

V
I S
U A L
T E S T
I N G I T S
N O T W H A T
Y O U L O O K A T
I T S W H A T U S E E

by
Mike Lyles



About Me - @mikelyles

QE Program Manager with over 22+ years in IT:

- Development
- Project Management Office
- Development Manager
- Testing
 - Functional Testing
 - Test Environments
 - Software Configuration Management
 - Test Data Management
 - Performance Testing
 - Test Automation
 - Service Virtualization
 - Building Testing Organizations
 - Defining Processes, Methodologies, Measurement



Recap of Session Objectives

- An understanding that no matter how good we believe we are as testers, we have to realize that there is the possibility of being so familiar with a product that our eyes do not notice changes that sneak in.
- Tips to recognizing patterns and potential gaps that many visual testing activities may miss.
- Techniques that can be used in becoming a better visual tester.

It's Not the Car, It's the Driver!

How many times have you driven somewhere only to find that you don't remember much that happened along the way?



How Good Are You?

M I K E I V I E W I S

H I M D I N G T O C O N C I L I C I O N S

What did you see?

Pay Close Attention!





About Me - @mikelyles



ment

Word(s) of the Day!

Inattentional Blindness

Anamorphic Art

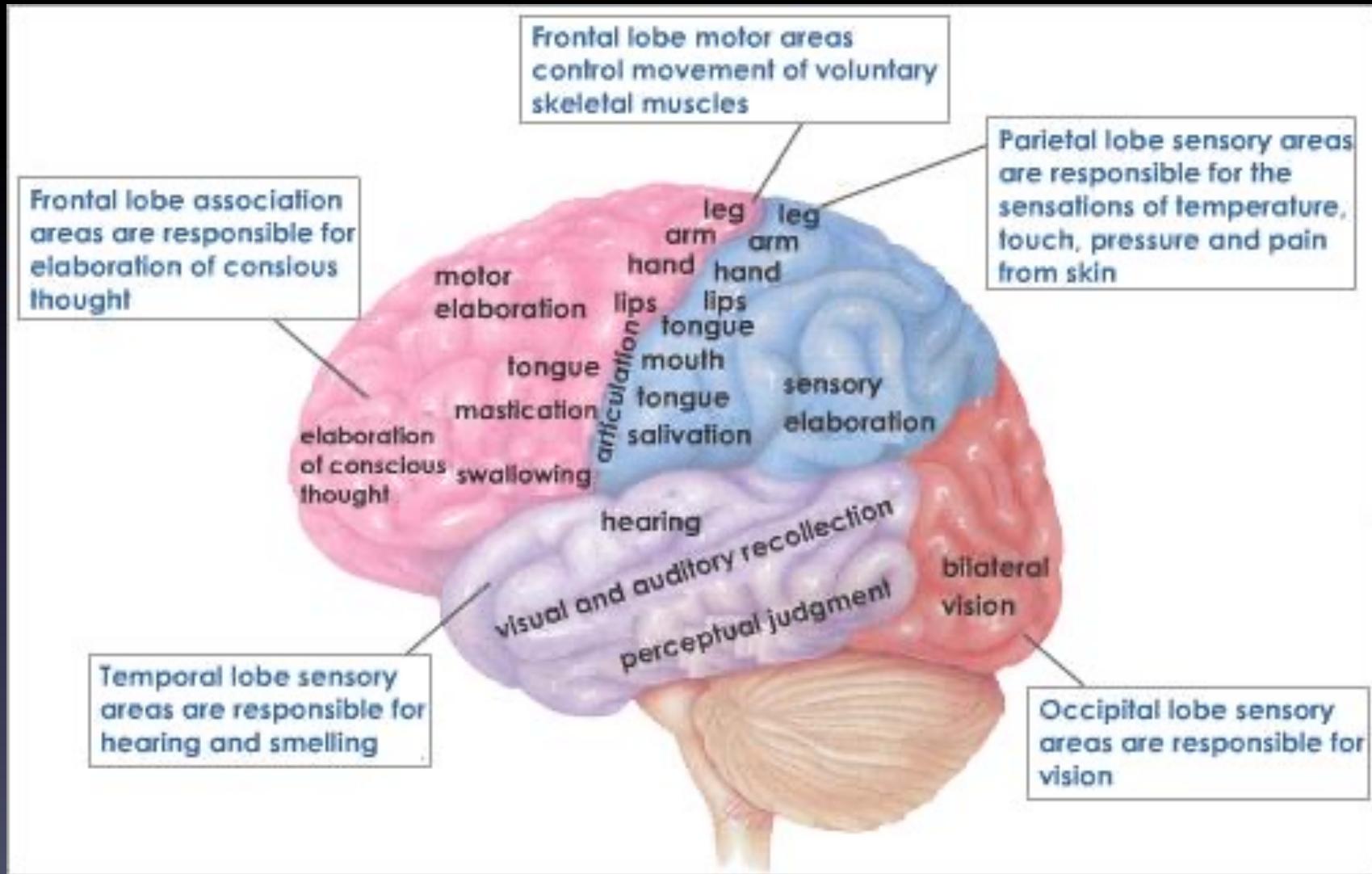
BISTABLE IMAGES

Choice Blindness

Change Blindness

Neuroplasticity

The Human Brain

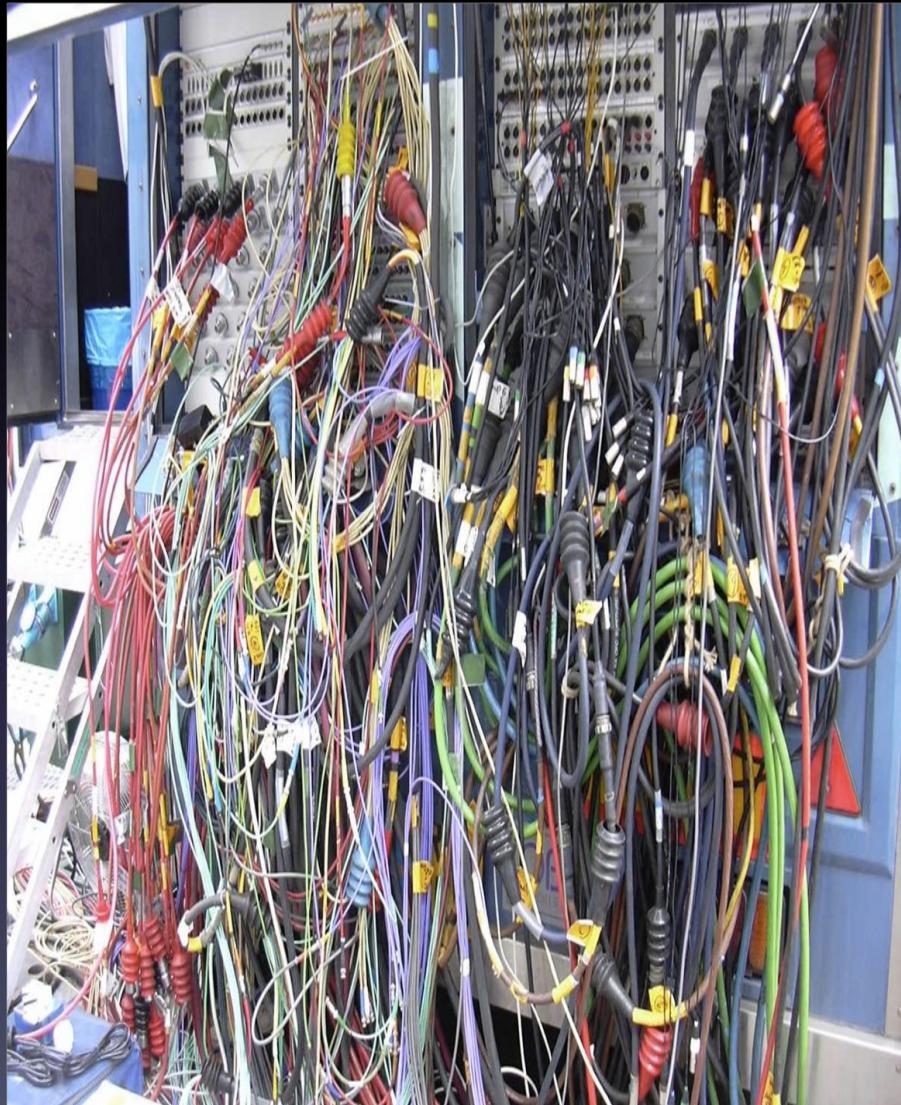


The Brain is a Survival Organ

- Designed to solve problems related to surviving unstable environments
- Humans may not be strongest, but we developed the strongest brains.
Strongest brains survive over bodies
- Need to feel safe with teacher/boss
- No greater anti-brain environment than a cube or classroom



