

Empowering Our Low-Watt Brains

Steven R. Van Hook, PhD

The Science Circle / May 25, 2024 / 10:00 AM PT SLT

Abstract & Bio

Abstract: The typical human brain runs on only 12-watts of power – less than a refrigerator light bulb. Thus, our brain has an amazing array of tricks to maximize the returns on that dim wattage. This presentation considers proven tactics to better understand our own brains, and how to best connect with the minds of others.

Bio: Steven R. Van Hook (Kip Roffo) is a researcher in transcultural relations, teaching courses in cross-cultural communications and international marketing for the University of California and other universities in the United States and abroad. He's been a social worker, newspaper columnist, radio talk show host, TV news anchor, and television bureau chief in Moscow. He has a PhD specializing in transcultural education, and has research published in scholarly journals including UNESCO's *Prospects* and the *Journal of Research in International Education*.

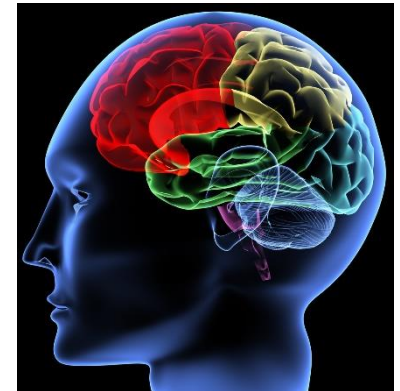
Research website: <http://wwmr.us>



Steven R. Van Hook, PhD

Our Low-Watt Brains

- Human brain runs on only 12-watts
- Limit our load
- Specialization
- Primers & Prompts direct our actions

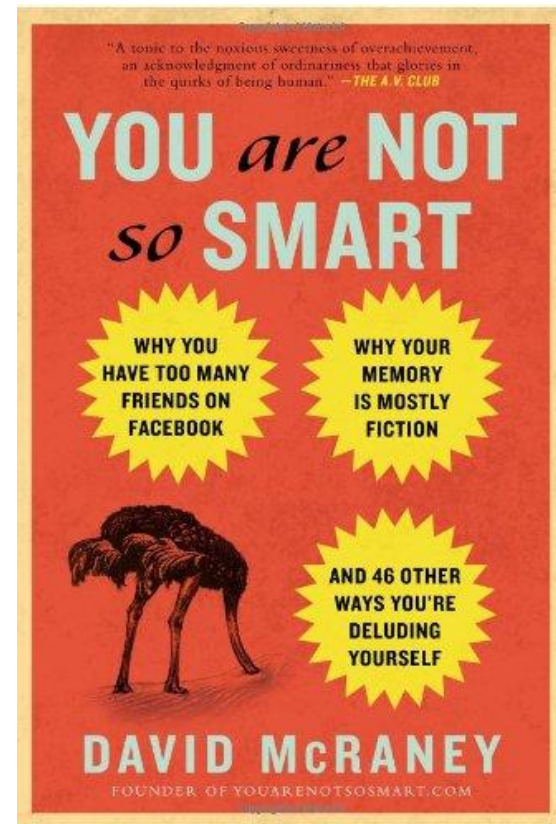


Primers & Prompts

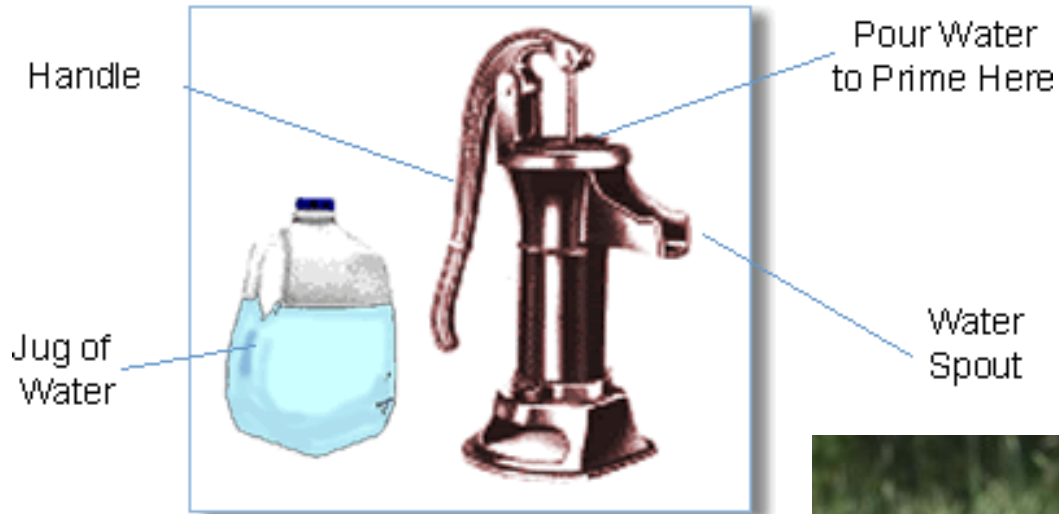


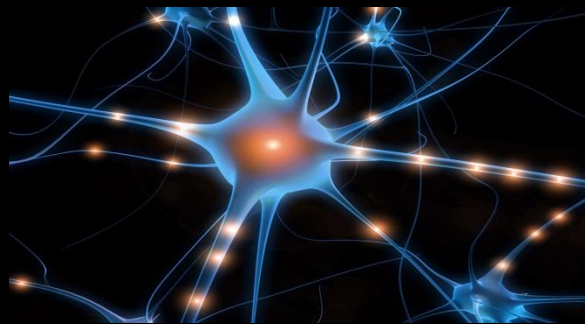
- **Primers** set a tone or ambience; an operating belief system
- **Prompts** promote a behavior or belief

