

# CREATIVITY, INNOVATION AND CRITICAL THINKING IN THE AGE OF THE WORLD WIDE WEB AND SOVEREIGN INTERNETS



# “CRITICAL THINKING IN THE AGE OF THE WORLD WIDE WEB AND SOVEREIGN INTRANETS

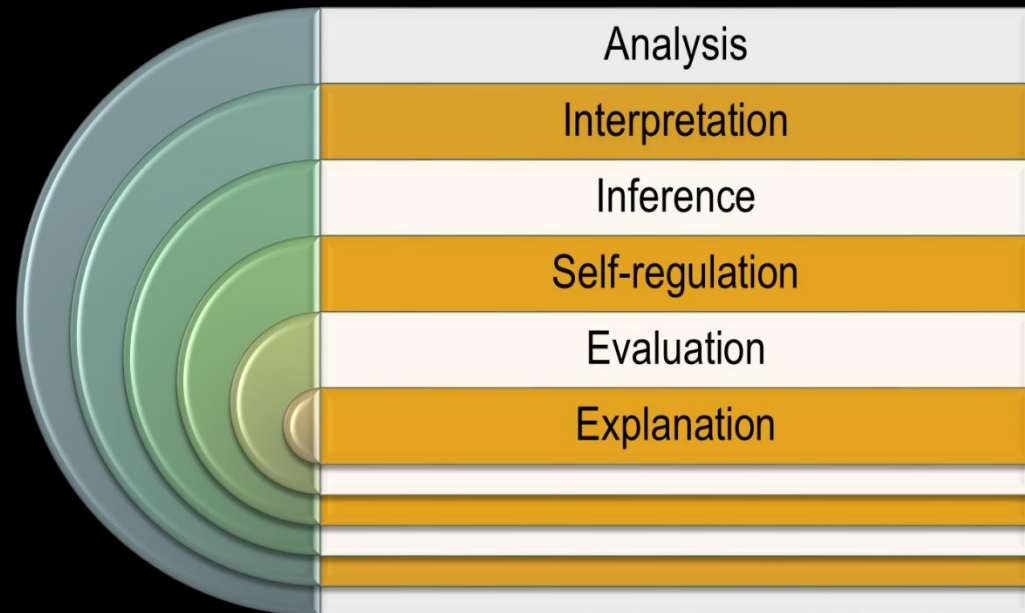
- Is the discipline of critical thinking a lost competency in the age and speed of surfing the internet? With the velocity of information flow, with social media sources eliminating the need for established media outlets, and with the ubiquitous nature of information, today's world is facing a knowledge-gap that it has never faced in history. Is the internet a fountain of disinformation, or a fountain of knowledge? Is the fountain of knowledge in jeopardy of being over taken by government interventions, including the dismantling of the WWW by certain nations in favor of sovereign intranets? The power of, and the need for critical thinking has never been more important than in today's world. This interactive session will build your skills, challenge your thinking and unlock your capabilities to do critical thinking on your own and in groups.
- Presenter: Kent Kaufman is the CEO of the Growth and Leadership Center, one of Silicon Valley's long established and prestigious providers of executive coaching and leadership development, [kkaufman@glcweb.com](mailto:kkaufman@glcweb.com).



# RE-DISCOVERING THE VALUE OF CRITICAL THINKING SKILLS

- *Requirements for Critical thinking in job postings have doubled since 2009*
- *Big Data: World's data will grow by 50X in next decade, IDC study predicts*
- *The Changing Landscape of traditional media*

## CORE CRITICAL THINKING SKILLS



# RE-DISCOVERING THE VALUE OF CRITICAL THINKING SKILLS (2)

- *Companies want critical thinking capability especially in higher level leadership roles*
- *Even at lower levels problem solving is important and companies expect more than just order takers.*
  - *Bosses Seek 'Critical Thinking,' but What Is That? By MELISSA KORN, Oct. 21, 2014*

Research conducted in recent years by Pearson, as well as by independent academics has shown that people who score high on critical thinking assessment are also rated by their supervisors as demonstrating:



# THE WORLD WITHOUT CRITICAL THINKING

- *“We think so because other people all think so; or because – or because – after all we do think so; or because we were told so, and think we must think so; or because we once thought so, and think we still think so; or because, having thought so, we think we will think so...”*
- *~ Henry Sidgwick*