Every Brain is Wired Differently



- The brain is constantly evolving
- What you do and learn in life physically changes what your brain looks like
- Brains of school children – unevenly developed as their physical body
- Many schools ignore this fact

We Do Not Pay Attention to Boring Things

- Avoiding boredom by multi-tasking
- The brain is incapable of multi-tasking
- Everyone today is trying to juggle emails, phone, tablets, social networks



We Starve for Relevance

We must do something relevant every 10 minutes to reset our attention



Stressed Brains Don't Learn the Same Way

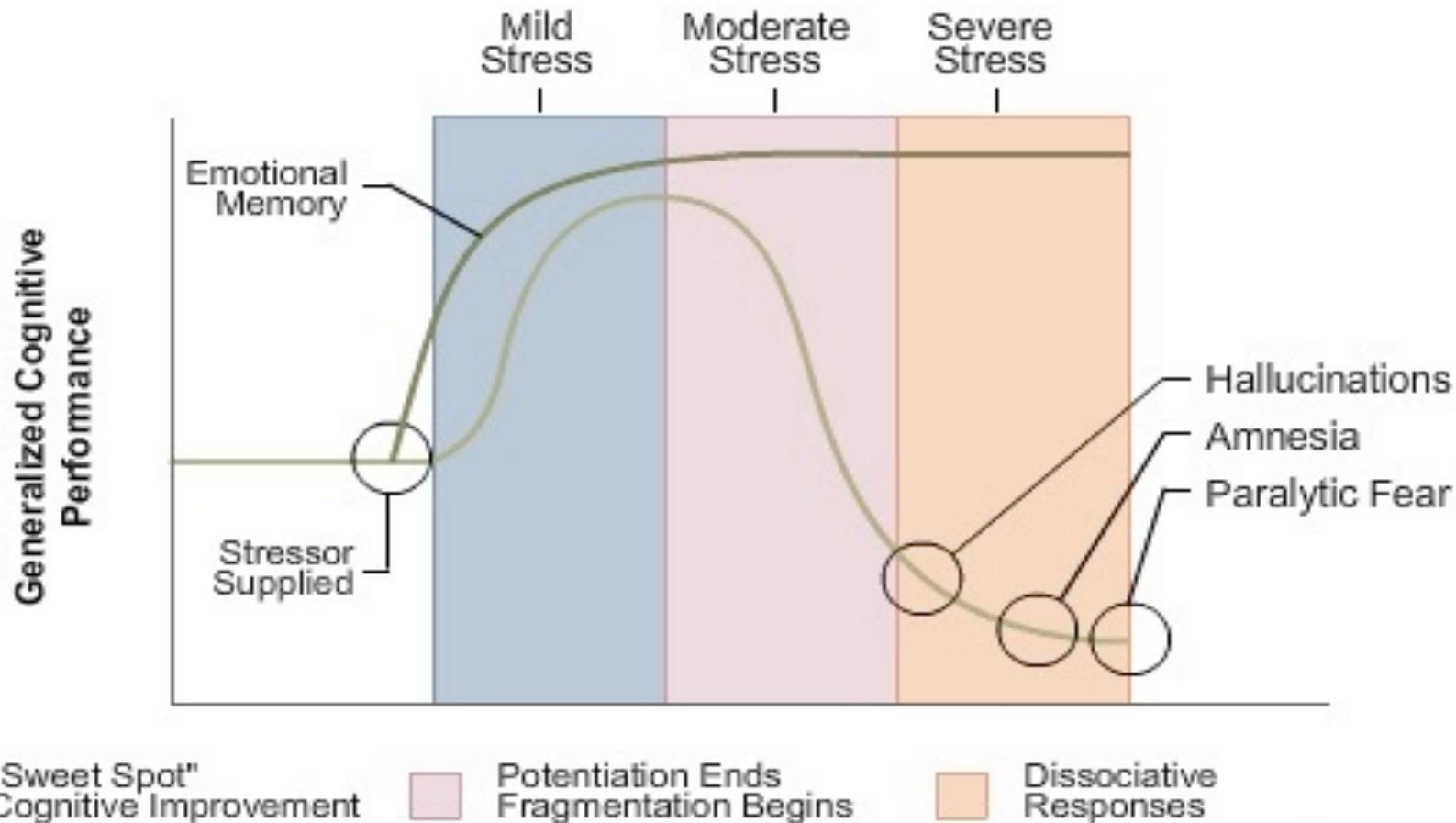


- Brains are wired to deal with stress lasting <= 30 seconds
- Whether the lion eats you or you get away – the stress lasts <= few mins
- Stress of a bad boss may last years
 - A great deal is expected +
 - No control over performing well
- You can actually witness the brain shrinking

The Effects of Stress

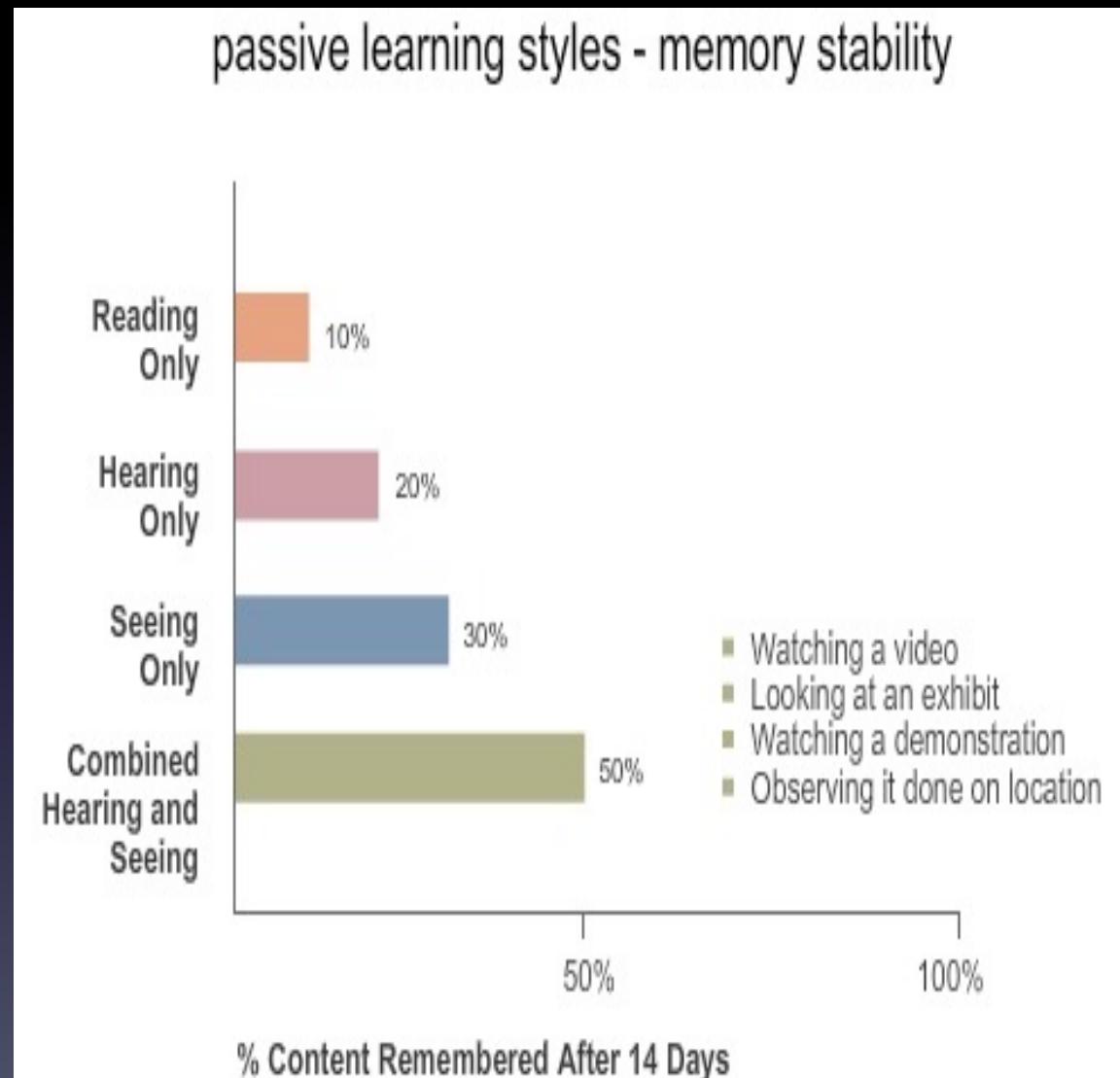
CONTROL IS CRITICAL!

