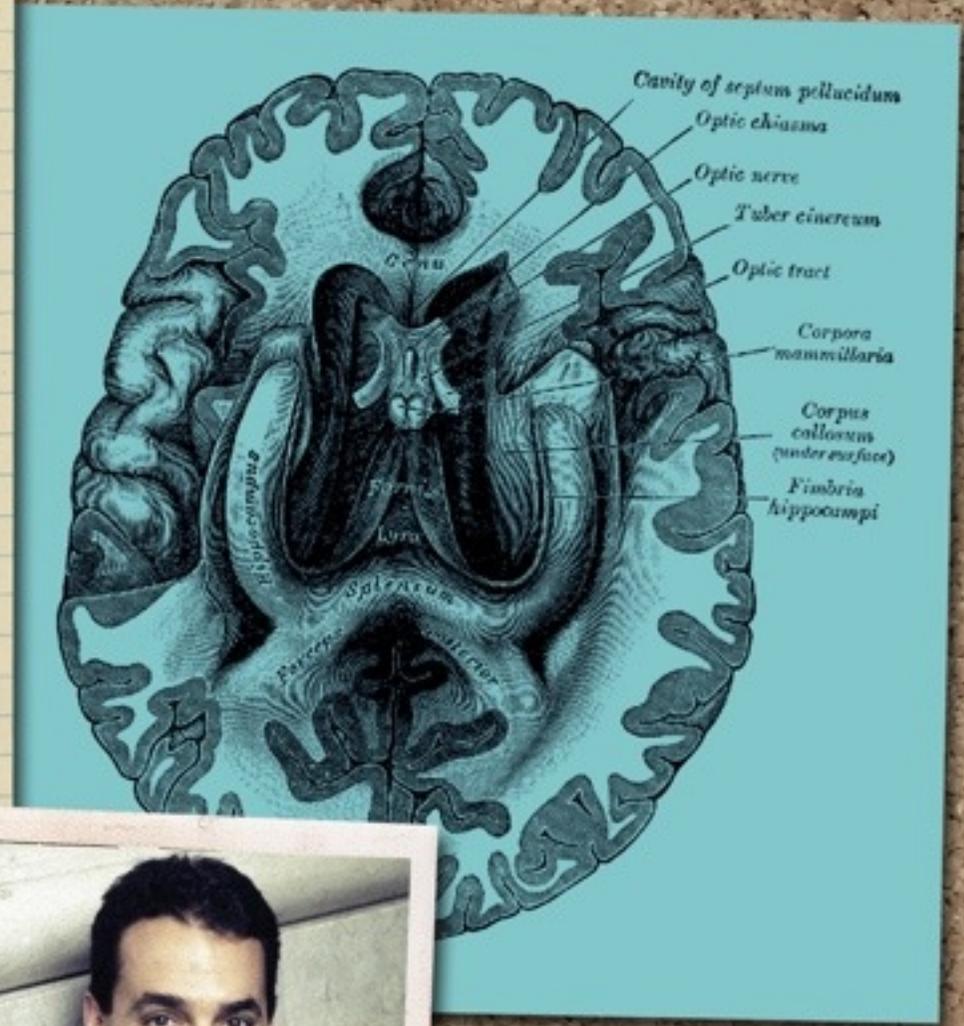
“Social people seem more comfortable with logical, sequential, computer-like reasoning. They tend to become accountants and engineers. Other people are more comfortable with holistic, intuitive and non-linear reasoning. They tend to become inventors, entertainers, and counselors.”