“You Are Not So Smart”
David McRaney



Priming the Pump





Brain Power



“There are 100 billion neurons in the adult human brain, and each neuron makes something like 1,000 to 10,000 contacts with other neurons in the brain. Based on this, people have calculated that the number of permutations and combinations of brain activity exceeds the number of elementary particles in the universe.”

— Neuroscientist Vilayanur Ramachandran
on TED.com

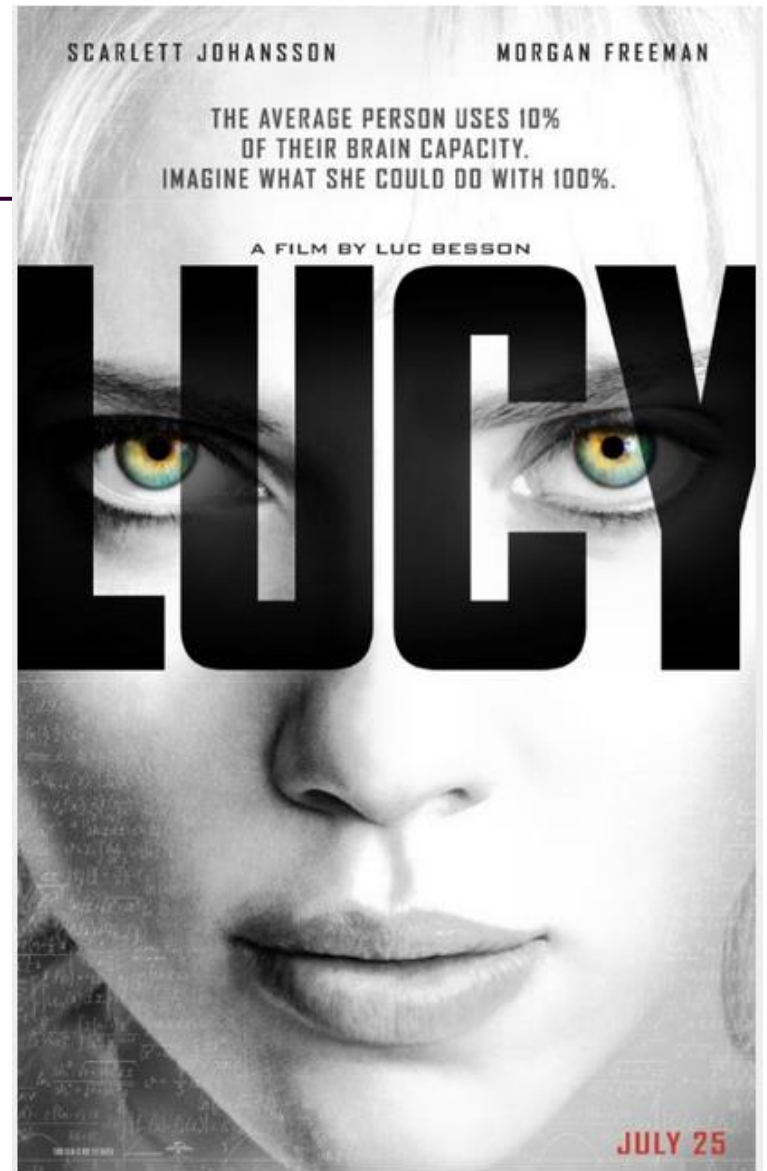


Lucy

“One plus one equals two. That’s all we’ve learned, but one plus one has never equaled two. There are, in fact, no numbers and no letters”

...

“We’ve codified our existence to bring it down to human size, to make it comprehensible, we’ve created a scale so we can forget its unfathomable scale.”



2014

Whole Brain Activity

“It turns out though, that ***we use virtually every part of the brain***, and that [most of] the brain is ***active almost all the time*** ...

“Let’s put it this way: the brain represents three percent of the body’s weight and uses ***20 percent of the body’s energy.***”

– ***Barry Gordon, Neurologist
Johns Hopkins School of Medicine***



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“The ‘10 percent myth’ is so wrong it is almost laughable.”