effects on cognition - emotional memory

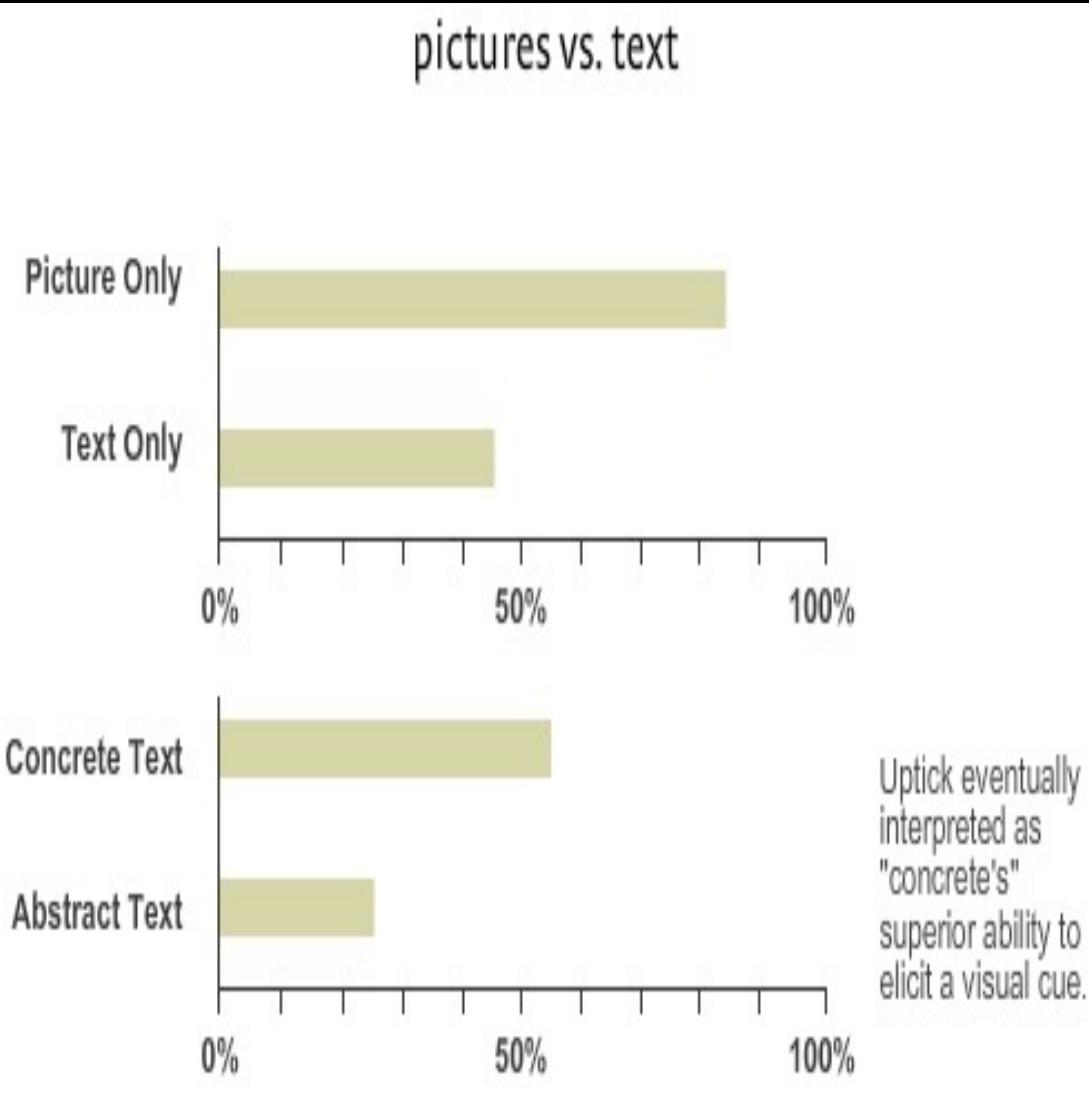


Important to Stimulate More Senses

- Yes, we are here to discuss VISUAL testing
- However, other senses stimulate and increase learning and memory
- Smell is unusually effective at provoking memory
- Effects are seen > 20 yrs



Vision Trumps All Other Senses



- Childrens books = pictures
- Retained memory by hearing = 10%
- Add a picture = 65%
- Our brains see words as tiny pictures

We Are Natural Explorers

- Babies learn by exploring
- The desire to explore never leaves us
- We test through observation, hypothesis, experimentation, and conclusion



Facts About the Brain

- If you tell your brain it has comparisons to make, it will get busy making them, even if they don't really exist
- The brain will sacrifice facts over efficiency
- Naturally wired to use mental shortcuts to save time and energy



