

Blink: The power of thinking without thinking

Rapid Cognition

Author: Malcolm Gladwell

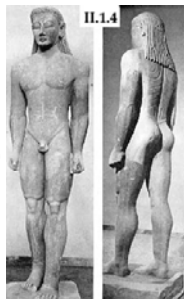
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- Author: The Tipping Point
- Writer for the New Yorker
- One of Time Magazine's 100 most influential people
- Canadian!
- Warning for this info: oversimplified



brooke williams

Story of the day

- The statue that didn't look right...
- Kouros: Statue of a nude male youth (left leg forward, arms at side), only about 200 in existence, most are recovered badly damaged or in fragments (Greek origin)



Kouros

- In 1983, an art dealer claimed he had a perfectly preserved Kouros which he tried to sell to the J. Paul Getty museum for 10 million dollars
- The museum proceeds slowly, running multiple tests on the kouros

Kouros

- Statue was made of dolomite marble and was covered by a layer of calcite...important because dolomite turns into calcite over the course of hundreds or thousands of years...didn't appear to be a contemporary fake
- The kouros was purchased by the museum after a 14 month investigation

Problem:

- The statue didn't look right
- One art historian first noted this while staring at the fingernails of the statue but couldn't articulate the problem
- An expert on Greek sculpture also felt it was fake the moment she saw it but wasn't sure why
- A former museum director noted that his first thought upon seeing the statue was "fresh", not the expected reaction to a 2000 year old statue
- No one could articulate the problem, every one of these experts, however, had an instinctive sense that the statue was a fake

- The statue was sent to Athens to be investigated by the foremost sculpture experts
- Every expert thought something was wrong on first glance but couldn't articulate why
- One expert noted that on first glance, he felt "intuitive repulsion"
- Still, all scientific tests on the authenticity of the statue checked out

- Soon, however, the case falls apart...the authenticity of documents called into question (postal code), incredibly careful examination showed that the design of the kouros mimicked several different styles and time periods
- Later analyses showed that you could age the surface of dolomite marble using a potato mold
- Statue turned out to be a modern forgery
- None of this would have been discovered in the absence of "intuitive repulsion" that occurred in many the first moment they glanced at the statue

Mother always told us...

- Haste makes waste
- Look before you leap
- Stop and think
- Don't judge a book by it's cover
- We're taught that we're better off gathering as much information as possible and spending as much time deliberating as possible...but is it the case that doing so is actually a bad idea?

An example

- Picture a gambling game in which you are faced with 4 decks...two red and two blue
- Each card in each deck either wins you money or costs you money, your task is to maximize winnings and minimize losings

An example

- What you're not told: the red decks are a minefield...high rewards but when you lose you lose big
- The only way to win is by taking cards from the blue decks, steady payouts, low penalties
- How long will it take you to figure that out?

- Most people figure out how to play after turning over 50 cards but can't articulate the rules
- After 80 cards, you've figured out the game and can explain why to avoid certain decks
- This makes sense, it's learning...we have experiences, think them through, and draw conclusions
- What if we measure knowledge in a different way though (similar to implicit learning)

- Participants are hooked up to a machine that measures activity of the sweat gland, below the skins in the palm of their hands (skin conductance...responds to stress as well as temperature)
- Stress responses are generated to the red decks after only 10 cards are turned over, 40 cards before conscious knowledge kicks in
- After 10 cards people draw from the blue deck moreso
- People have actually figured the game out well before they know they have

- In a high stakes situation where a lot of information is being taken in in a short period of time, our brain uses two very different strategies to make sense of the world
- 1) Conscious strategy – we think about what we've learned and reach a logical and definitive conclusion, but it takes us awhile to get to this point (slow moving)
- 2) Unconscious strategy – operates far more quickly, very smart, identifies patterns immediately, the only downside is we're not aware of it
- It's the second strategy that influenced the experts examining the kouros

The Adaptive Unconscious

- The part of our brain that leaps towards conclusions (not to be confused with Freud's notion of unconscious)
- Essentially a giant computer that quickly and quietly processes a lot of information to allow us to function normally
- Quick decision making process
- What do you do when a truck is bearing down on you or someone throws a punch at you?

The Adaptive Unconscious

- The mind operates efficiently by leaving a lot of high-level sophisticated thinking to the unconscious much like pilots planes can fly on autopilot
- Adaptive unconscious sizes up world, warns of us dangers, sets goals and initiates actions
- We tend to switch back and forth between conscious and unconscious modes of thinking

How quickly can you determine a professor's teaching effectiveness?

- Ambady & Rosenthal (1993)
- Students shown a 10 second, 5 second, or 2 second clip of a professor with the sound turned off and are asked to rate teaching effectiveness
- Ratings compared with ratings at the end of the semester
- No difference in ratings

Rapid cognition

- We tend to be suspicious of rapid processing due to how we're taught to think (more research, more tests, etc.)
- Present purpose
 - 1) To convince you that the decisions we make rapidly are often as good as those we make after a good deal of time and thought
 - 2) To determine the situations in which our unconscious fails us (why did that museum purchase the kouros?)
 - 3) Snap judgments can be controlled and we can teach ourselves to make better snap judgments

How rapid cognition applies

- Decision making
- Attention
- Automaticity
- Expertise

Keep in mind...

- ...our unconscious is powerful, but fallible, it can be thrown off, our instinctive reactions can go awry
- Normally when this happens though, there's a reason

Thin slicing: a little knowledge goes a long way

- John Gottman, Washington University
- Marital stability and relationship analysis
- Claims to be able to assess the likelihood of divorce just by watching brief interactions



- Couples seated on chairs facing each other with electrodes and sensors clipped to their fingers and ears (measures heart rate, skin temperature, sweat)
- Chairs are motion sensitive to determine how much people move around
- Videotape interactions in which couple is asked to talk about a contentious issue from their marriage

What can be learned in 15 minutes?

- Can you tell if someone's marriage is healthy/unhealthy when viewing them having a discussion about a single topic?
- To really know a couple, wouldn't you need to see them interact over time in different situations?
- Gottman says no, 15 minutes is all it takes to predict future relationship success

SPAFF

- Gottman analyzes all interactions with SPAFF (specific affect), a coding system with 20 categories corresponding to any emotion that may be expressed during the conversation (e.g. contempt is 2, anger is 7, defensiveness is 10)
- Students code every second of every interaction
- The coded information is then added to an equation that also factors in the data from the electrodes and sensors

How much can you tell from the data?