[Article](#)

Brain Mapping

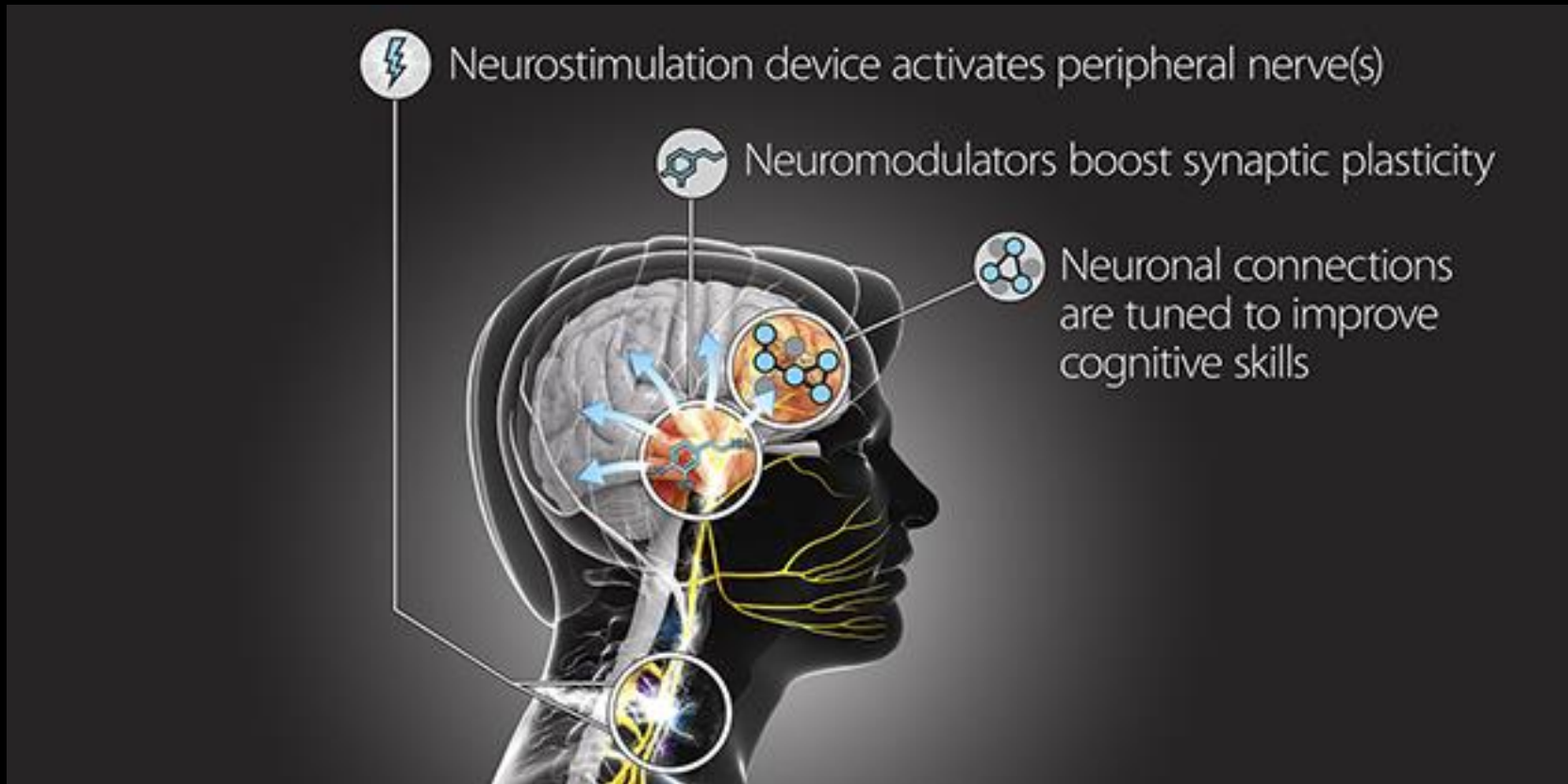
“The BRAIN Initiative — a bold new research effort to revolutionize our understanding of the human mind and uncover new ways to treat, prevent, and cure brain disorders like Alzheimer’s, schizophrenia, autism, epilepsy, and traumatic brain injury.”



[Website](#)

DARPA & Neuroplasticity

Defense Advanced
Research Projects
Agency
Article



“Recent research has shown that stimulation of certain peripheral nerves, easily and painlessly achieved through the skin, can activate regions of the brain involved with learning, by releasing neurochemicals in the brain that reorganize neural connections in response to specific experiences.”

Brain Content Avatars

“By 2045, mass production of lifelike, low-cost avatars that can be uploaded with the contents of a human brain, complete with all the particulars of consciousness and personality.”

~ *New York Times*



Robotic model of head will use 36 motors to reproduce facial expressions and voice.

[Article](#)

Lego Memories

Memories are reconstructed from bits, rather than rewound tape



David McRaney



*Excerpt From:
"You Are Not So Smart"
David McRaney*

Limited Field of Attention



- Brain limits sensory input
- Images distort on periphery

Brain Games
“Battle of the Sexes”
[Netflix Documentary](#)

Inattentional Blindness

“Psychologists call missing information in plain sight inattentional blindness. You believe with confidence your eyes capture everything before them and your memories are recorded versions of those captured images. The truth, though, is you see only a small portion of your environment at any one moment. Your attention is like a spotlight, and only the illuminated portions of the world appear in your perception.” p. 277



Excerpt From:
“You Are Not So Smart”
David McRaney

Male & Female Brain Wiring

- **Women:**
colors,
faces
- **Men:**
direction,
spatial tasks



Brain Games
“Battle of the Sexes”
Netflix Documentary

How Many Shades of Red?