© Simone Brandt/Corbis

The Gas Pump Dilemma



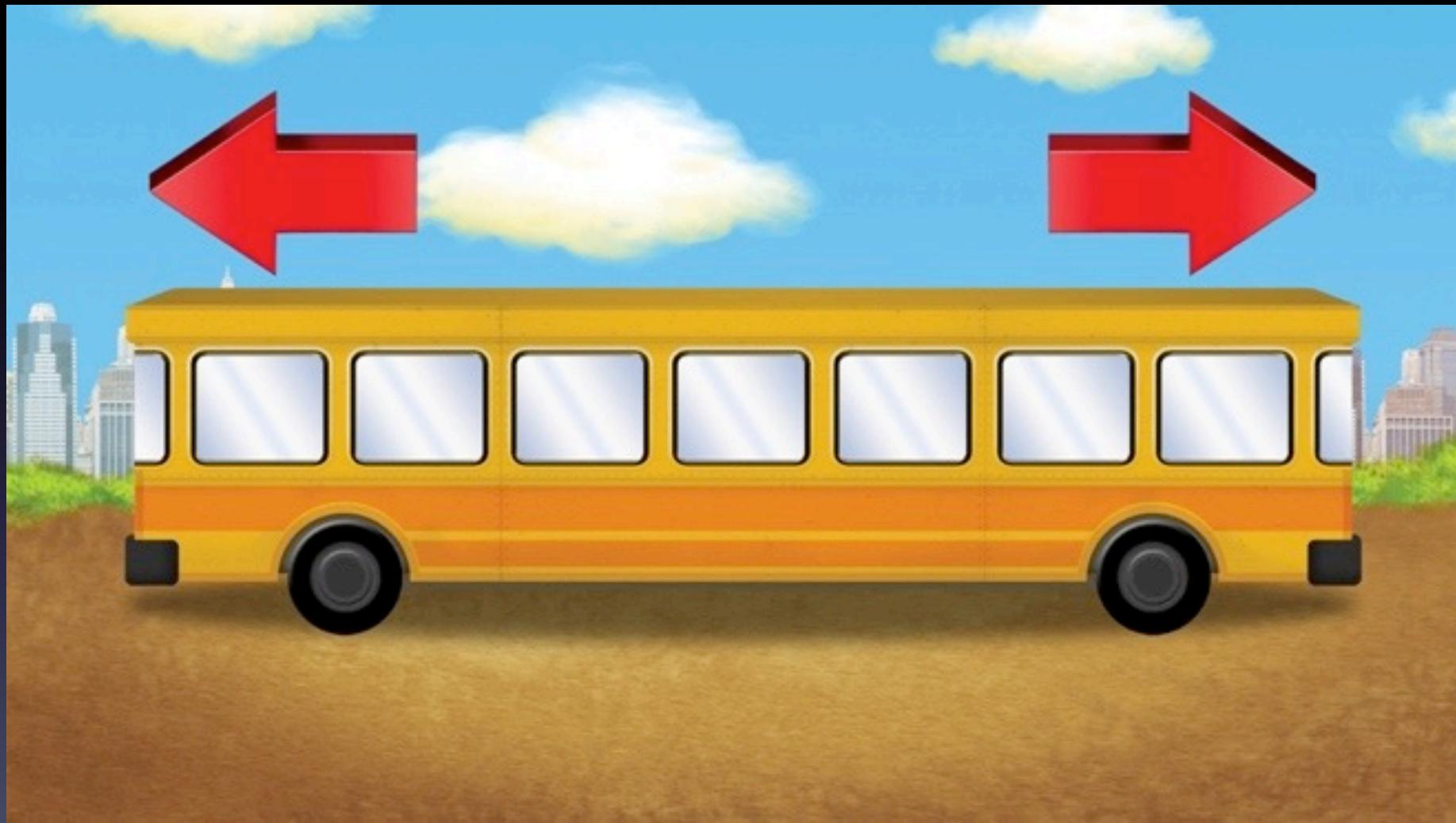
Which button do you press?

The Gas Pump Dilemma



There
it is!

The Illusion of Knowledge



Which way is the bus going? Left or right?

The Design of Everyday Things



Change Blindness

a surprising perceptual phenomenon that occurs when a change in a visual stimulus is introduced and the observer does not notice it



The Silence of the Ebay

The image shows two versions of the eBay homepage side-by-side. The left version is the original design, featuring a sidebar on the left with sections for 'Specialty Sites' (listing categories like 'Books, Music, Movies', 'Cars, Boats, Vehicles & Parts', and 'Antiques') and 'Categories' (listing sub-categories under 'Antiques', 'Business & Industrial', 'Computers & Electronics', 'Sports & Outdoors', 'Toys & Hobbies', 'Automotive', 'Home & Garden', 'Pet Supplies', and 'Musical Instruments'). It also features a 'Summer STYLE STARTERS' banner at the top. The right version is a simplified design, removing the sidebar and the 'Specialty Sites' section, and focusing more on the main deal banners and search functionality.

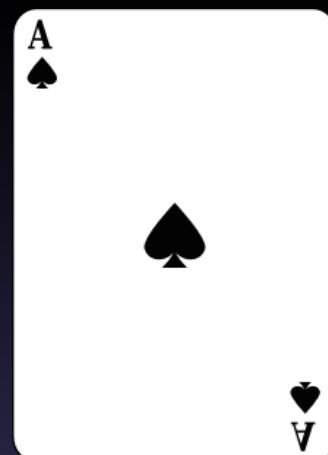
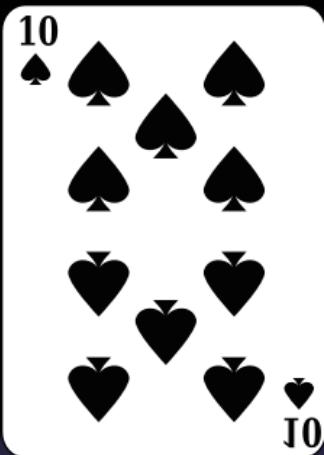
Did you notice?

Three Men & A Baby... and a Ghost



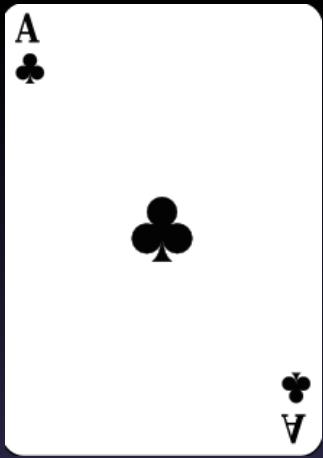
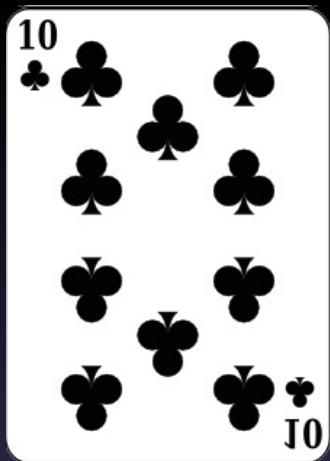
Watch the window....

Playing Card Mind Reading



Pick one card and remember it...