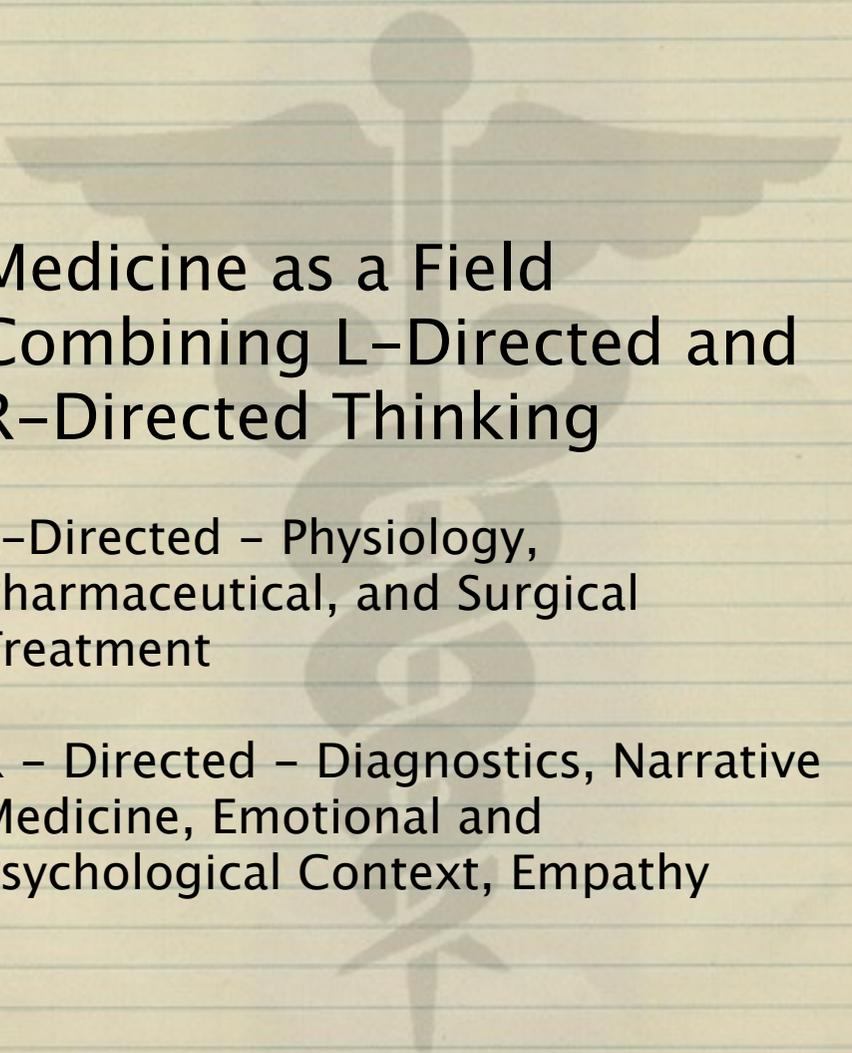
– Daniel Pink, [A Whole New Mind](#)
p.26



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

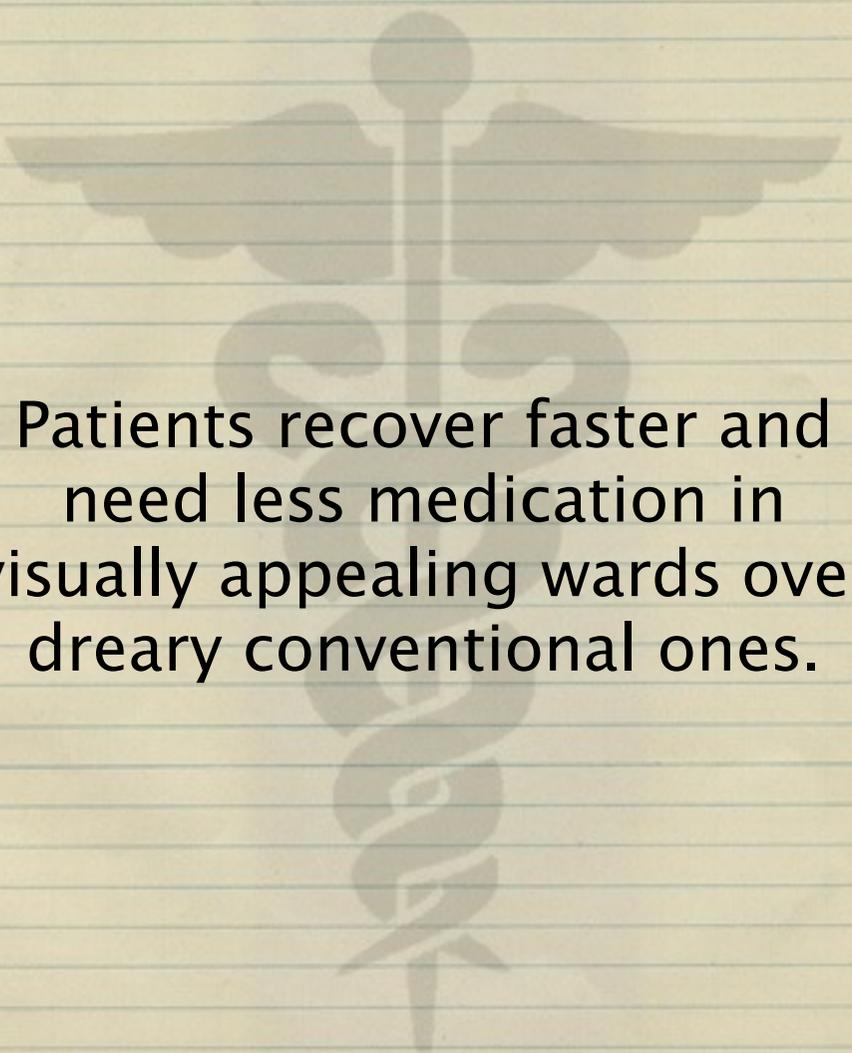
“Narrative Medicine” – diagnosis based in patient’s story

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.”