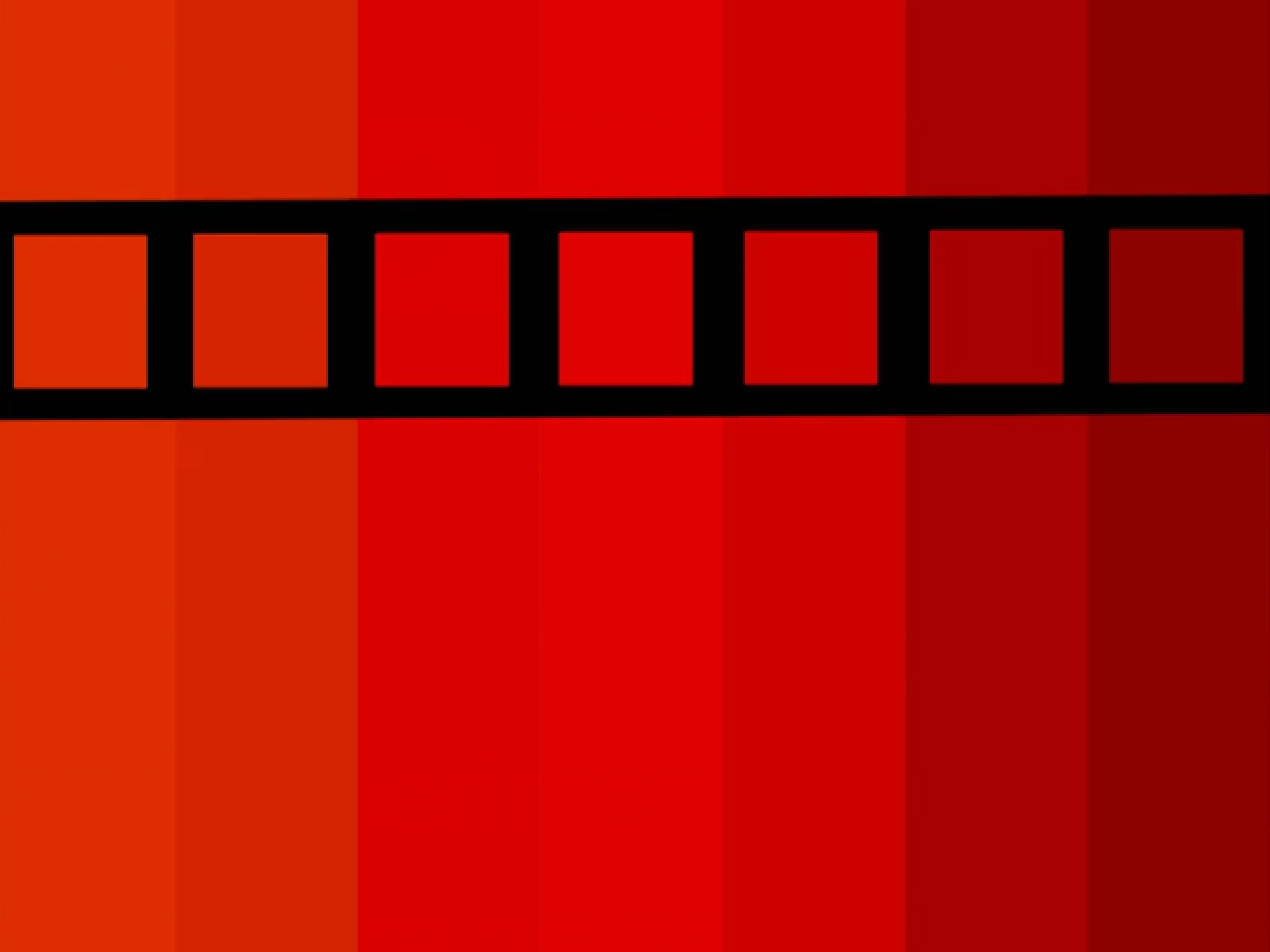
Specialization for Efficiency



- Most men see 3-5 shades of red
- Most women see 7 shades
 - Women: wider color range
 - Men: 8% of men colorblind
 - 0.4% of women colorblind



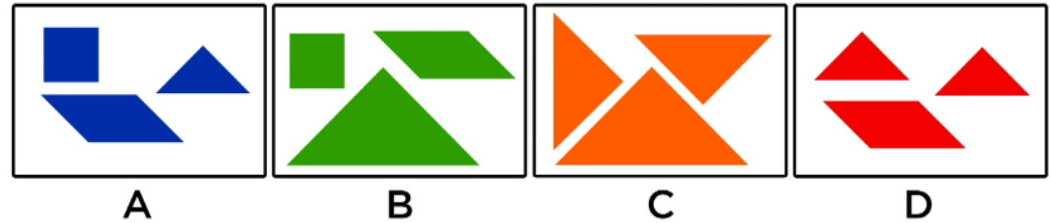
Brain Games
"Battle of the Sexes"
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Spatial Reasoning



- Men better at assessing configurations, distances and bearings
- Better at packing trunks



Brain Games
"Battle of the Sexes"
[Netflix Documentary](#)

We Are The Same

“Genetically, you and your friends are almost identical. Those genes create the brain that generates the mind from which your thoughts spring.