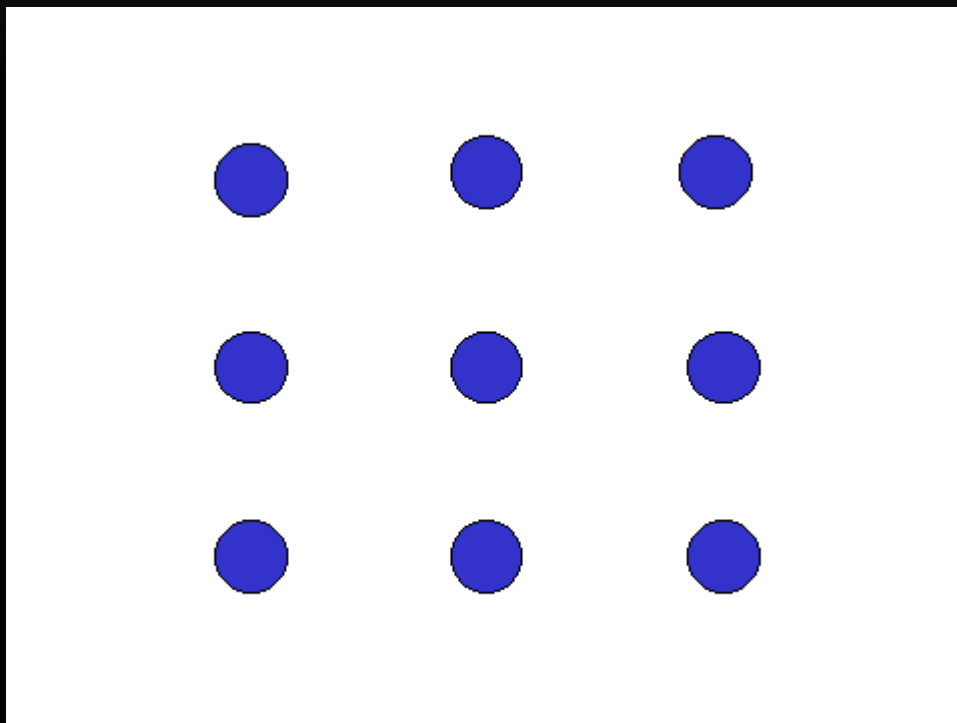


# SOME DEFINITIONS OF CRITICAL THINKING

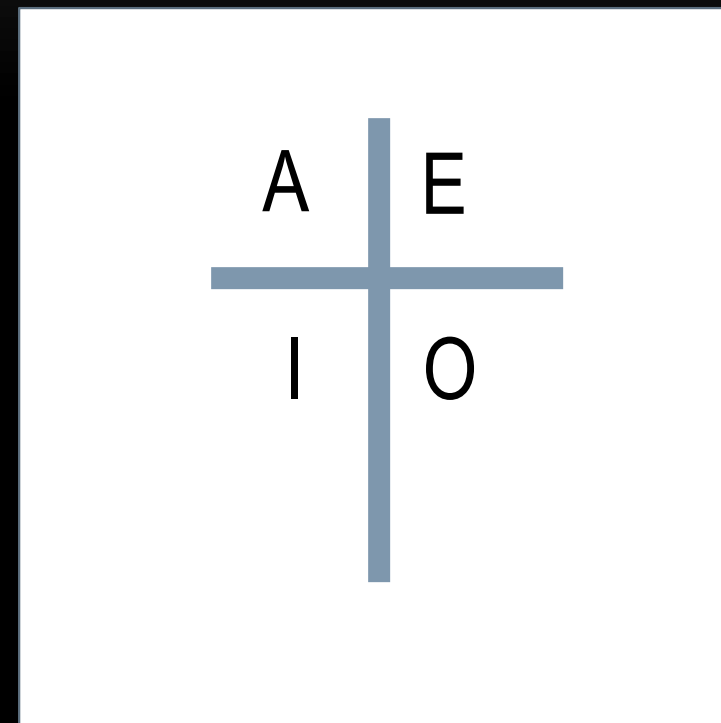
- crit-i-cal think-ing; *noun*
  - The objective analysis and evaluation of an issue in order to form a judgment.
- “The ability to cross-examine evidence and logical argument. To sift through all the noise.”
  - -Richard Arum, New York University sociology professor
- “Thinking about your thinking, while you’re thinking, in order to improve your thinking.”
  - -Linda Elder, educational psychologist; president, Foundation for Critical Thinking
- “Do they make use of information that’s available in their journey to arrive at a conclusion or decision? How do they make use of that?”
  - -Michael Desmarais, global head of recruiting, Goldman Sachs Group



# INDIVIDUAL EXERCISES



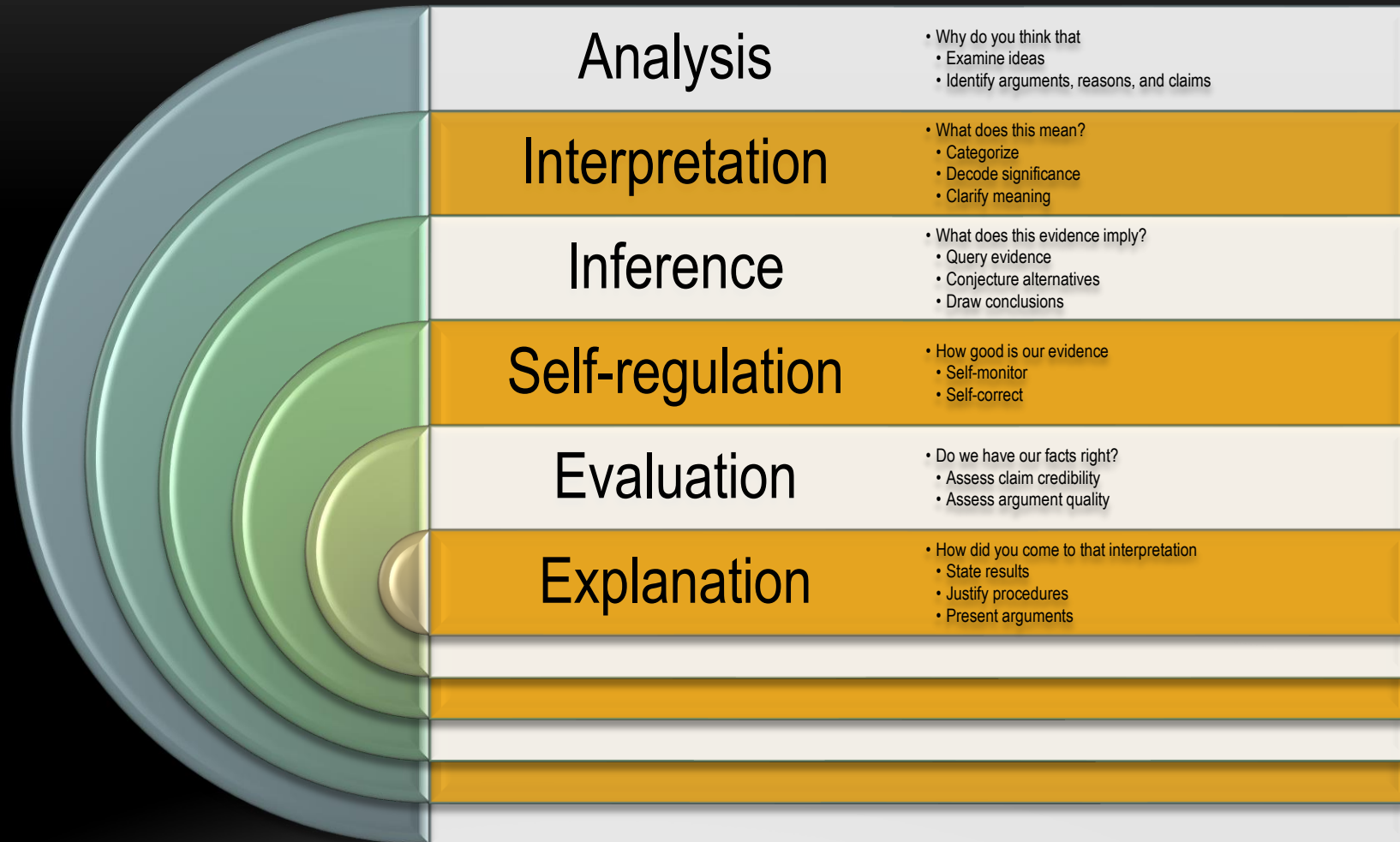
1. Without lifting your pencil use 4 straight lines to connect all the dots.