- If you look at one hour of interaction, ability to predict whether the couple will still be together in 15 years is 95%
- If you look at 15 minutes, can still predict with up to 90% accuracy
- Even after viewing only 3 minutes, your ability to predict marriage stability is quite high
- How can one be so accurate with little information?

Thin-slicing

- A critical aspect of rapid cognition
- Thin-slicing is the ability of our unconscious to find patterns in situations and behaviors based on narrow slices of experience
- When our unconscious thin-slices, it is doing an automated, accelerated, unconscious version of what Gottman does with his videotapes and calculations

Thin slicing...

- ...comes about due to expertise
- What Gottman is able to do comes about due to his years of experience coding tapes
- Claims he can now have couples discuss things over dinner and know whether or not they'll make it
- Our unconscious is able to thin slice for the same reason, lots of experience with things makes them automatic (like driving a car)

Expertise

- As people become experienced at coding SPAFF, patterns of behavior jump out that wouldn't be perceived otherwise (e.g., eye rolling, word choices, yes-but, tone)
- What is actually being measured is positive and negative emotion independent of what is said...interactions that appear positive can actually be very negative

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What exactly is our unconscious basing it's decision on?

- Fists – distinctive patterns
- A fist is a term used in Morse code, even though dots and dashes are standard, everyone has their own specific fist – dots and dashes are formed with various spacing and rhythm for each individual

What exactly is our unconscious basing it's decision on?

- In WW2, the British were able to learn about the Germans by analyzing fists rather than particular message content (certain operators were with certain units and by determining their fist they could pick up on where each unit was at a given time)
- Critically: fists emerge naturally, your personality tends to express itself automatically and unconsciously

- Relationships also have fists which are expressed during interactions, one needs to know how to pick up on them
- Turns out that there are shortcuts to this as well
- Selectivity is key (picking up on the most important determinants)
- For relationships, there are 4 critical negative predictors: defensiveness, stonewalling, criticism, and contempt
- Contempt is by and large the most important determinant of marital stability (contempt is essentially any statement of superiority, made from a higher level)

Contempt

- Contempt also correlates with the number of colds a husband/wife gets in a year...being in the presence of contempt is so stressful it can damage your immune system
- This seems to be how our unconscious works: when we leap to a decision our unconscious is throwing out irrelevant info and zeroing in on the important stuff
- As a result thin-slicing is sometimes better than deliberative/exhaustive thinking

Another example

- If you're going to hire someone for a job, what's the more effective approach?
 - A) Meet with the prospective hire twice a week for a year
 - B) Go to his/her house and spend a half hour looking around
- We're generally taught that option a) is correct

Samuel Gosling

- Uses the Big 5 inventory to study personality
 - Extraversion
 - Agreeableness
 - Conscientiousness
 - Emotion Stability
 - Openness to new experiences



Gosling et al., 2002

- 80 subjects...all of whom fill out a questionnaire tapping into the Big Five
- The subjects then select their closest friends to fill out the same questionnaire describing them
- Then the experimenter took strangers who had never met the students, gave them the same questionnaire (is this person talkative, original, reserved, etc.), and asked them to fill it out after spending 15 minutes looking through the subjects dorm room (no interaction with individual)

How does everyone do

- Friends describe us accurately
- How about strangers:
 - Not good at determining extraversion (really need to interact with someone to determine this)
 - Slightly less better than friends at determining agreeableness (also probably need to interact with someone)
 - For the other three scales though (conscientiousness, emotional stability, openness to experience), strangers are actually more accurate than friends
 - Overall, strangers rate us better than our friends do
 - This is another example of thin-slicing

What can a bedroom tell you?

- Three kinds of clues about personality
 - Deliberate expressions of how we'd like to be viewed by the world (e.g., framed degree)
 - Behavioural residue: inadvertent clues such as dirty laundry or alphabetized CD collection
 - Thought and feeling regulators: scented candles, decorative pillows

More importantly, what information do you not get from a bedroom?

- When you meet someone face to face a number of confusing, complicated, and irrelevant pieces of information can be obtained which mess up your judgment (e.g., if you met a football player who was a philosopher, could you get by the dumb jock bias...what if you just saw his bookcase?)

- People aren't very good at being objective about their own personality, they may lie, so we ask questions to get around this rather than straightforward questions (e.g. what is your marriage like)
- Strangers can cut through this by simply observing your room, Gottman cuts through this by examining positive/negative nature of interactions independent of content of interactions

Yet another example

- Imagine you work for an insurance company that sells medical malpractice protection...it is your job to determine which physicians are most likely to be sued....do you
 - A) examine each physicians' training and credentials, analyze past performance for errors
 - B) Listen in on brief snippets between each doctor and his/her patient

Why people sue

- Often times shoddy medical care goes unpunished, people sue because of shoddy medical care plus something else
- Physician demeanor: physicians who take more time answering questions in a friendly/gentle tone are rarely sued, those who are rushed, blunt, or unclear, are often sued

Levinson et al., 1997

- What differentiates surgeons who have never been sued relative to those who have been sued twice or more?
- Surgeons who have never been sued...
 - Spend about 3 minutes more with each patient
 - More likely to make orienting comments (first I'll do this, then that)
 - More likely to engage in active listening
 - Importantly, however, no difference in quality of information/care given by those who have been sued relative to those who have not

Ambady et al., 2002

- Took two 10-second clips of interactions between physicians and patients
- Content filtered the clips to remove ability to recognize individual words, but intonation, pitch, and rhythm are preserved

Ambady et al., 2002

- Subjects asked to rate each clip for warmth, hostility, dominance, and anxiousness
- From those ratings you can predict, with a high probability, who will be sued

Thin slicing

- Related to other concepts
 - Court sense in basketball
 - Love at first sight
 - Coup d'oeil in the military (power of the glance)
 - “I knew the moment I saw him/her...”
 - Internet dating, speed dating

The secret life of snap decisions

- Vic Braden, former professional tennis player and top tennis coach
- While watching tennis matches, knows instantly when a player is about to double fault
- Has no idea why he knows this even though he can correctly call out double faults almost every time they are about to happen (16 out of 17 over the course of one weekend)