Thus, genetically, your mental life is as similar to everyone else’s as the feet in your shoes.”



Excerpt From:
“You Are Not So Smart”
David McRaney

Animal Minds

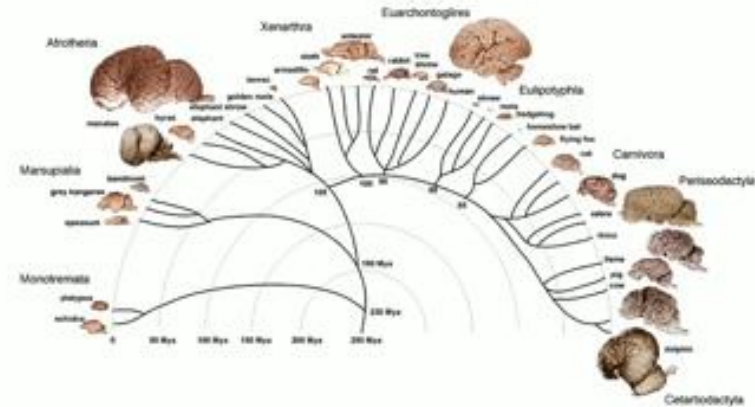
- Our neurons identical to those of crayfish
- Crawfish given micro-shocks develops anxiety and retreats to burrow
- Give them human anti-anxiety drugs, crayfish relaxes and comes back out



mouse



human



[Article: Animals are Conscious](#)

What Are Animals Thinking & Feeling?
Carl Safina / TED

Animal Minds

- Octopuses use tools and recognize human faces
- Sea otters & orcas teach their young
- Elephants can tell human voices apart (tourists from hunters)



What Are Animals Thinking & Feeling?
Carl Safina / [TED](#)

The Tardigrade (Water Bear): Extreme Survivors



- Complex creatures with brain-cluster of neurons.
- About 0.5 mm long full grown
- Live just about everywhere on Earth: tops of mountains to the bottoms of oceans to the polar regions to the hot climates.
- Survive exposure to outer space for 10 days.
- Survive extreme temperatures ... even degree above absolute zero for a few minutes.
- Survive dehydration for 10 years.
- Survive extreme pressures greater than the at the deepest depths of the ocean.



- Survive radiation 1000 times greater than other animals.
- Adults of each species of Tardigrade has the same number of cells.

Limited Awareness

- The mind is easily distracted and misdirected
- Magicians and pickpockets bank on it



Brain Optimization

What actions should you take to keep your brain in good condition? Here are some immediate steps you can take.

- Get enough sleep at night, and take naps.
- Eat right and exercise. Both of these are things you can do with friends, which is important because isolation and loneliness can impair brain function.
- Increase your capacity for sustained attention and concentration with attentional exercises. Here, too, you can add a social element, as with playing bridge or chess.
- Increase your finger and hand dexterity: Try Jenga, juggling, model building, video games, playing a musical instrument, or enhancing your penmanship.
- Spend less time watching television.



Dr. Richard Restak
*Clinical Professor of Neurology at
George Washington University
School of Medicine &
Health Sciences*

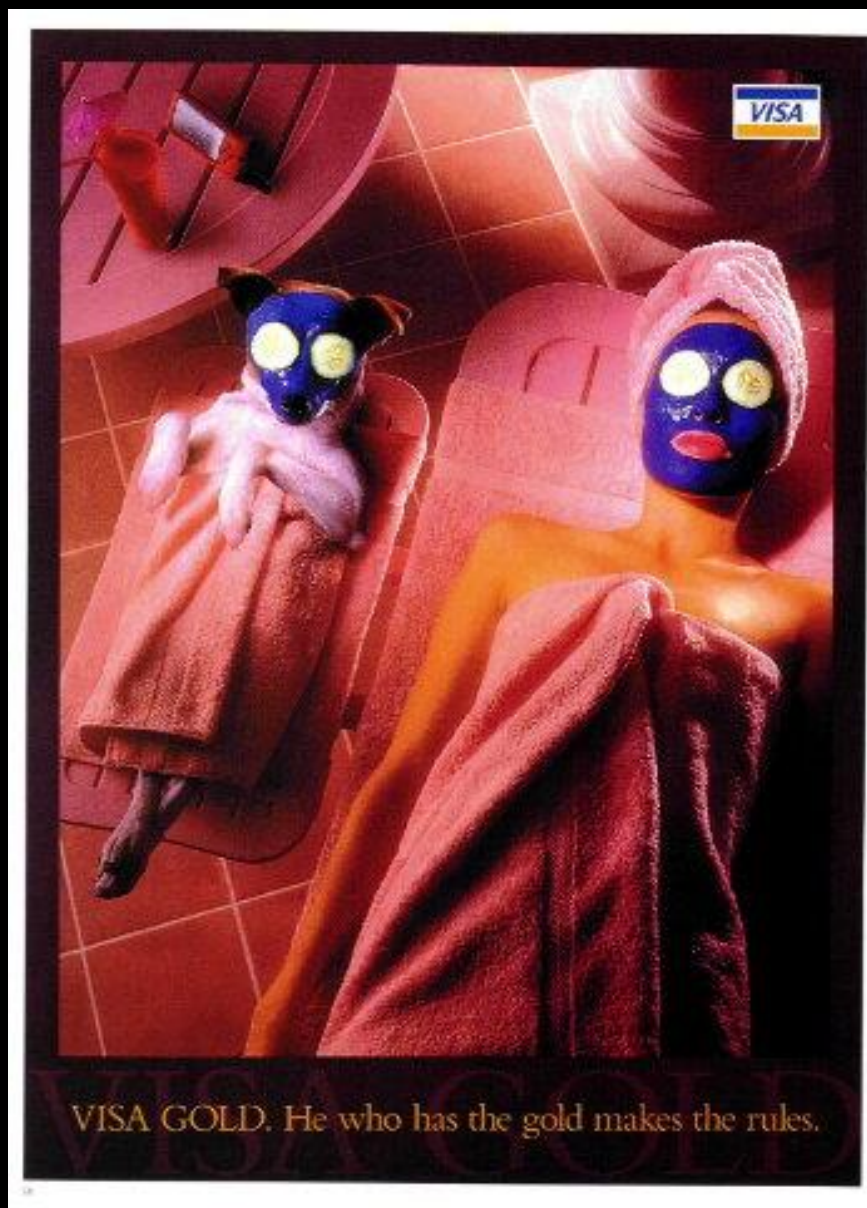
- Try to maintain a healthy sense of humor. (Humor appreciation has been associated with longevity.)
- Develop an appreciation of different styles of art. It's thought now that different brain areas are activated by different styles of painting.
- Develop an appreciation of different styles of music. Music can elevate your mood and activate regions of the brain involved in emotion, reward, motivation, and arousal. Attend a concert with a friend—or even better, go dancing with friends to combine the benefits of music, socialization, and exercise.