2. Which Letter does not belong?



# CORE CRITICAL THINKING SKILLS



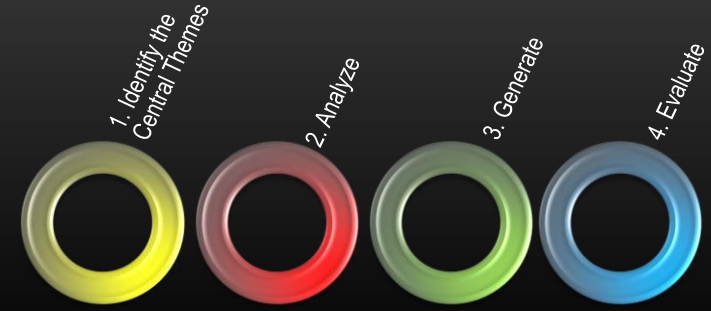
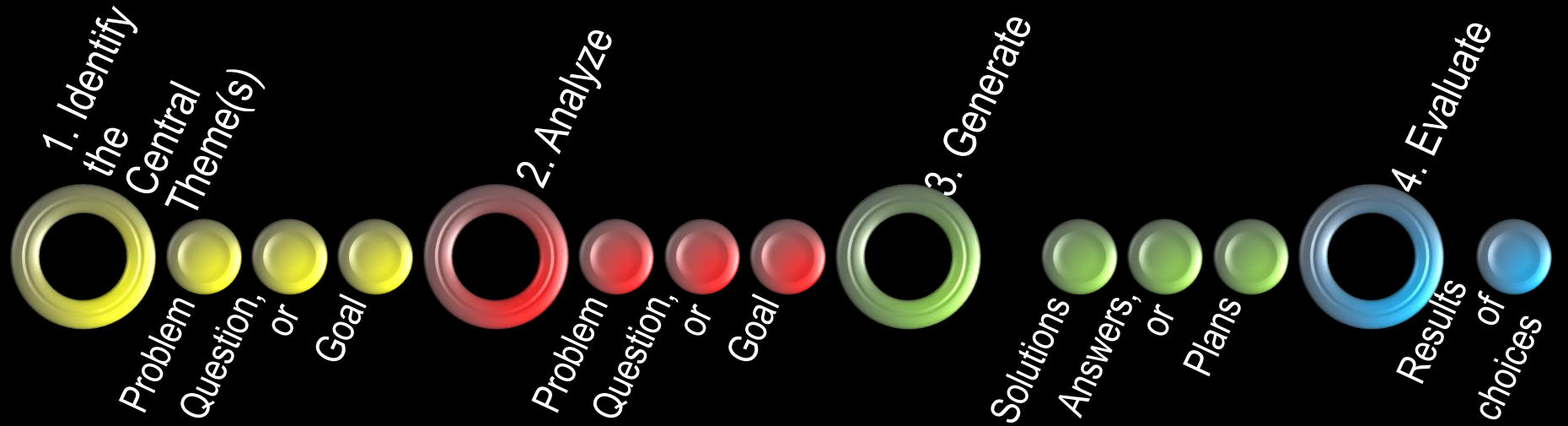