Expertise

- Braden has become so expert at picking up the subtle nuances of tennis he has this knowledge but is frustrated that he can't verbalize why
- What does this tell us about snap judgments?
 - They are almost entirely unconscious (e.g. the gambling experiment where people learn about the red decks way before they are consciously aware that they learned)

Kouros

- When the experts knew the kouros was a fake, they couldn't verbalize why either
- Art critic Bernard Berenson: "distressed colleagues due to his inability to articulate how he could clearly see the defects and inconsistencies of a particular work"
 - His common explanations
 - My stomach felt wrong
 - I had a ringing in my ears
 - I was struck by momentary depression
 - I felt woozy and off balance

- George Soros, a billionaire investor, used to say he'd change positions on the market when his back hurts
- How many investors would you trust who told you they based things on their sore back?
- Snap judgments take place behind a locked door that we don't deal with very well (seemingly no key)

Okay, so our unconscious makes snap judgments, is there any way for us to influence our unconscious?

- John Bargh
- Social Psychologist
- Has investigated priming effects on behaviour



Bargh et al., 1996

- Scrambled sentence test: create one four word sentence from each set of words as quickly as possible
 - him was worried she always
 - from are Florida oranges temperature
 - ball the throw toss silently
 - shoes give replace old the
 - he observes occasionally people watches
 - be will sweat lonely they
 - sky the seamless gray
 - should now withdraw forgetful we
 - us bingo sing play let
 - sunlight makes temperature wrinkle raisins

Bargh et al., 1996

- The sentence task is actually irrelevant...interest is in how fast/slow people leave the experiment relative to how fast/slow they came
- After the sentence task people take longer walking back down the hall than they took walking in
- Priming “old” is supposed to have made people walk slowly

Bargh et al., 1996

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Works for other behaviours also

- Sentence test has words related to either being rude (aggressive, bold, rude, bother, disturb) or polite (respect, considerate, patiently, yield, polite)
- After task, subjects are asked to walk down the hall and get the experimenter who is engaged in a conversation with someone else
- Those primed to be rude interrupted around 5 minutes into the conversation
- Those primed to be polite never interrupted 82% of the time (10 minute max)

Related findings

- Subjects asked to answer 42 Trivial Pursuit questions
- Prior to this, half of all subjects are asked to think about what it would mean to be a professor and write down everything that came to mind
- Other half of subjects were asked to think about soccer hooligans
- "Professor" group outperforms "hooligan" group on trivia questions (56% vs. 42% correct)

Steele & Aronson

- Subjects: black college students
- Test: 20 questions drawn from the GRE
- Prior to the GRE questions, half of all subjects are asked to identify race (primes stereotypes of African Americans?)
- People asked about their race do half as well as subjects who weren't
- All subjects indicated that it hadn't bothered them to be asked about their race pre-test
- In all of these examples people have no idea the prime is influencing them

Free will?

- Is free will an illusion? The results suggest that much of the time we operate on autopilot and we're influenced by far more variables than we could imagine
- Is there an advantage to operating like this?

Free will?

- Yes, we're hardwired to perform optimally across environments, if we carefully analyzed everything around us we'd never get anything done...your unconscious picks up on clues about the environment and tells you how to act accordingly so you needn't waste time/resources...unconscious is like a mental valet

What if our unconscious didn't act this way?

- Damasio has studied a patient with damage to the ventromedial prefrontal cortex (area critical to decision making)
- Highly intelligent, high functioning individual who lacks judgment
- Takes about 30 minutes to decide between two potential dates for an appointment (considers previous engagements, proximity to other engagements, weather, etc.)

Gambling experiment

- When this patient does the red deck/blue deck experiment he learns the same as everyone else but don't show any of the physiological symptoms early on (e.g. sweaty palms)
- Can't verbalize at any point why the blue deck is better either
- Lacks the same mental valet the rest of it has and it affects performance

The Warren Harding Error (tall dark and handsome)

- In 1899, Harding was a senator in Ohio who was met and befriended by political advisor Harry Daugherty
- Daugherty's initial impression was that Harding would make a good president (based on this looks, tall, chiseled, handsome)
- Many others agreed, thought he looked noble (Roman)



The Warren Harding Error (tall dark and handsome)

- Problem: Harding was not very intelligent (pompous and not particularly well spoken), spent most of his time playing poker and golf, and had a voracious sexual appetite that got him into a fair amount of political trouble

He looked like a presidential candidate

- Despite his shortcomings, he was continuously pushed up the political ladder based on his look
- Unfortunately, Harding is considered one of the worst presidents in American history
- This is the dark and unfortunate side of thin slicing

The dark side of thin slicing

- Though thin slicing can be helpful, it must also be acknowledged that it is not infallible
- Thin slicing is at the root of most prejudice/discrimination
- It's why picking a job candidate is difficult and why sometimes, very mediocre people end up in positions of enormous responsibility

The dark side of thin slicing

- In order to take rapid cognition seriously, we need to accept the fact that in some situations, rapid cognition leads us astray
- Numerous researchers have begun examining these unconscious/implicit associations which influence our beliefs behaviour

The Implicit Association Test (IAT)

- Based on the idea that we make connections more quickly between pairs of ideas that already related in our minds than we do pairs that are unfamiliar to us
- How do we use this knowledge to test implicit associations?

Example 1

Male		Female
_____	John	_____
_____	Bob	_____
_____	Amy	_____
_____	Holly	_____
_____	Joan	_____
_____	Derek	_____
_____	Peggy	_____
_____	Jason	_____
_____	Lisa	_____

Example 2

Male or career		Female or family
_____	Lisa	_____
_____	Matt	_____
_____	Laundry	_____
_____	John	_____
_____	Merchant	_____
_____	Bob	_____
_____	Home	_____
_____	Holly	_____
_____	Joan	_____
_____	Jason	_____
_____	Kitchen	_____
_____	Parents	_____
_____	Sarah	_____
_____	Derek	_____
_____	Siblings	_____

Example 3

Male or family

Female or career

	Babies	
	Sarah	
	Derek	
	Employment	
	Merchant	
	Holly	
	Home	
	Lisa	
	Corporation	
	Matt	
	Entrepreneur	
	Cousins	
	Parents	
	Domestic	
	Joan	



IAT

- People tend to be much faster completing example 2 relative to example 3 because most people have stronger associations between maleness and career-oriented concepts than we do between femaleness and career (and femaleness correlates more with family concepts than maleness)
- The IAT gets to the bottom of deeply held associations that people may try to disguise otherwise

Another example

White or bad

Black or good

	Hurt	
	Evil	
	Glorious	
		
	Wonderful	
	Mean	
		


Another example

White or good

Hurt


Evil

Glorious



Wonderful

Mean



Black or bad

Racism?