Playing Card Mind Reading

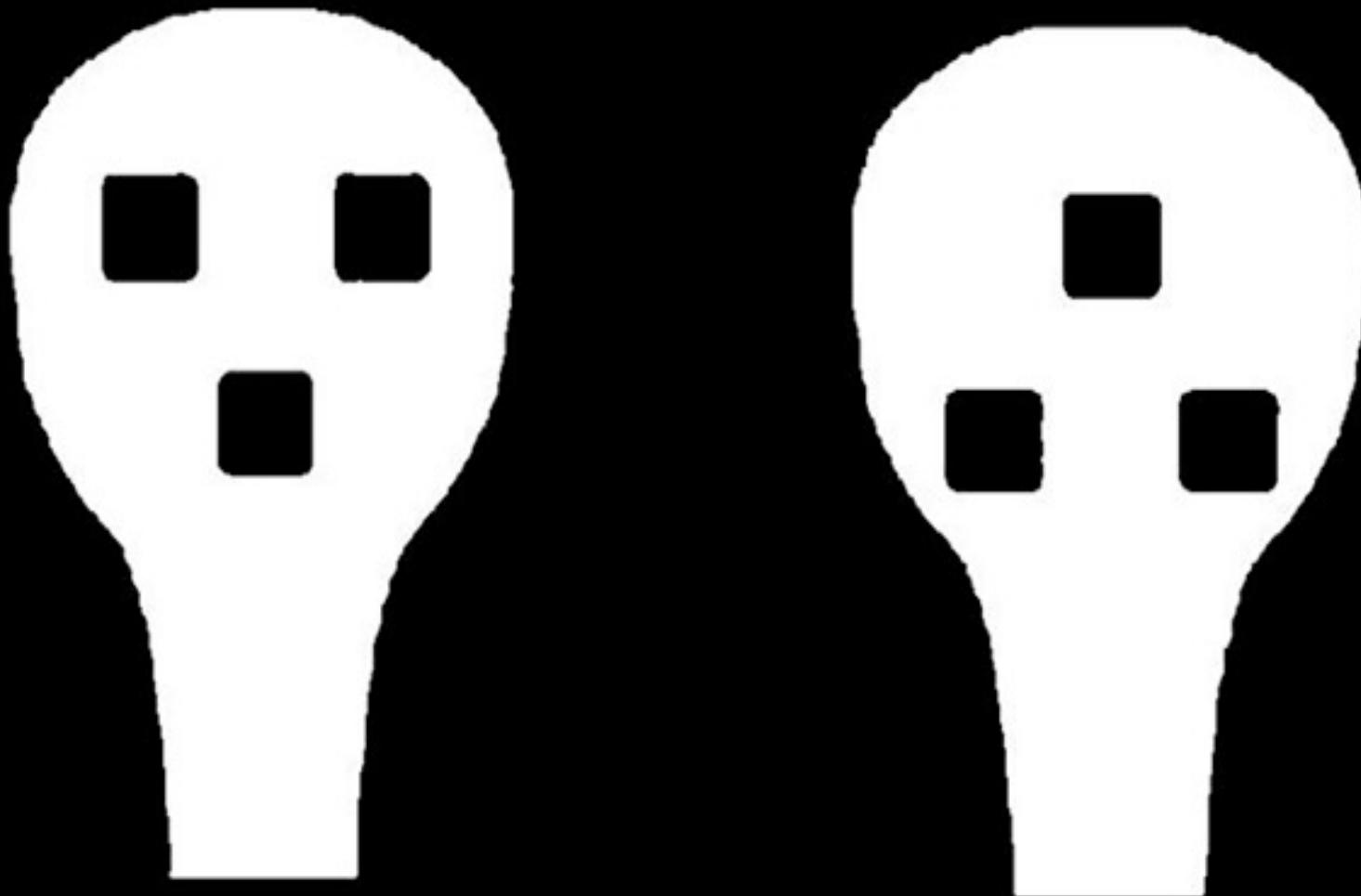


Was Your Card Removed?

We See Faces in Everything!



It Starts at an Early Age...



Social Perception (M or F)



Facial Recognition with Distortion



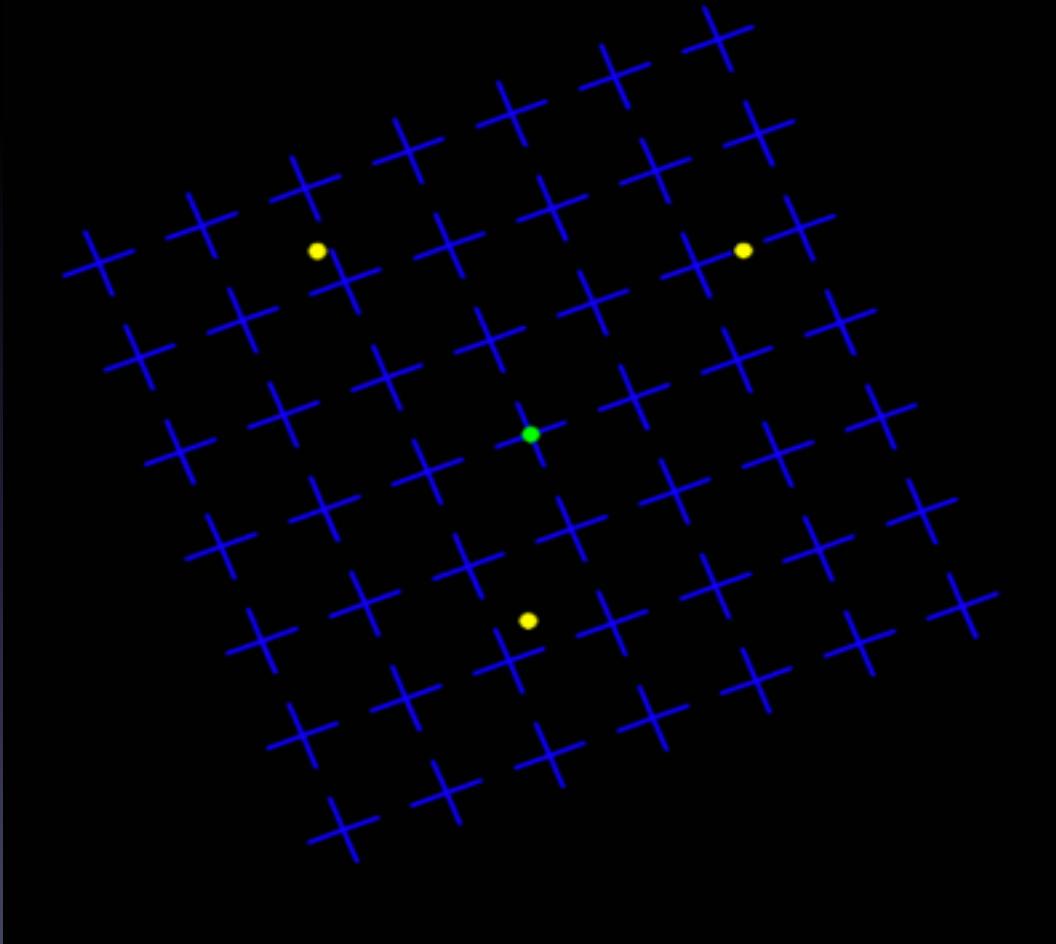
Flashed Face Distortion Effect



Cells That Fire Together Wire Together



Motion Induced Blindness



None of us are as good as ALL of us!



Can you guess the number of gumballs?

Leverage the Wisdom of the Crowd

- Same number of people UNDER-estimate that OVER-estimate
- The miscalculations cancel each other out
- Use the crowd to increase accuracy and quality
- Crowdtesting / Bug bashes – increases chances of finding more defects

CROWDSOURCING.ORG
DIRECTORY OF SITES

2900+

Of which 100s provide
application services

Testbirds

MOB4HIRE

bugcrowd

"By 2018, crowdsourcing will constitute 20% of all enterprise application development sourcing initiatives."

 **APPLAUSE**
WINNING APPS GET IT



crowdsourcedtesting
smarter software testing



Pay4Bugs

 **peopleperhour**

 **freelancer**

 **passbrains**

Elance

 **[topcoder]**TM

Inattentional Blindness

Conscious perception is the abnormality

- A.K.A. Perpetual Blindness
- Psychological lack of attention
- Not associated with any vision defects or deficits
- An event where individual fails to recognize an unexpected stimulus that is in plain sight



Inattentional Blindness



- The visual world is abundant and complex
- The brain's complexity is not
- Visual stimuli compete for processing resources
- When important information loses out, the consequences can be lethal

Inattentional Blindness - Quotes

*"In essence, trying to eliminate inattentional blindness would be like **asking people to try to fly by flapping their arms really rapidly**. The structure of the human body doesn't permit us to fly, just as the structure of the mind doesn't permit us to consciously perceive everything around....Focused attention allows us to use our limited resources more effectively; we don't want to be distracted by everything else around us. Most drivers follow the rules of the road., most doctors don't leave guidewires in patients. Unexpected events are unexpected for a good reason. They are rare."* (**Chabris and Simon, 2010**).