The Process

# CRITICAL THINKING

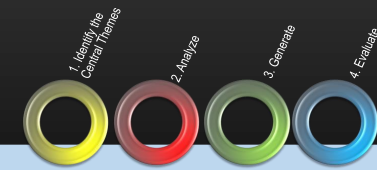
# CRITICAL THINKING

## THE BASIC STEPS OF TAG-E



# WARREN BUFFET'S FAVORITE CRITICAL THINKING EXERCISE

- 10 largest market-cap companies



Year 2000					Year 2018				
#	Name	Headquarters	Primary industry	Market value (USD million)	#	Headquarters	Name	Primary industry	Market value (USD million)
1	Microsoft	United States	Software industry	586,197	1	United States	Microsoft	Software, Cloud and Gaming	780,520
2	General Electric	United States	Conglomerate	474,956	2	United States	Apple	Computers, Mobile Phone/Prod.	748,680
3	NTT DoCoMo	Japan	Telecommunications	366,204	3	United States	Amazon	e-commerce, Cloud	735,900
4	Cisco Systems	United States	Networking hardware	348,965	4	United States	Alphabet - Google	Search advertizing, other	728,360
5	Wal-Mart	United States	Retail	286,153	5	United States	Berkire Hathaway	Conglomerate	499,590
6	Intel Corporation	United States	Computer hardware	277,096	6	United States	Facebook	Inernet Social	375,890
7	Nippon Telegraph and Telephone	Japan	Telecommunications	274,905	7	PRC	Tencent	Inernet Social	375,110
8	Exxon Mobil	United States	Oil and gas	265,894	8	PRC	Alibaba	eCommerce	355,130
9	Lucent Technologies	United States	Telecommunications	237,668	9	United States	Johnson & Johnson	Life Sciences	346,110
10	Deutsche Telekom	Germany	Telecommunications	209,628	10	United States	JP Morgan	Financials	324,660

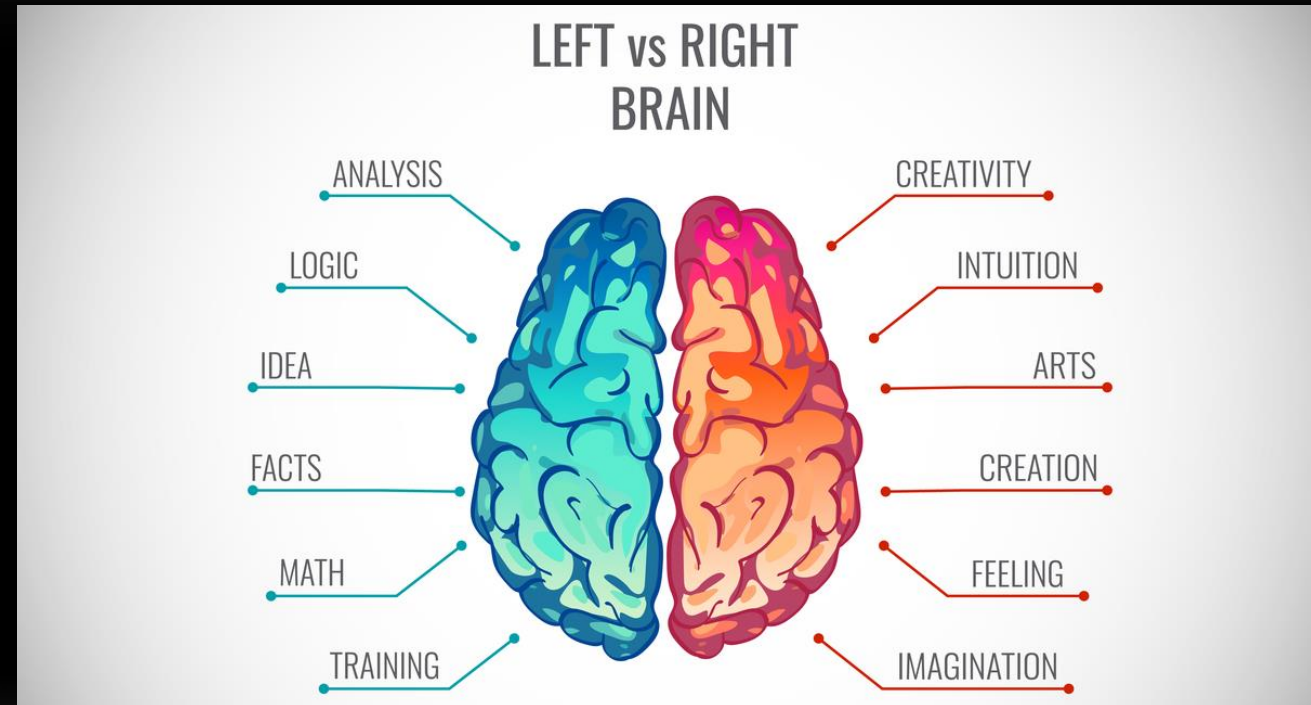
Break into groups of 4, use TAGE to discuss the data:

Making a Difference

# INNOVATION AND CREATIVITY

# CREATIVE AND CRITICAL THINKING THE INNOVATION CO-DEPENDENCE

- How creative and critical thinking both important for innovation... what is sometimes referred to as left brain thinking (analytic, serial, logical, objective) as Critical Thinking & Creativity 19 compared to right brain thinking (global, parallel, emotional, subjective) (Springer & Deutsch, 1993).” (Huitt 1994)



# CREATIVE AND CRITICAL THINKING

“Creative thinking is described as:

- making and communicating connections to think of many possibilities;
- think and experience in various ways and use different points of view;
- think of new and unusual possibilities; and
- guide in generating and selecting alternatives.

Critical thinking is described as:

- analyzing and developing possibilities to compare and contrast many ideas
- improve and refine ideas
- make effective decisions and judgments, and
- provide a sound foundation for effective action.”

“WHAT IS OFTEN LACKING IS NOT CREATIVITY IN THE IDEA-CREATING SENSE BUT INNOVATION IN THE ACTION-PRODUCING SENSE, I.E. PUTTING IDEAS TO WORK.”