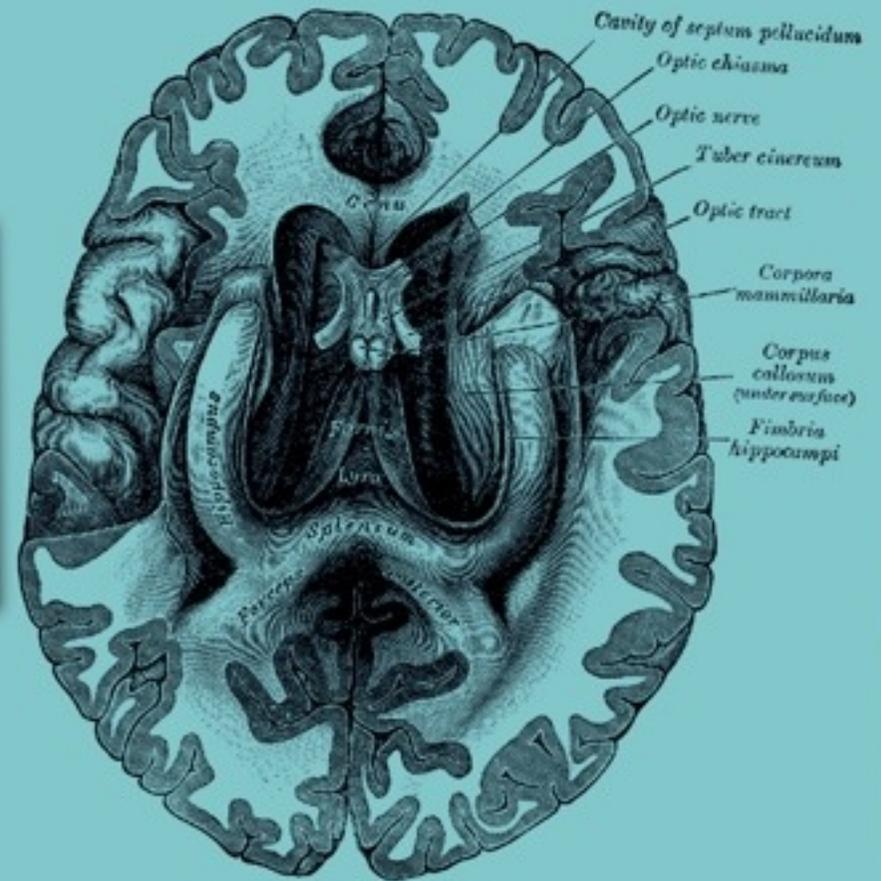
Mark Turner, The Literary Mind p. 4 - 5

Yale Psychology Professor Robert Sternberg Proposes An Alternative SAT

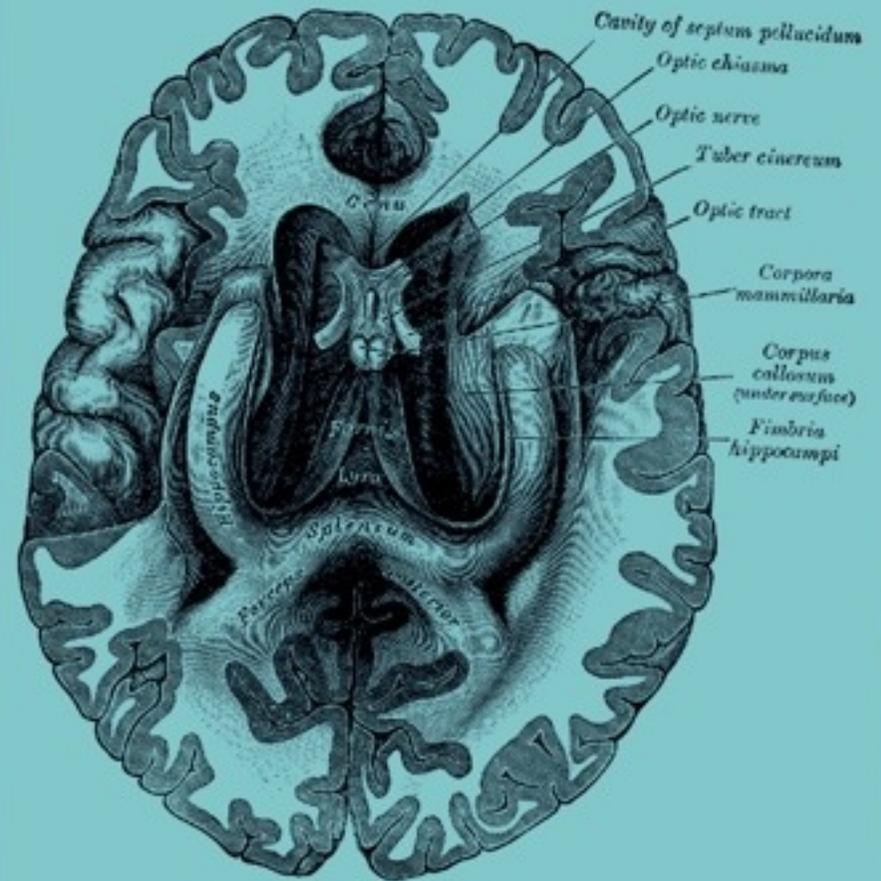
- craft humorous captions for cartoons
- write narrative stories
- face “real-life” challenge