Inattentional Blindness - Impacts

- An automobile driver looks left down a sidewalk and pulls forward into a driveway. She hears a thud, looks down and sees a bicyclist on the ground near her left front fender. The bicyclist is seriously injured.
- A nurse pulls a vial from a medication cart. She looks at the label, fills the syringe and then injects the patient. The patient receives the wrong drug and dies.
- A submarine commander looks through his periscope and sees no ships nearby. He orders the ballast blown and the submarine to surface. He then hears the clank of a ship hitting his deck and realizes that he has surfaced with another ship directly overhead. The ship overturns, killing 9 people aboard.
- An Eastern airlines pilot and his fellow officers see a bulb flash on the control panel. They become so concerned with the cause, that they don't notice the plane approaching the ground or hear the alarm. The crash kills over 100 people.

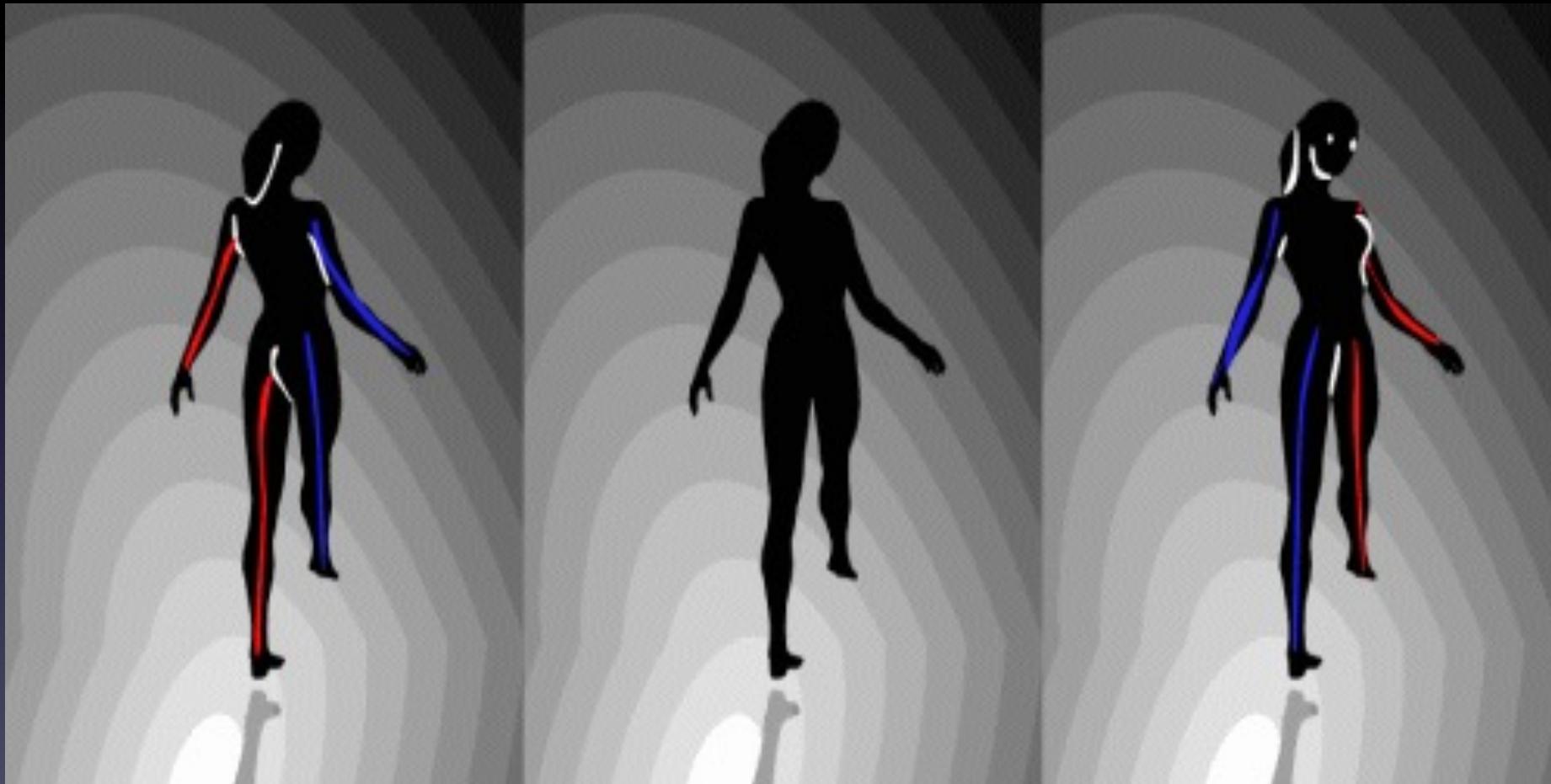
Curing Inattentional Blindness



- Avoid distractions
- Pay attention to what others might notice
- Remember that looking is not the same as seeing
- Just because your eyes are open doesn't mean you're seeing something

Bistable Images

Bistable: having two stable states



Anamorphic Art

A distorted projection or perspective requiring a specific vantage point to reconstruct the image



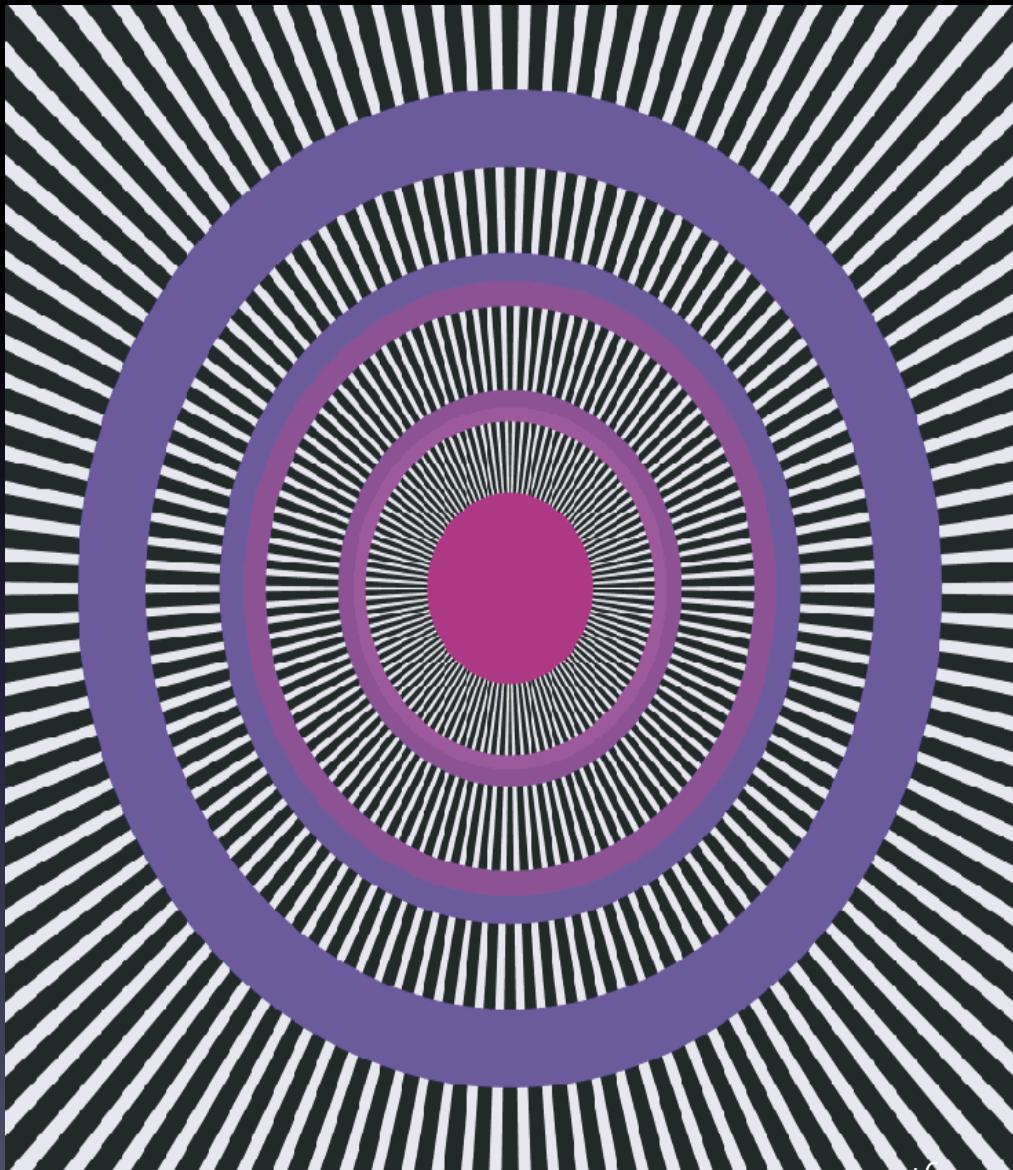
Choice Blindness



- Blind to choices and preferences
- People often fail to notice glaring mismatches between their intention and outcomes
- Prepared to offer introspectively derived reasons
- Fail to notice when presented with something different than what we really wanted