Fundamental Human Appeals

APPEAL

- Security
- Possessions
- Imitation
- Health
- Sex
- Curiosity
- Beauty
- Play
- Importance
- Pleasure
- Love
- Avoid Pain



TACTICS

- Straight Sell
- Educational
- Testimonial
- Humorous
- Dramatization
- Artistic

DEMOGRAPHICS

- Age
- Gender
- Income
- Culture

Overwhelming Choice

Jam Taste Sample

- 6 flavors on display:
40% stop / 30% buy
- 24 flavors on display:
60% stop / 3% buy

Tips:

- Average American makes 70 choices per day
- Too many choices overwhelming & demotivating
- 2-3 meaningful choices good / Dozens of choices bad
- Need to be choosy about choosing



Sensation Transference: Color of 7-Up Can

After 15% plus-change of yellow color on the can, upset 7-Up customers complained of a change in flavor, perceived as more lemony over lime.

- Cheskin Company



Imperial Margarine

- 1940s: Marketing innovator Louis Cheskin coined term, “sensation transference”



To successfully boost dead margarine sales:

- Colored white margarine yellow to look like butter
- Put a crown on the package
- Wrapped it in foil for quality image
- Sales soared and margarine caught on



Students Snap Judge Instructors

Students evaluated an unknown instructor based on three silent ten-second clips; then three five-second clips; then three two-second clips.



In each case, the evaluations were “essentially the same” as by students who had take the instructor for a full semester.



Study by Nalini Ambady
Harvard University

Resonance is:

- *Acoustics.* Intensification and prolongation of sound, especially of a musical tone, produced by sympathetic vibration.
- Richness or significance, especially in evoking an association or strong emotion.
- *Physics.* The increase in amplitude of oscillation of an electric or mechanical system exposed to a periodic force whose frequency is equal or very close to the natural undamped frequency of the system.
- ***Dissonance:*** A harsh, disagreeable combination of sounds; discord.



Writing for Low-Watt Brains

- 1) Use Resonant Characters
- 2) Engage Action Verbs
- 3) Perform the 8-Word Test
between Nouns & Verbs
- 4) Link Sentences & Phrases
with Explicit Connectors
- 5) Lead Your Readers From
Old to New Information
- 6) Craft a Problem/Solution/
Action Paradigm



Articles on Transcultural Learning

- *UNESCO Journal “Prospects”*

Van Hook, S.R. (2012, June).

Hopes and hazards of transculturalism.

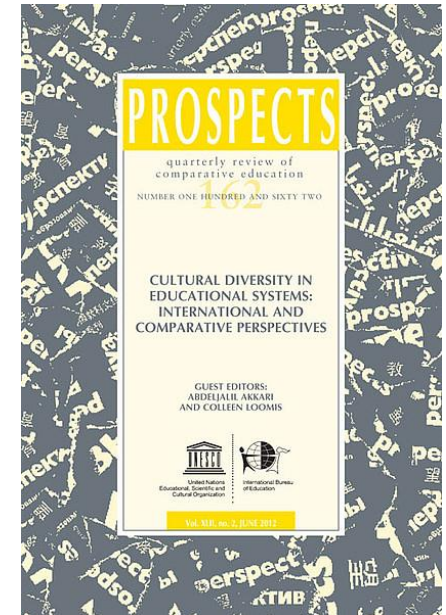
[Article](#)

- *Journal of Research in International Education*

Van Hook, S.R. (2011, April).