Theodore Levitt



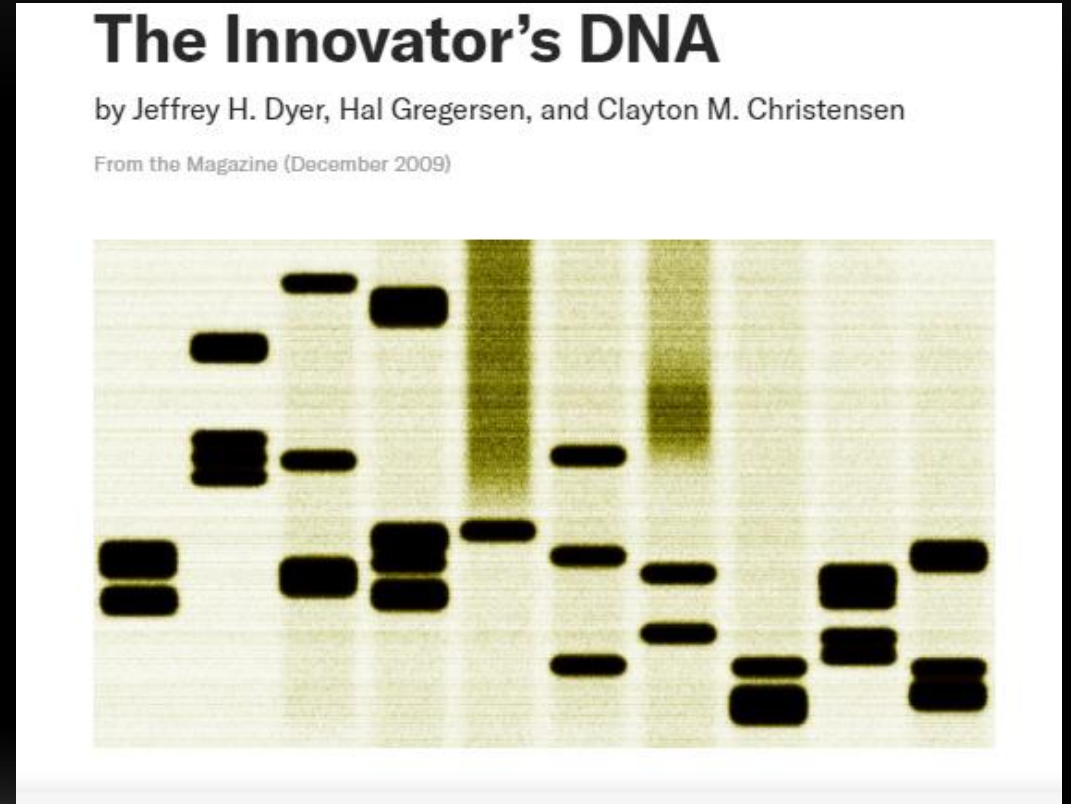
# RELATED TOPICS TO CRITICAL THINKING

- **Innovation:**
  - A new idea, device, or method
  - The act or process of introducing new ideas, devices, or methods



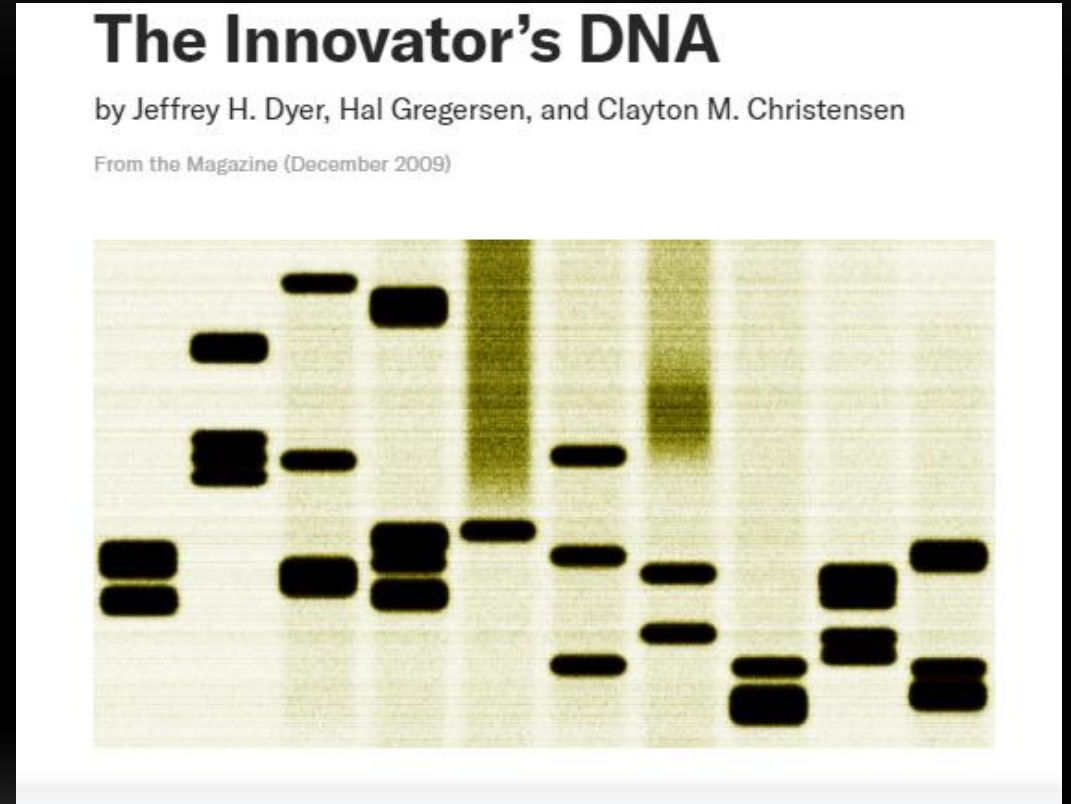
# HBR READING REVIEW AND EXERCISE

- What are five important skills to hone to be a better innovator?