- More than 80% of those tested have pro-white associations
- Even if you don't feel as though you are prejudiced, there is a strong inclination for black to be associated with bad on this test
- Our attitudes towards race/gender operates on two levels
 - 1) conscious – what we choose to believe, stated values
 - 2) unconscious – immediate, automatic associations that express themselves before we have time to think

What does this mean?

- Unconscious attitudes may be completely inconsistent with our stated conscious values
- Most African Americans that take this test (more than 50%) have more pro-white associations than pro-black associations
- You don't choose to make positive associations with the dominant group, but you're mostly acquired to (influence of society, media, etc.)

IAT

- More than just an abstract measure of attitudes, a predictor of how we would act in spontaneous situations
- Example, walking down a dark alley at night

IAT

- Other interesting related findings: tall people enact positive associations
 - Fortune 500 CEOs tend to be 2-3 inches taller on average than the general population
- Could this be one of the reasons that there are fewer women/minorities in positions of power?
- Note, this is not a measure of deliberate prejudice, it is unconscious bias that is difficult to overcome

Career guidance for a thin slicer

- Car salesman – customers vary from being insecure and nervous to knowledgeable and confident to clueless...salesmen needs to determine which it is quickly to determine sales approach
- To successfully do this though, you need to constantly make snap judgments while simultaneously overriding stereotypes based on customer appearance

How does race affect car price?

- Ayres, 2001
- Sends a number of confederates to car dealerships, all told to dress the same and interact the same, only thing that differs is race
- When an interest is expressed in buying a car by a young college educated professional, does race matter?

How does race affect car price?

- Initial offer: white men (\$725 above invoice), white women (\$935 above invoice), black women (\$1195 above invoice), black men (\$1687) above invoice
- Popular explanation: black women and men are being viewed as stupid/naïve and are being suckered
- This doesn't hold as all confederates present themselves as college age and successful, might instead be something unconscious

Can we overcome these biases?

- Think of Martin Luther King
- By preemptively associating positive things with African American, the commonly observed result on the IAT can be changed/reversed
- We can change our first impressions/instincts via top down control, we need to know when to do this though and when no to

Hey, let's make fun of the US army!

- What do you suppose is better? Millions of dollars worth of technology and report and research....or rapid cognition?
- Meet Paul Van Riper



Van Riper

- Incredibly well respected military veteran
- Multiple tours of Vietnam in a variety of capacities
- Known for his unorthodox methods
- In 2000, Van Riper (retired) was approached by the Pentagon to take part in the largest and most expensive (cost 250 million dollars) War Games ever, Millennium Challenge '02

The scenario

- A rogue military commander has broken away from his government somewhere in the Persian Gulf and is threatening to engulf the entire region in war. He has a considerable power base from strong religious and ethnic loyalties, and he is harboring and sponsoring four different terrorist organizations...he is virulently anti-American
- Paul Van Riper was asked to play the rogue commander

War games

- War games are run by the Joint Forces Command (JFCOM)
- JFCOM has at its disposal, hundreds of military analysts and specialists and software experts
- For a good deal of time prior to the game, JFCOM performed a number of spiral exercises to prepare them
- USA = blue team, Enemy = red team
- As it turned out, these war games were actually a rehearsal for an upcoming war so blue team wanted everything to go perfectly

War games

- Pentagon wanted to test new and radical ideas about how to go to battle
- The belief was that future wars will not be military vs. military...the decisive factor would be how you take apart your enemy's system (war making capability is connected to the economic system, which is connected to the cultural system, which is connected with personal relationships)

The centerpiece

- JFCOM devised the Operational Net Assessment – formal decision making tool that breaks the enemy down into a series of systems—military, economic, social, political—and creates a matrix showing how these systems are interrelated and which links are most vulnerable
- Also had: a real time map of combat situations, tools for joint interactive planning, tons of information/intelligence...red team had none of this

Van Riper

- ...was fairly convinced that all of blue team's equipment was useless because it is impossible to lift "the fog of war" (idea that things rarely proceed in a rational manner)
- War is unpredictable, messy, and nonlinear, all those millions of dollars of tools shouldn't matter
- He was once involved in the creation of JFCOM tools and hated it...took too long
- To Van Riper, war involves snap decisions that aren't always rational

Army vs. Stockbrokers

- Van Riper once visited the Mercantile Exchange in New York to visit the trading floor
- What he saw reminded him of military command posts during war

Army vs. Stockbrokers

- On a whim, Van Riper took some stockbrokers to a military base for war games and despite a lack of training, the stockbrokers did amazingly well
- The games required decisive, rapid-fire decisions under conditions of high pressure and limited information
- Gives credence to the notion that thinking things through isn't always good

Millennium challenge

- Not just a battle between armies, a battle between philosophies
- On Day 1, blue team poured tens of thousands of soldiers in the Persian Gulf, parked an aircraft carrier battle group outside the red team's home country, and issued an eight-point ultimatum to Van Riper, #8 being to surrender
- Blue team acted with confidence because the Operational Net Assessment matrixes told them the red team's vulnerabilities

Millennium challenge

- Unfortunately for the blue team, Van Riper didn't act in the predicted manner
- Blue team knocked out the red team's microwave towers and fiber optic lines on the assumption that Red Team would have to use satellite communications and cell phones (which blue team could monitor)
- Van Riper, not being an idiot, used couriers on motorcycles and hidden messages inside prayers

Millennium challenge

- To get airplanes off the airfield, Van Riper used an old WW2 strategy whereby he used lighting systems for signals
- Van Riper was not intimidated and blue team did not know how to react
- On Day 2, Van Riper put a small fleet of boats in the Persian Gulf to track the ships of the invading blue team

Millennium challenge

- Then, without warning, he bombarded them in an hour long assault with a ton of cruise missiles
- When the attack ended, sixteen American ships were sunk...had this been a real war, 20000 Americans would have been killed before their army ever fired a shot
- How to explain the defeat of the blue team with all their technology?