Modes and models for transcending cultural differences in international classrooms.

[Article](#)



Study Sample



- Ongoing research from 2000 to current
- 40+ Countries
- 900+ Students

Transculturally Dissonant Messages:

What Doesn't Work Well

- Humor
- Sex
- Religion
- Politics



Transcultural Themes & Images

- Babies & Children
- Pets & Animals
- Sports
- Love, Marriage,
Relationship Conflicts
- Self-image
- The Birth-Life-Death
Cycle
- Water

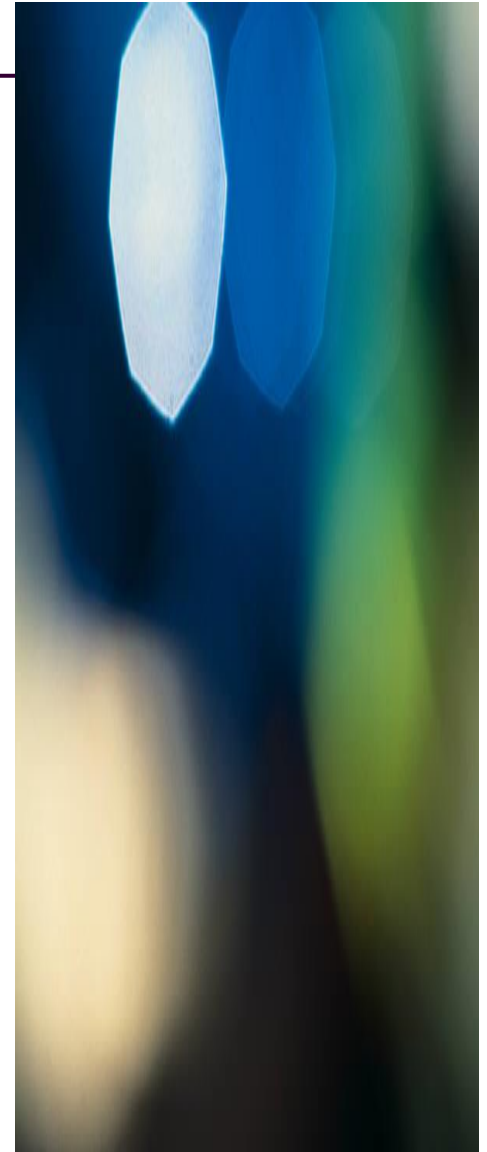


Alien Morphology

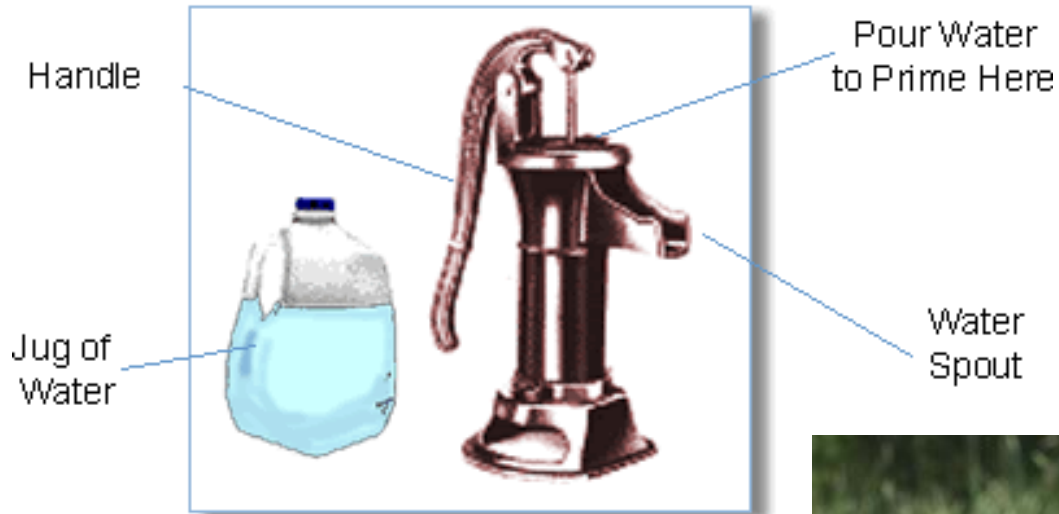


Trans-Galactic Themes

- Reproducing & Preserving Life
- Family Bonds
- Models & Methods of Social Interaction
- Religion / Philosophy of Life
- Environmental Awareness
- Governance
- Economic Systems
- Self Defense
- Altruism