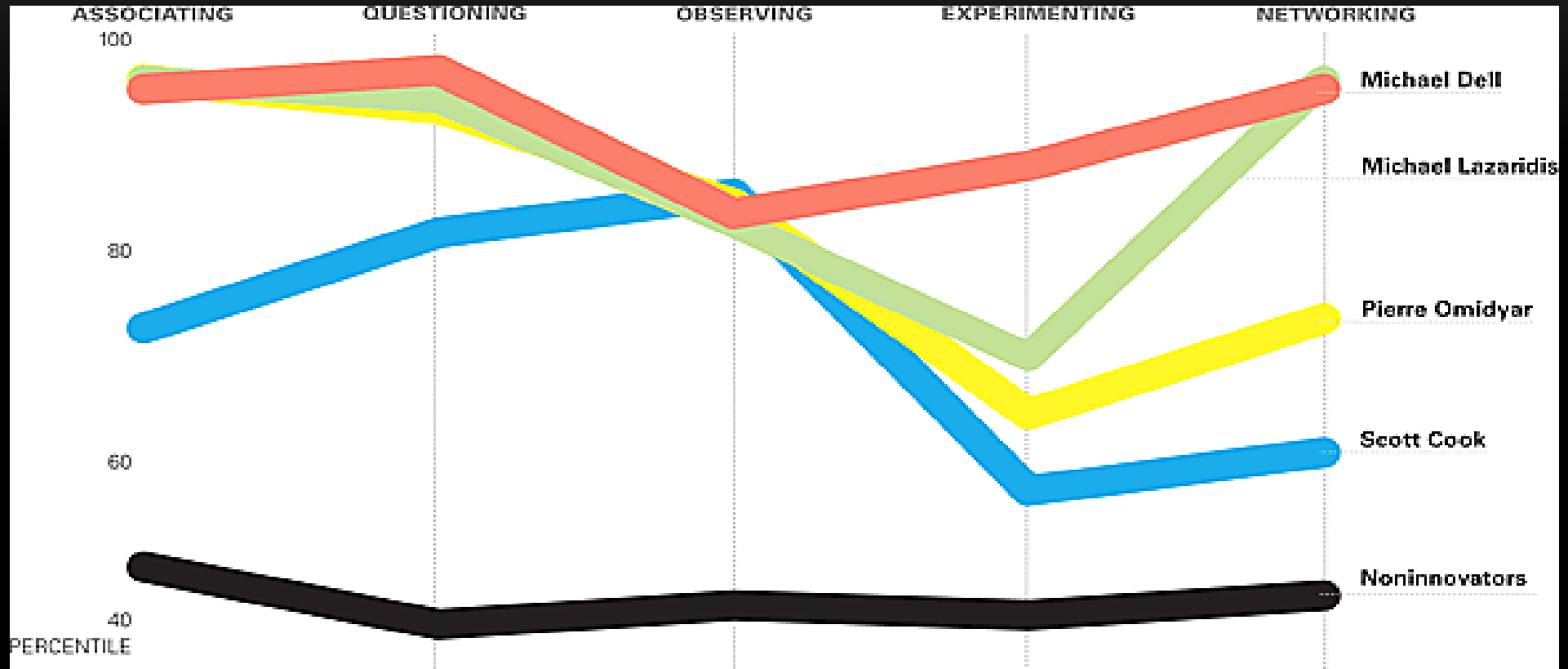


# HBR READING REVIEW AND EXERCISE

- Discovery Skill 1: Associating
- Discovery Skill 2: Questioning
- Discovery Skill 3: Observing
- Discovery Skill 4: Experimenting
- Discovery Skill 5: Networking



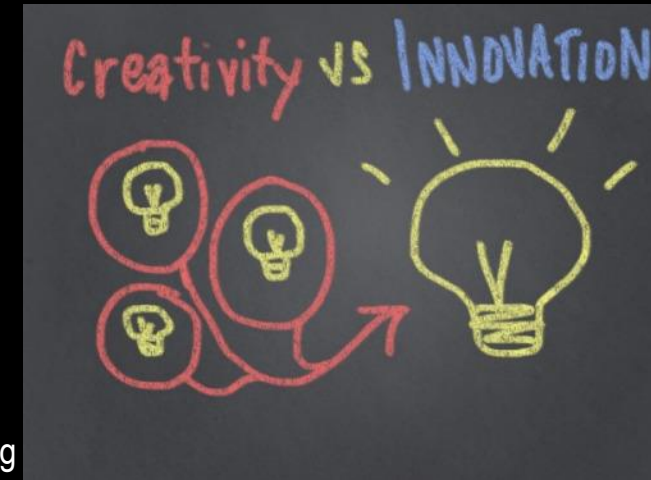
# HOW INNOVATORS STACK UP



- This chart shows how four well-known innovative entrepreneurs rank on each of the discovery skills. All our high-profile innovators scored above the 80th percentile on questioning.

# IDEATION: USING CREATIVITY TO INNOVATE

- Ideation is about unleashing creativity to maximize the potential of the mind to conceive new ideas
  - Broadest sense creative ideas that can be explored as thought experiments or
  - Creative Ideas can become something tangible
  - Creativity is in the eye of the beholder and therefore it hard to measure
- Innovation is typically measurable.
  - It is about introducing change into systems
  - It's about the work required to make an idea viable
  - Making changes in something established, especially by introducing new methods, ideas, or products.
  - It is about change, alteration, revolution, upheaval, transformation, metamorphosis, breakthrough; new measures, new methods, modernization, novelty, newness; creativity, originality, ingenuity, inspiration, inventiveness; a shake up



# INNOVATION CYCLE

- Emerging Trends including technology and markets



“While critical thinking is important, there’s another way of processing ideas that can open more possibilities: *integrative thinking*.” Kevin Cashman