The structure of spontaneity

- To answer this question, consider another group of people, about as far away from the military as you can get...improv troupes
- Improv troupes perform a series of scenes/plays which can last up to an hour based on suggestions of the audience
- It's unrehearsed, completely spontaneous and oftentimes, very funny
- To the uninitiated, this process seems terrifying, but in actuality, it isn't nearly as random and chaotic as it appears

The structure of spontaneity

- Improv troupes actually rehearse to an insane degree, though they can't rehearse specific ideas, they can rehearse general rules that will make improv proceed as smoothly as possible
- It's like basketball...basketball is an intricate high speed game filled with split second, spontaneous decisions
- That spontaneity is possible only when everyone engages in hours of repetitive and structured practice

Structure

- This is the key to improv as well as understanding why red team did well in Millennium challenge
- **SPONTANEITY ISN'T RANDOM!**
- How good people's decisions are under the fast-moving, high-stress conditions of rapid cognition is a function of training and rules and rehearsal

Improv

- Certain rules make improv possible
- The most important rule is the idea of agreement...characters have to accept everything that happens to them

An example of a bad improv scene

- A: I'm having trouble with my leg
- B: I'm afraid I'll have to amputate
- A: You can't do that, Doctor
- B: Why not?
- A: Because I'm rather attached to it
- B: Come on, man
- A: I've got this growth on my arm to
- In this example, Actor A violated the rule of agreement ("You can't do that Doctor")
- Joke was funny, scene wasn't

An example of a good improv scene

- A: Augh!
- B: Whatever is it, man?
- A: It's my leg, Doctor
- B: This looks nasty, I shall have to amputate
- A: It's the one you amputated last time
- B: You mean you've got pain in your wooden leg?
- A: Yes, Doctor
- B: You know what this means?
- A: Not woodworm?
- B: Yes, we'll have to remove it before it spreads to the rest of you
- (A's chair collapses)
- A: My God, it's spreading to the furniture
- This scene works because the rule of agreement is followed

Improv

- In improv, the humor arises out of how steadfastly the participants adhere to the rule that no suggestion can be denied
- By following rules, one creates the conditions for successful spontaneity

How this applies to Van Riper

- Van Riper instructed the red team to be "in command and out of control"
- Overall guidance provided by Van Riper but the forces in the field do not depend on orders coming from the top
- Rather than overwhelming his operatives with any of the technology blue team used, they used the wisdom, experience and good judgment of people on his team

Disadvantage of this approach

- 1) Van Riper didn't have a clear idea of what his troops were up to
- 2) He placed a lot of trust in his subordinates
- 3) It's a messy way to make decisions
- Huge advantage: this method of leadership is like the rule of agreement in improv, it enables rapid cognition

Another example of why rapid cognition can be better than thought

- If I asked you to pick out of a lineup, an individual who sat next to you on the bus earlier in the week, you could do it very easily
- This is an example of unconscious cognition, you don't have to think about it, faces just pop into our mind
- What if instead I ask you to write down as much detail about this person as possible (e.g., hair colour, clothing, etc.) before identifying them in the lineup?

Verbal overshadowing

- Now you do far worse on the lineup task
- Describing a face impairs your otherwise effortless ability to recognize a face
- This is referred to as verbal overshadowing
- Jonathan Schooler (UBC)



Verbal overshadowing

- Your brain has a part (the left hemisphere) that thinks in words and a part (the right hemisphere) that thinks in pictures (note: this is a gross oversimplification)
- When forced to describe something you interfere with visual memory and moved your processing from the right to left hemisphere
- This is problematic for faces since we are better at recognizing them than describing them

An example

- If I showed you pictures of the following people, you would have no difficulty recognizing them
 - Michael Jordan
 - Britney Spears
 - Albert Einstein
 - Marilyn Monroe
 - Brad Pitt
- But if I gave you just a description of each person's face, you would probably have no idea who I was describing

Verbal overshadowing

- Verbal overshadowing actually extends beyond faces...consider the following problem:
- A man and his son are in a car accident. The father is killed and the son is rushed to the emergency room. Upon arrival, the attending doctor looks at the child and gasps, "This child is my son"...who is the doctor?
- This is an insight puzzle, can't be worked through systematically, you only get it in a moment of insight

Here's another

- A giant inverted steel pyramid is perfectly balanced on its point. Any movement of the pyramid will cause it to topple over. Underneath the pyramid is a \$100 bill...how do you remove the bill without disturbing the pyramid?
- Again, this is an insight puzzle

Schooler

- Schooler ran an experiment with two groups...one group was asked to write down everything they could remember about how they were trying to solve the problem
- People asked to explain themselves solved 30% fewer problems than those who weren't
- Forcing someone to write down their thoughts decreases their chance of having a flash of insight
- With logic problems, explaining yourself helps, but with insight problems, this wrecks you

Interesting aside

- If you force someone to take 10 seconds of "prep" time before they take a free throw, how do you think this affects
 - A) basketball amateurs
 - B) basketball professionals

Interesting related story

- A fire department commander in Cleveland thought for a very long time that he had ESP
- Reason: While attending to a fire in the back of a one-story house, the commander thought to himself "something is wrong", ordered everyone out of the house and then moments later, the floor collapsed
- When asked, however, the commander had absolutely no idea why he had ordered his men out of the house

- Upon further questioning, it was discovered that the fire hadn't behaved the way one would have expected (fire was in the basement, not the kitchen as had been thought)
- Fire was hotter than expected, didn't respond to water, and wasn't as noisy as expected
- All of the signs of danger were there, but had the commander actually thought to stop and discuss these things with his men, they all would have died, fortunately his unconscious took over

- During the Millennium challenge, this was the mistake the blue team made, stopping to discuss everything rather than just acting on instinct
- They were so focused on mechanics they never considered things holistically
- Interestingly, after their failure, rather than dumping their strategy, the Pentagon started the war game over (pretended everything that happened, didn't), gave Van Riper's superiors specific instructions how to act, and won the next day