Priming the Pump

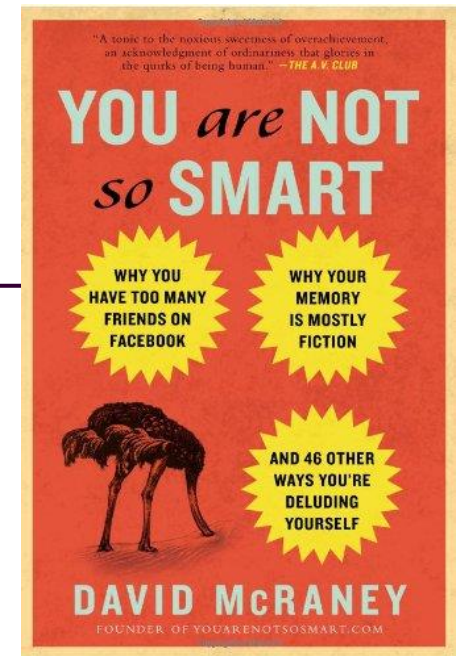


Business Primer

- Neutral item primers split money pile evenly 100% of time



- Business item primers split evenly only 50% of time



Primer Against Insecurity

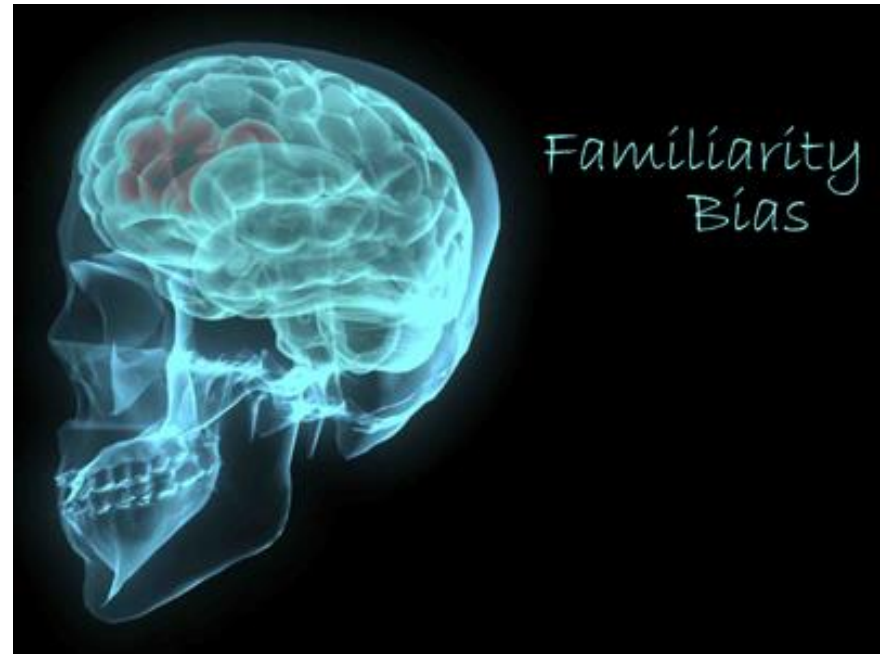
“To defeat feelings of inadequacy, you first have to imagine a task as being simple and easy. If you can manage to do that, **illusory superiority** takes over.” p. 206



Excerpt From:
“You Are Not So Smart”
David McRaney

Familiarity Fondness

“People like to be told what they already know. Remember that. They get uncomfortable when you tell them new things. New things . . . well, new things aren’t what they expect.” p. 50



Excerpt From:
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Consistency Bias for Good

“One of the stranger facets of consistency bias is how it can be evoked on the spot. If you are primed to believe you are an honest person, you will then act as if you are.” p.

302



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'Old' Priming Words

Make short sentences
from scrambled terms:

- *shoes give replace old the*
- *sky the seamless gray is*
- *us bingo sing play let*
- *sunlight makes temperature
wrinkle raisins*
- *ball the throw toss silently*

[Priming Article](#)



The subjects
internalized 'oldness'
and walked
significantly slower
after test



John Bargh
Psychologist
Yale University

Contagious Prompts: Pay it Forward

- Whereas paying it forward in drive-thrus occurred maybe once or twice a year a decade ago, now fast-food operators said it might happen several times a day.
- Serial pay-it-forward incidents involving between 4 and 24 cars have been reported at Wendy's, McDonald's, Starbucks, Del Taco, Taco Bell, KFC and Dunkin' Donuts locations in Maryland, Florida, California, Texas, Louisiana, Pennsylvania, Oklahoma, Georgia, Alabama, North Dakota, Michigan, North Carolina and Washington.



[Article](#)

Emotion Vs. Logic

- “It’s purely emotional, the moment you pick. People with brain damage to their emotional centers who have been rendered into Spock-like beings of pure logic find it impossible to decide things as simple as which brand of cereal to buy. They stand transfixed in the aisle, contemplating every element of their potential decision—the calories, the shapes, the net weight—everything. They can’t pick because they have no emotional connection to anything.” p. 125
- “Your rational, mathematical, reasonable, and methodical mind is slow and plodding. It takes notes and uses tools. Your irrational, emotional, instinctive mind is lightning-fast.” p. 182



Excerpt From:
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Harriet Beecher Stowe

“There is one thing that every individual can do – they can see to it that they feel right.
An atmosphere of sympathetic influence encircles every human being;
and the man or woman who feels strongly, healthily and justly, on the great interests of humanity, is a constant benefactor to the human race.
See, then, to your sympathies in this matter!”
- *Uncle Tom’s Cabin*, 1852



Questions? Comments?

Steven R. Van Hook, PhD

- **University of California**
*Language, Culture
& Business Programs*
- **Educare Research inc**
*Nonprofit International
Educational Resources*
- **Second Life: Educare**
Learning Centers
- <http://educares.net>
- <http://wwmr.us>
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