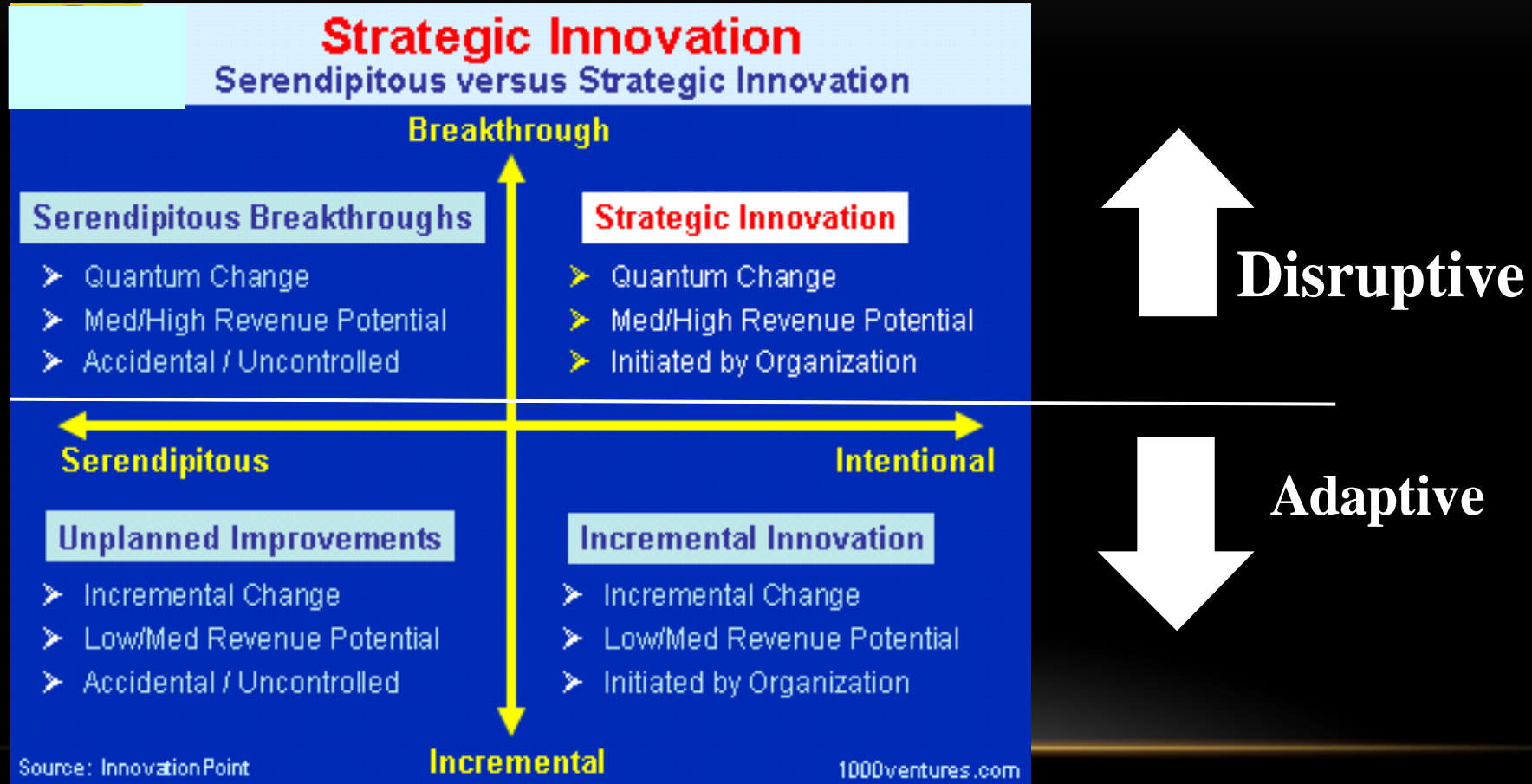
# WHAT IS WRONG WITH THIS PICTURE





# TYPES OF INNOVATION

- Two Types of Strategic Innovation



# EXERCISE GROUP LISTS DISCUSSION

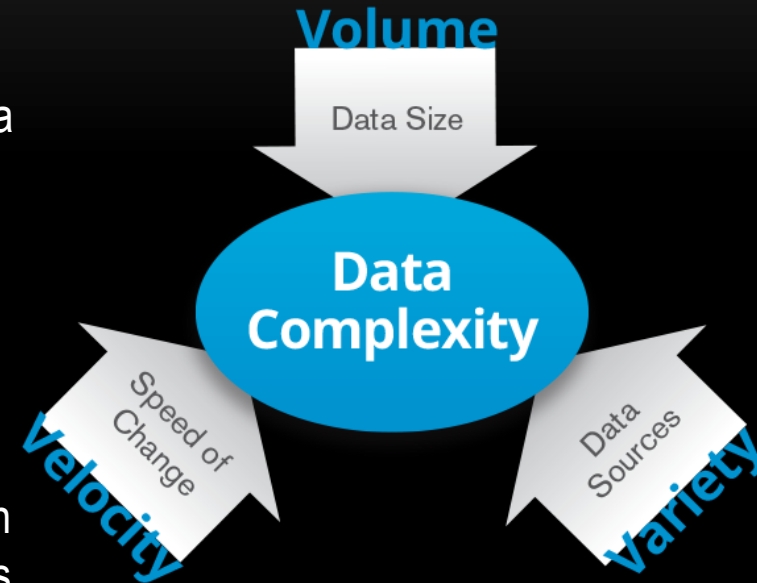
- 1. Name examples of Disruptive Innovations and the situations and time frames that lead to those innovations
- 2. Name examples of Adaptive Innovations and the situations and time frames that lead to those innovations