When less is more

- It's not always the case that "less is more" relates only to our unconscious, sometimes it can also help in very tricky decision making contexts
- Cook County hospital in Chicago is the real life inspiration for the series ER
- Cook County is renowned for changing the manner in which heart attacks are diagnosed

Brendan Reilly

- Took over Cook County when the place was at its worse...resources were stretched to the limit, the building was old and not up to code, there were no private rooms, just plywood dividers
- At one point they trained a homeless man to do lab tests because no one else was available

The biggest problem

- To Reilly, the biggest problem was the Emergency Department (few patients had health insurance)
- Lines were down the hall, rooms were jammed, and at its peak, 250000 patients came through the ED each day
- Biggest worry: patients who thought they were having heart attacks

Heart problems

- These patients were the worst as they take up a lot of time and resources...the treatment protocol was long and elaborate and for the most part, inconclusive
- Tests: blood pressure taken, doctor listens to the chest via stethoscope, a series of questions are asked (how long have you had pain, when/where does it hurt, cholesterol level, drugs, diabetes?)...a technician then administers an electrocardiogram (which doesn't spot problems very readily)

Heart problems

- Doctors take all this information, and estimate the likelihood a heart attack is occurring
- Problem: this estimate is often not anywhere close to accurate (different doctors give different estimates and these often range from 0 to 100 in terms of overlap)

Why all the tests?

- Doctors like to think that they are making reasoned judgments but they're actually just guessing
- People having an actual heart attack get sent home between 2 and 8% of the time, as a consequence, most doctors overcompensate and admit more people than they should

Why all the tests?

- Heart patients take up rooms and testing resources for days at a time, this is particularly problematic since the public is well educated on heart disease and coming out to the hospital en masse
- Doctors are also worried about malpractice, so they'd rather err on the side of admitting someone
- At Cook County, less than 10% of those admitted actually had, or were having, a heart attack

There's got to be a better way

- Reilly was intent to change the way in which heart attacks were diagnosed, so he turned to the works of former cardiologist Lee Goldman
- Goldman collaborated with mathematicians to determine whether the principles of math could be used to help determine whether someone is having a heart attack

Goldman's system

- Goldman thought that doctors should combine the evidence of the ECG with what he called the three urgent risk factors
 - 1) Is the pain felt by the patient unstable angina?
 - 2) Is there fluid in the patient's lungs
 - 3) Is the patient's systolic blood pressure below 100?

Goldman's system

- Goldman created a decision tree that recommended treatment options based on these dimensions and assign treatment accordingly (home, ED, cardiac care unit, etc.)
- Goldman refined the system for years, noting that research need to be done to confirm it, but no one would...no one wanted to explore the idea that an equation would be better than a doctor
- Surprisingly, when the research was done, it was funded by the navy for non-medical reasons...but Goldman's ideas checked out

The Goldman System

- Since Reilly was desperate, he decided he would take a shot at using the Goldman system
- For two months, they kept extensive records of doctors' diagnoses of heart conditions
- For two months after that, they used Goldman's system exclusively

The Goldman System

- Goldman's system turned out to be 70% better at recognizing patients that weren't having a heart attack
- In terms of diagnosing the most severe cases, doctors were right between 75 and 89% of the time, the Goldman algorithm was right more than 95% of the time

Why is this important?

- We're taught that the more info we have, the better decisions we make, but often too much info clouds the important stuff
- In most cases, doctors would actually diagnose better if they knew less
- It's also why Red Team won war games on day 1
- It's also why stockbrokers do well at war games with no formal training

Similar experimental finding

- Stuart Oskamp
- Asked a group of psychologists to consider the case of a 29 year old war veteran
- Information was given in stages to see how confidence and accuracy were affected



Oskamp

- Stage 1: basic information is given
- Stage 2: childhood information is given
- Stage 3: high school and college information is given
- After each stage, a 25 question multiple choice test about the individual was administered which sought to determine diagnosis
- With each subsequent stage, confidence in the diagnosis increased, but in reality, overall accuracy was unaffected throughout (constantly at about 30%)

More information makes us more confident...

- ...but this tends not to correlate with performance in any way
- Important to note, however, that ideal performance strikes a balance between instinct and deliberation
 - Gottman spent years researching his system
 - Car salesmen spend a lot of time refining their sales style

Two important lessons

- 1) Truly successful decision making relies on a balance between deliberate and instinctive thinking
 - What you're striving to do is get to the point that your unconscious is an expert and you're attempting to only use deliberation when necessary
- 2) In good decision making, frugality matters
 - Must be able to differentiate between needing and not needing certain pieces of information

Consumer extension

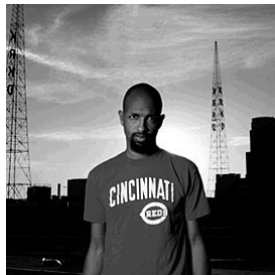
- Iyengar once studied the correlation between jam choices and jam sales
- Set up a booth with either 24 or 6 jam choices
- Conventional wisdom says more choices equals more sales

Consumer extension

- Customers at the 6 jam booth bought jam 30% of the time
- Customers at the 24 jam booth bought jam 3% of the time
- Jam is an impulse item, and too many choices paralyzes the consumer
- You listening Baskin Robbins?

Do people know what they want?

- Has anyone here heard of Kenna?
- Extremely talented experimental pop artist
- Fred Durst instructed his label head to sign him after hearing only one song
- U2s manager remarked "he's going to change the world"
- Everyone in the industry thought he was immensely talented and would be a huge success
- Problem: focus groups hated him



Kenna

- There are firms that post music on the web for the general public to listen to and rate...to get rotation at a top 40 station, songs need to get a rating of 3.0 (out of 4) or higher...when songs achieve this score there is an 85% chance they will be a hit
- Kenna's most promising single, Freetime, scored a 1.3 among rock listeners and a .8 among R&B listeners
- If everyone who was an expert was so sure he would succeed, why didn't he?

More on first impressions

- Dick Morris, key advisor to Bill Clinton
- Famous for taking an idea from the entertainment world and applying it to politics (instead of proposing PR blurbs about movies, made PR blurbs about political issues/speeches)
- This is another attempt to capture people's impressions
- Unfortunately, gut feelings about what the public wants are often mysterious and iffy
- Problem #1: People's gut feelings are often not how they actually act



Can we do this?