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



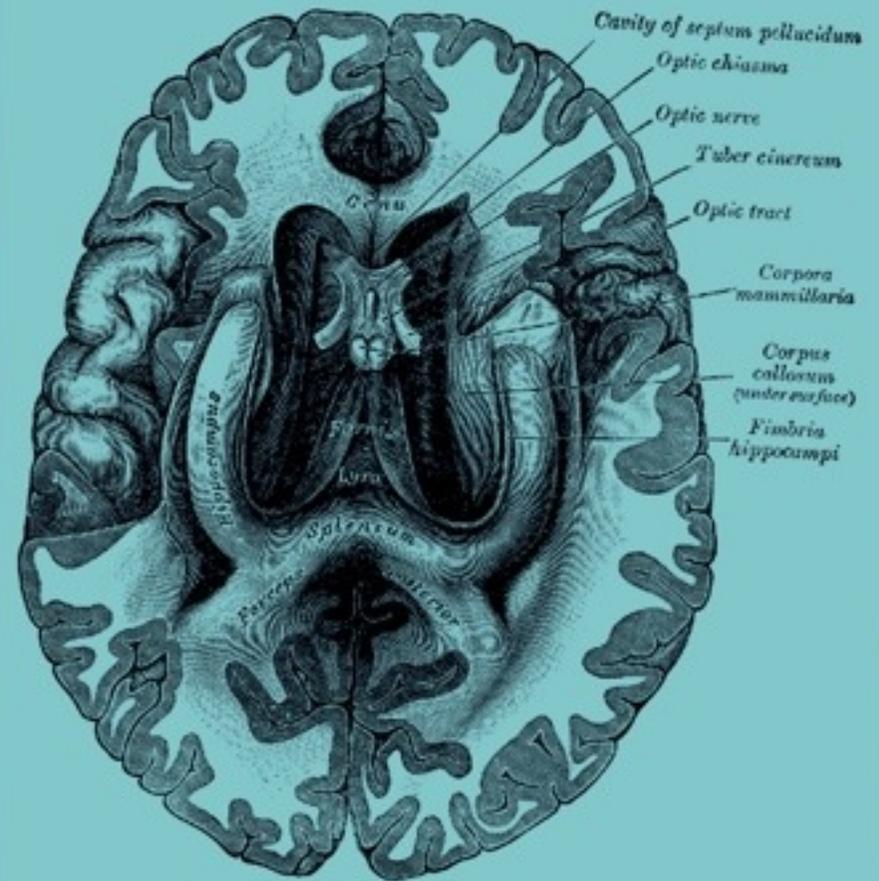
Csitzentmihali's Personality Dualities of Creative People