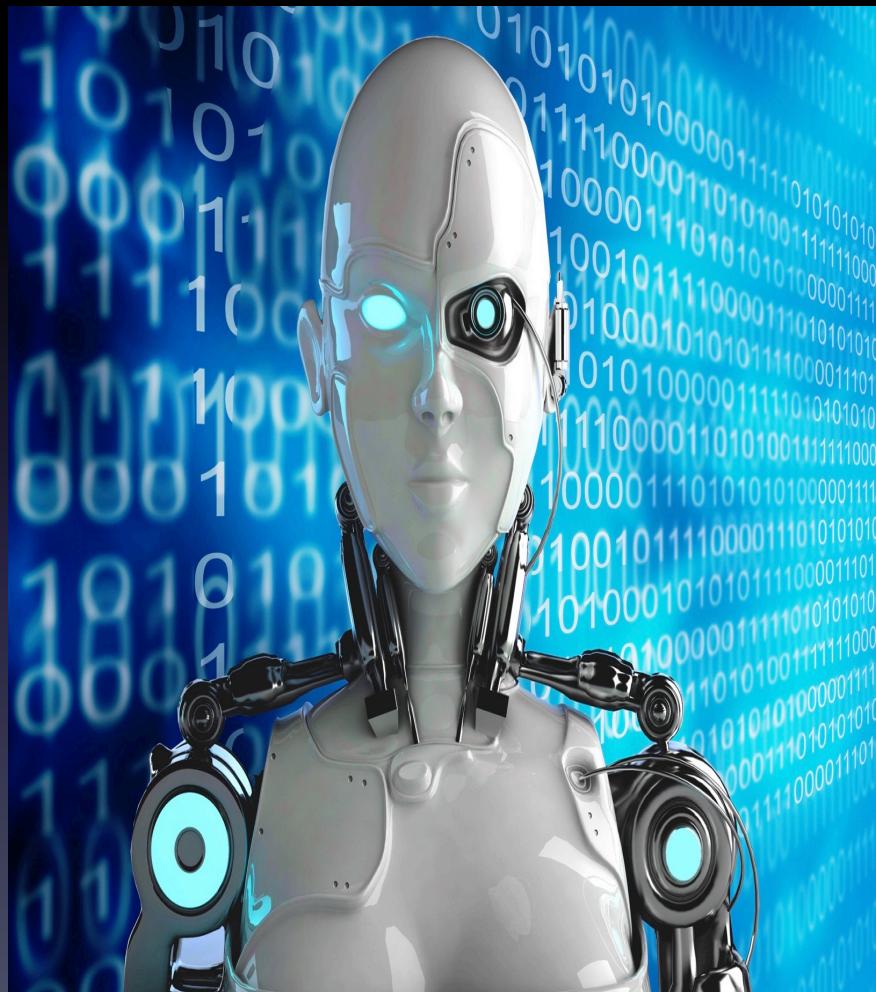
Motion

- Visual cortex designed to see motion whether it is there or not
- Brain sees apparent motion as a survival technique
- Orienting response – if anything going on in field of vision we see it
- Peripheral vision – not as strong



Automation

The burning question of the near future will not be how much work a man can do safely, but how little" (**Human Factors, 1980**)



- Use automation to test things that are not as easily visible with the human eye
 - A/B Testing
 - Usability Testing
 - GUI Testing
- Assists in testing things that the human brain may find boring to test after a few rounds

Primacy Effect

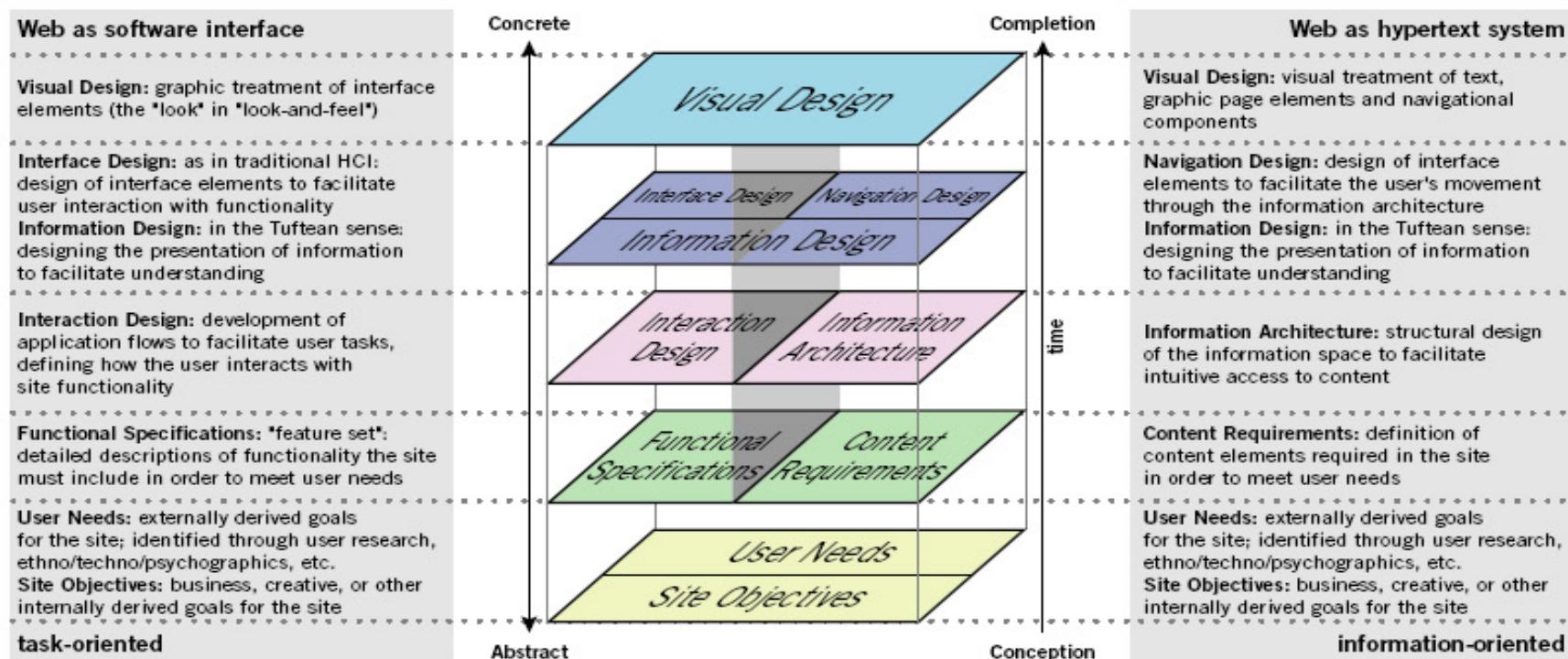
- When given a list of information and later asked to recall that information, the items at the beginning (**primacy**) and the items at the end (**recency**) are more likely to be recalled than the items in the middle.
- You never get a 2nd chance to make a 1st impression