- Did Bargh's students know they were walking slow or why they were being polite?
- It sounds like it should be easy to gage people's opinions about things by just asking but as we've seen, this isn't the case
- Huge example of this: Pepsi Challenge

The Pepsi Challenge

- In the early 80's, Coke was worried about its future
- In 1972, 18% of soft drink users said they drank Coke exclusively relative to only 4% for Pepsi
- In 1980, only 12% were exclusively Coke relative to 11% Pepsi, but Coke was spending \$100 million more a year in advertising

Adding to this problem

- The Pepsi Challenge
- Pepsi aired a series of commercials in which dedicated Coke drinkers were asked to take a sip from two unmarked containers and indicate which they preferred
- 57% of people preferred Pepsi
- Coke did their own research, found the same thing, and panicked, immediately sending a New Coke formula into production

New Coke

- Designed to mimic Pepsi's sweeter taste
- Performed well in taste tests (beat Pepsi by 6 to 8%)
- New Coke was immediately released, how could it fail?



Outrage

- As it turned out, Coke drinkers hated the New Coke, there were protests across the country and the company was forced to bring back the original recipe, as "Classic Coke" just a few months later
- Clearly, what people really think was not uncovered by the taste test, why?

Sip test vs. home test

- During sip tests, people only get to sip the drink and not finish it completely (this was the case in the Pepsi challenge)
- In home tests though, you take home the beverage, have as much as you want, and report your preference a few weeks later
- Home tests are better, less artificial, more reflective of normal consumption

Sip test vs. home test

- In home tests, Coke destroys Pepsi
- Pepsi is sweeter, and better suited to sip tests, but tends not to be satisfying for an entire bottle
- To determine your market, you need to determine which reaction is more important, the sip reaction or the long term reaction

Sensation transference

- The other thing Coke had going for it that it forgot about was a strong branding
- Cheskin believed that people do not make a distinction between the package and the product, this idea is referred to as sensation transference
- Cheskin did work examining margarine and how the taste experience was linked to the presentation of the product (margarine was not popular in the 40s but when coloured yellow and put in butter dishes it was actually preferred)

Sensation transference

- Cheskin also demonstrated a strong consumer preference for a low quality brandy over a high quality but equally inexpensive brandy
- The low quality brandy always performed better in taste tests until Cheskin served each brandy from the bottle of its competitor
- The low quality brandy had a regal, high class look to the bottle/label and that strongly influenced the taste experience
- In consumer situations, appearance of label, container, etc. are highly important as people have implicit connections between certain things
- Related recent finding (beer with vinegar)

Why Coca Cola went wrong

- Not only did they not do the home test as research, they completely ignored the strong associations people had with their packaging
- This doesn't mean you can put out a terrible product with fancy packaging but it does show the importance of sensation transference

The Chair of Death

- Bill Stumpf, industrial designer
- Designed chairs...sought to create something that looked different
- Reaction to his creation highlights a second problem with measuring people's reactions: it is hard for us to explain our feelings about unfamiliar things



The Aeron

- Stumpf's chair was designed to be as ergonomically correct as possible
- It was one of the most comfortable chairs ever designed
- Problem: it didn't look anything like the types of chairs that were best sellers



The Aeron

- When buying office chairs, people gravitate to the chair with the most presumed status – something thronelike with thick cushions and a high imposing back
- The Aeron was the opposite of this
- “Slender, transparent concoction of black plastic and odd protuberances and mesh that looked like the exoskeleton of a giant prehistoric insect”

The Aeron

- After completion, they did market testing
- People were asked to score the chair's comfort out of 10, with 7.5 being the minimum you'd want to mass produce
- Early ratings were a 4.75 and the chair was jokingly nicknamed the chair of death
- After tinkering with the chair they got the ratings up to 8, but at this point the chair was even uglier than before
- Normally comfort and aesthetics are correlated, here they weren't, and that was a huge concern

The Aeron

- After market testing the chair was taken to focus groups, all of whom hated the look of it and rated it poorly
Despite this, the company pushed ahead with its plan to release the chair, which was pretty unheard of given market scores (they trusted Stumpf's instincts)
- Initially the chair sold terribly, but then won some design awards and began to appear on TV and film, after which sales increased immensely

The Aeron

- The Aeron is now the best selling chair in company history
- People's reactions to the chair were that it was ugly, it is now thought of as beautiful...in other words, people have a tendency to think of things that are different, as ugly

Market research

- The problem with almost all market research is it can not pick up the difference between different and bad
- For example, All in the Family and the Mary Tyler Moore show, two of the most popular shows of all time, initially tested terribly with focus groups

Market research

- Reason: the shows were different (MTM was about a woman putting career before family, AITF was about a curmudgeonly racist)...those shows were in danger of never airing
- Similar problems still exist for television audiences (e.g. Arrested Development)

Different = bad?

- Unfortunately, things that are new and different are often thought of as bad by the general public...even though that's not actually how people feel
- This is why Kenna hasn't blown up
- This is why branding is so important
- This is why immensely popular TV shows are initially not well received (also happened with Seinfeld)
- So, why do we listen to market research?

How to combat this

- Expertise: People who are experts in various fields tend to be able to overcome these biases
- Reasons: as we become more expert in something, our tastes grow more esoteric and complex
- For example, food critics can often identify things about food that the general public never could

How to combat this

- A food critic would never get fooled by the Pepsi challenge, or the label on a product, because they have a better understanding of what goes on beyond the locked door of the unconscious
- This is why it was wrong to favor the results of Kenna's market research over reaction by industry insiders, the first impressions of experts are different and, more often than not, correct (same reason experts spotted the fake kourou so quickly)

An example of the importance of experts

- Schooler and Wilson: how well can undergraduates rank something relative to experts
- Jam preference: 5 jams drawn from Consumer reports, rated on texture, taste, etc.
- How would undergrads rate these items
- Answer: Undergrads do pretty well

What if you have to account for why you like which jam best?