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

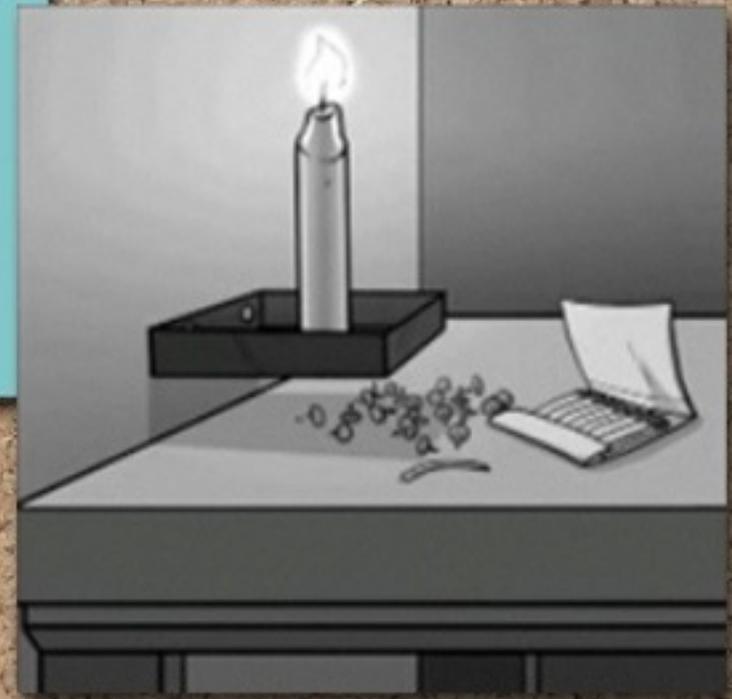
Group 1 – just asked to solve problem

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



the 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.”

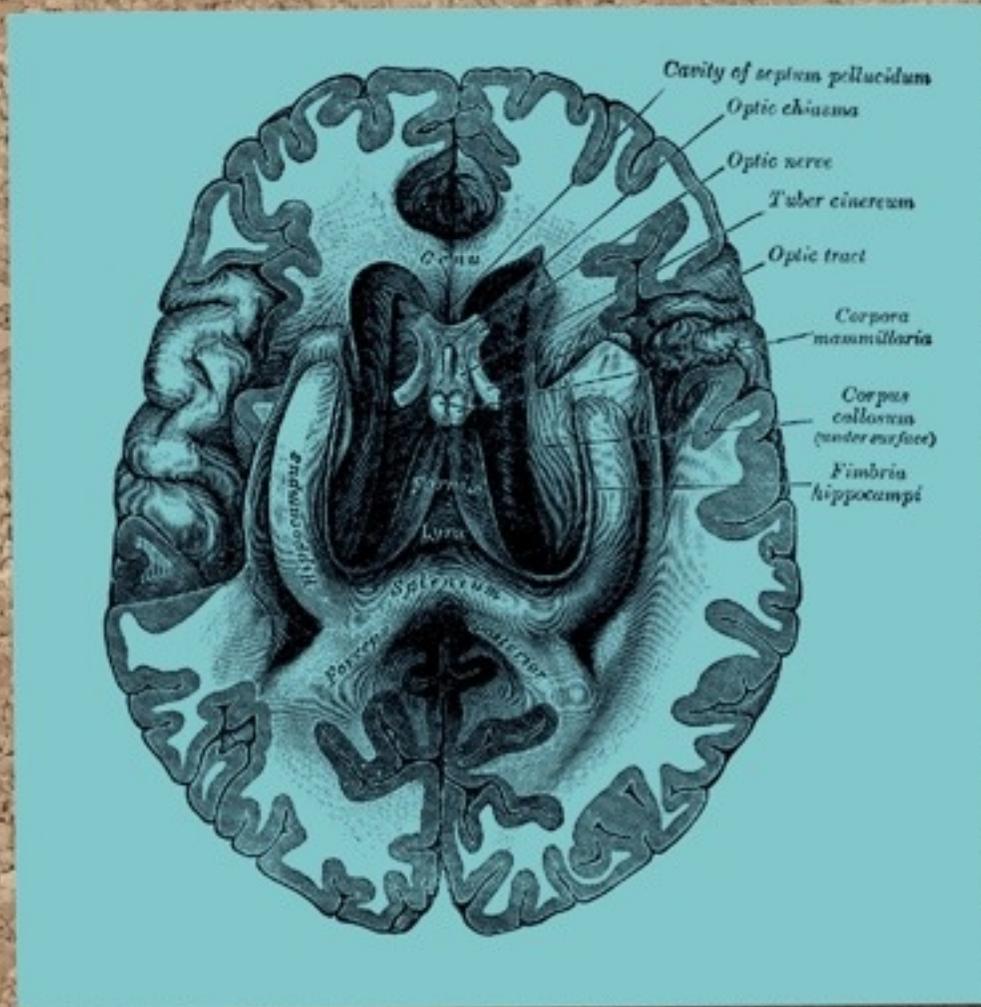
– Sally Shaywitz, Yale neuroscientist and specialist in dyslexia



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**