UI / UX Design Considerations

The Elements of User Experience

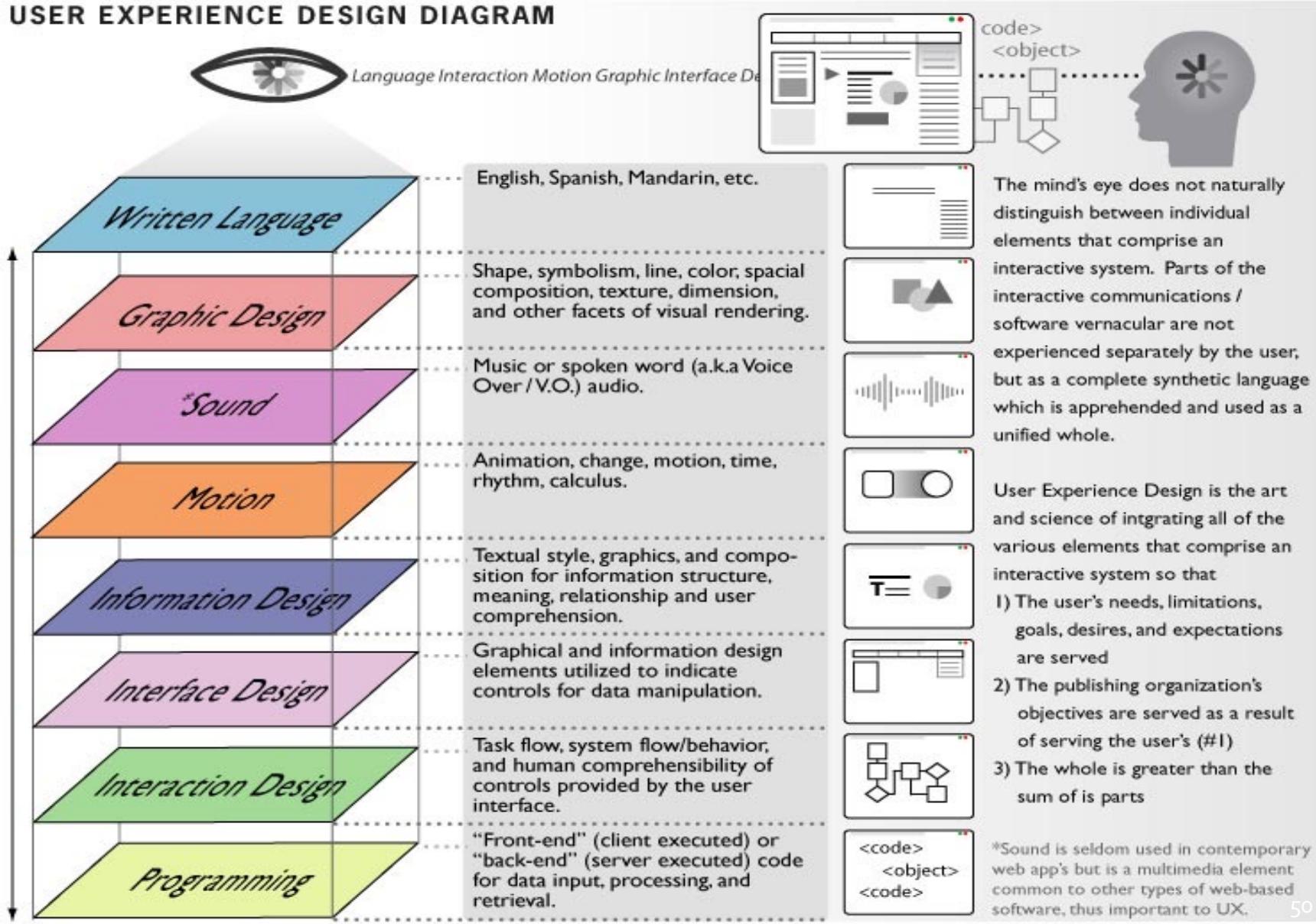
A basic duality: The Web was originally conceived as a hypertextual information space; but the development of increasingly sophisticated front- and back-end technologies has fostered its use as a remote software interface. This dual nature has led to much confusion, as user experience practitioners have attempted to adapt their terminology to cases beyond the scope of its original application. The goal of this document is to define some of these terms within their appropriate contexts, and to clarify the underlying relationships among these various elements.



This picture is Incomplete: The model outlined here does not account for secondary considerations (such as those arising during technical or content development) that may influence decisions during user experience development. Also, this model does not describe a development process, nor does it define roles within a user experience development team. Rather, it seeks to define the key considerations that go into the development of user experience on the Web today.

UI / UX Design Considerations

USER EXPERIENCE DESIGN DIAGRAM



Putting It All
Together...

Neuroplasticity

- Brain's potential to reorganize by creating new neural pathways to adapt as it needs
- The more you focus and practice something the better you become at the new skill
- Synapses that don't usually fire together now sharpen the skills



What Do We Know Now?

- The human brain is very complex
- Vision is very critical to us
- We don't always SEE when we are LOOKing
- Understanding our own brains, its weaknesses and strengths, helps us design our testing strategies, methodologies and the tools for which we will use

Keep In Touch!

Mike Lyles

QE Program Manager

mikewlyles@gmail.com

www.mikewlyles.com

www.facebook.com/MikeLylesBusiness

<http://about.me/mikelyles>

Twitter: [@mikelyles](https://twitter.com/@mikelyles)

<http://www.linkedin.com/in/mikewlyles>



www.mikewlyles.com



<http://about.me/mikelyles>

Thank You!

References - 1

Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School:

<http://theweek.com/articles/460769/12-things-know-about-how-brain-works>

Fooled by Your Own Brain:

<http://nautil.us/issue/2/uncertainty/fooled-by-your-own-brain>

Video for the Door Theory

<http://www.simonslab.com/videos.html>

Where Science and Story Meet

<http://nautil.us/issue/0/the-story-of-nautilus/where-science-and-story-meet>

Failures of Awareness: The Case of Inattentional Blindness

<http://nobaproject.com/modules/failures-of-awareness-the-case-of-inattentional-blindness>

Reference Guide: Inattentional Blindness

<http://www.yale.edu/perception/Brian/refGuides/IB.html>

References - 2

Definitions of Neuroplasticity

<http://www.medicinenet.com/script/main/art.asp?articlekey=40362>

<http://www.whatisneuroplasticity.com>

<http://bigthink.com/think-tank/brain-exercise>

<http://articles.mercola.com/sites/articles/archive/2015/01/15/neuroplasticity-brain-health.aspx>

Asymmetric Dominance

<http://prateekvjoshi.com/2013/02/21/asymmetric-dominance/>

https://en.wikipedia.org/wiki/Decoy_effect

<http://blog.freshplum.com/pricing-strategy-decoy-effect/>

Choice Blindness

<https://explorable.com/choice-blindness>

<http://psychology.about.com/od/cognitivepsychology/f/What-Is-Choice-Blindness.htm>

<http://www.lucs.lu.se/choice-blindness-group/>

<http://www.wired.com/2010/08/choice-blindness/>

<http://www.education.com/science-fair/article/evaluating-choice-blindness/>

References - 3

Video Credits

https://www.youtube.com/watch?v=VTgig9D_9gl

https://www.youtube.com/watch?v=vF2f_koPnw

<https://www.youtube.com/watch?v=bgTbvyKyPCE>