- Now undergraduates do terribly
- Similar to the idea that introspection ruins insight
- This occurs for a similar reason as to why describing faces destroys memory
- We don't know how to explain our feelings about jam...unconsciously we know what a good jam is but when you're asked to rate across a series of criteria, you have no idea
- Experts don't have this problem...they are taught a very specific vocabulary to quantify experience (e.g. mayonnaise is rated along 6 dimensions of appearance, and 14 dimensions of flavor split along three subgroups)

Expertise

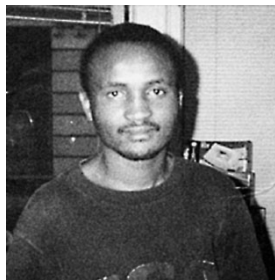
- Our unconscious reactions come out of a locked room, but with experience we become an expert at using our behaviour and training to interpret and decode what lies beneath our first impressions
- Important: this does not mean that when we are outside our areas of expertise that are reactions are wrong
- It just means our reactions are shallow, hard to explain, and easy to disrupt

Don't believe me, try this

- If you think you'd do well on the Pepsi Challenge, try this
- Get someone to pour two glasses of either Coke or Pepsi and a third glass of the other brand
- Try to determine which is the different cola (triangle test, incredibly difficult)
- Why can't you do this like experts?
- No one actually *thinks* about colas so our snap judgments here are sure to be wrong

Amadou Diallo

- Immigrant from Guinea, working in New York City selling videos on the street
- 5'6, 150 pounds
- On February 3, 1999, while visiting a friend, he went out to the steps of his friend's apartment to get some fresh air



Amadou Diallo

- Moments later, four plainclothes police officers passed by, all carrying semi-automatic handguns and wearing bulletproof vests (part of the Street Crime Unit), dressed in thug like street clothes
- The police thought Diallo was acting suspiciously and thought that he was either a) a look-out or b) matched the description of a serial rapist
- The police approached Diallo and asked to speak to him
- Unbeknownst to the officers, Diallo had a stutter and didn't speak English well
- Diallo was terrified, didn't know these were police officers, and took off running

Amadou Diallo

- Diallo tried to quickly open his friends door with his left hand while fishing for something in his pocket with his right hand
- The police later testified that they assumed he was reaching for a gun
- Diallo pulled something black from his pocket and tried to raise it towards the officers, who instinctively jumped back and shot at Diallo...41 times
- When they inspected the body they found that Diallo didn't have a gun, but had gotten out his wallet to turn over to people he thought were robbing him
- The police were charged with first degree manslaughter and second-degree murder

Three fatal mistakes

- Given the nature of rapid cognition, we continually make predictions and inferences about what others are thinking/feeling/doing at any given moment...unfortunately this sometimes leads to disaster
- The four officers huge mistake was that they weren't able to read Diallo's mind and acted only on their instincts

Three fatal mistakes

- 1) The cops immediately thought Diallo looked suspicious even though he was just getting a breath of fresh air
- 2) The cops mistook Diallo's standing there and not running away as being brazen rather than curious
- 3) When Diallo reached for his pocket, they assumed he was dangerous, he was not

Three fatal mistakes

- Mistakes like this happen all the time but because they are instantaneous, they are difficult to understand
- This led to a long, drawn out, sensationalized process where people argued over the officers responsibility (racist and power hungry or genuinely mistaken and apologetic)
- The jury decided the death was an accident due to the fact that police officers are often faced with making rapid decisions in the face of uncertainty

Uproar

- As expected, there was a huge backlash to the decision, with the cops being treated as either martyrs or horrible racists
- The actual answer is less clear
- The officers didn't intend to shoot Diallo but their reaction was the result of a series of rapid, incorrect inferences

Split decisions by police

- As we've already seen with weapon focus, attention and memory is greatly affected by emotional/life threatening situations
- Often police, when interviewed, will describe seemingly impossible events/situations brought on by the stress of a situation
 - Not hearing one's gun going off
 - Watching your bullets hit someone, as if in slow motion
- Attention narrows to allow an assessment of threat

Optimal arousal

- Optimal arousal for heightened performance seems to occur when the heart beats at a rate between 115 and 145 bpm
- Champion marksmen clock in in that upper range at the height of performance
- Larry Bird used to say the game slowed down and he could see everything clearly, he was also at this heightened level

Over 145 bpm

- Bad things start to happen when the heart beats over 145
- Complex motor skills break down, doing something with one hand but not the other becomes difficult
- At 175, total breakdown of cognitive processing
 - The forebrain shuts down and the mid-brain takes over
 - People stop making sense
 - Vision becomes restrictive
 - Behaviour becomes inappropriately aggressive
 - In some cases, people void their bowels
 - Blood drains, muscles harden

Over 145

- We also get clumsy and helpless
- You should practice calling 911 until it becomes automatic, because often people can't do it in stressful situations
- Consequently (and related to Diallo), many police departments have banned high-speed chases for a few reasons
 - 1) many innocent pedestrians get killed
 - 2) at levels of high arousal mistakes are more likely to be made
 - 3) horrible things often happen at the end of the chase (driver beaten to death, riots)

Racism

- This is why cases like Diallo, and Rodney King, are so contentious
- It is suggested that the underlying factor in these situations is racism, and while that might be true, the factors of rapid cognition and adrenalin must also be considered
- Many police departments have also gone to one officer per car, which sounds counterintuitive but makes escalating mistakes less likely
- This is a huge concern in racially divided cities where already contentious relationships with the public make these events more likely

Conclusion

- Rapid cognition is one of the most powerful tools at our disposal, and yet most of us have no idea how to use it appropriately
- Rapid cognition can be extremely helpful
 - Spotting fake statues
 - Knowing when a double fault is coming
 - Determining marital success
- Or extremely hurtful
 - In extreme situations
 - When our stereotypes take over
 - In determining our opinion of things that are "different"

Conclusion

- To truly harness our power of rapid cognition we need to
 - A) accept that it occurs and is extremely powerful
 - B) realize that we can use these abilities in concert with deliberative, top down processing in determining how to react to situations

Conclusion

- The best way to harness rapid cognition is through expertise
- Experts have different insights/thoughts/abilities relative to non-experts and will often have insights that far exceed those of nonexperts
- Rapid cognition can positively influence decision making, attention, and memory, when implemented properly

Blink the book

- Pick it up to read more about these and other topics
 - Speed dating (do people act how they expect)
 - Mind reading
 - Analyses of facial position and emotion
 - Autism
 - The attempted assassination of Ronald Reagan and why his bodyguards were helpless to stop it
 - Overcoming stereotypes in classical music