Critical Thinking

# APPLIED TO NEW TRENDS

# RE-DISCOVERING THE VALUE OF CRITICAL THINKING SKILLS (3)

- Implications for Big Data
  - Will large-scale search data help us create better tools, services, and public goods? Or will it usher in a new wave of privacy incursions and invasive marketing?
  - Will data analytics help us understand online communities and political movements? Or will it be used to track protesters and suppress speech?
  - Will it transform how we study human communication and culture, or narrow the palette of research options and alter what 'research' means?
  - Given the rise of Big Data as a socio-technical phenomenon, we argue that it is necessary to critically interrogate its assumptions and biases.
    - Danah Boyd\* & Kate Crawford



# WHAT ABOUT HOAXES AND THE MISINFORMATION EFFECT?

- The 15 worst Internet hoaxes of 2014 (Washington Post)
  - 1. There was no “three-boob girl.”
  - 2. 4chan didn’t leak Emma Watson’s nudes.
  - 3. That super-viral “drunk girl” video was staged.
  - 4. Bikers did not “surrender” the Brooklyn Bridge to pedestrians.
  - 5. A disfigured 3-year-old was not kicked out of a Mississippi KFC.
  - 6. Justin Bieber did not save a Russian man from a bear.
  - 7. A “Miracle Machine” can’t actually turn water into wine.
  - 8. Alex from Target was not a marketing hoax.
  - 9. There is no social network for drunk people.
  - 10. Wolves did not wander the halls of athletes’ dorms at the Olympic Games.
  - 11. A bird did not poop on Vladimir Putin.
  - 12. Earth did not, and will not, suffer six days of “total darkness.”
  - 13. Lawless, amoral teens did not riot in cities across the U.S.
  - 14-15. Macaulay Culkin and Betty White are both still alive.

- Do Vaccines cause autism?

An article published in 1998 by Andrew Wakefield, a British surgeon, put forth his theory that vaccines caused autism. He believed that the measles, mumps, and rubella (MMR) vaccine was increasing autism in British children. The article was published in *The Lancet*, a leading medical journal. That article has since been completely discredited and debunked, though. Aside from serious procedural errors, undisclosed financial conflicts of interest and ethical violations on Wakefield's part, there has never been one scientific study to support his claim. In the end, *The Lancet* retracted the story and Wakefield lost his medical license for showing “callous disregard” for the welfare of children. That now-retracted study, which involved only 12 children, contained apparently falsified data.

Although the true causes of autism remain a mystery, several studies have identified symptoms of autism in children well before they receive the MMR vaccine. Recent research provides evidence that autism develops in utero, well before a baby is born or receives vaccinations. These scientific studies all refute any autism-vaccination link. The Institute of Medicine, part of the National Academy of Sciences, released a report stating that there is sufficient evidence to reject the link between MMR and autism. Another study involving 1,256,407 children, and five case-control studies involving 9,920 children, has shown that there was no relationship between vaccination and autism.

Since 1998 there have been countless large and comprehensive studies looking for a link between vaccines and autism, but the evidence keeps coming up negative. The bottom line is that after almost two decades, and myriad scientific studies, there is no causal relationship between vaccines and autism.

Note: The **misinformation effect** happens when a person's recall of episodic memories becomes less accurate because of post-event information.

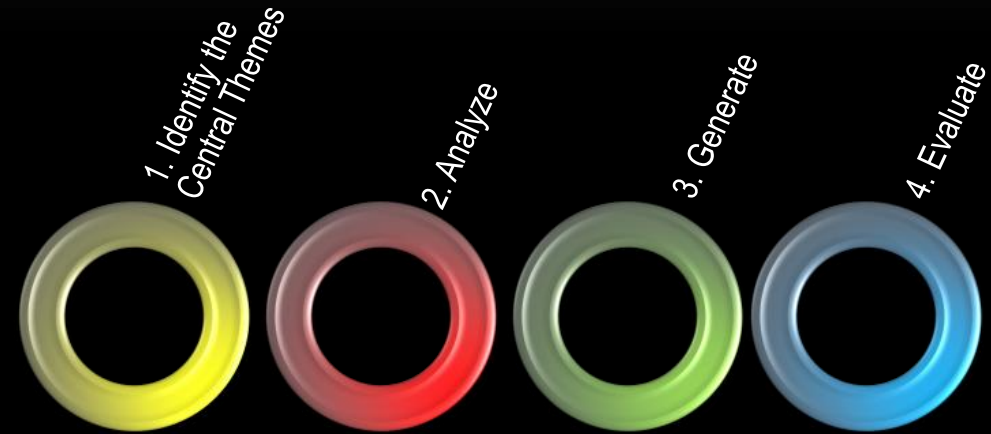
# WHAT ARE THE IMPLICATION OF SOCIAL MEDIA REPLACING TRADITIONAL MEDIA SOURCES?

- Andrew Keen, author of "The Cult of the Amateur," believes Twitter — and whatever real-time Web services follow in its wake — represents the future of both the Internet and media.
- Case Study:
  - But Keen says the Iran coverage on Twitter "exposes all the weakness of the service, the fact that it's so chaotic and unreliable. Who knows who's tweeting what?"
  - Some news outlets have begun aggregating, translating and confirming tweets said to be from Iran.
  - "The very nature of an editor needs to shift," says Keen. "(The Iran experience) is going to underline the need more and more for curators, for people who are able to take all of this raw content and actually shape it into valuable news."



# WHAT ARE THE IMPLICATION OF SOCIAL MEDIA REPLACING TRADITIONAL MEDIA SOURCES

- When ISM conducted research for a major pharmaceutical customer, they learned that “Over 80% of Internet consumers search online for health information, trusting peer-generated Social Media content more than pharma company websites and what their physicians say.”
- This was a shocking discovery.



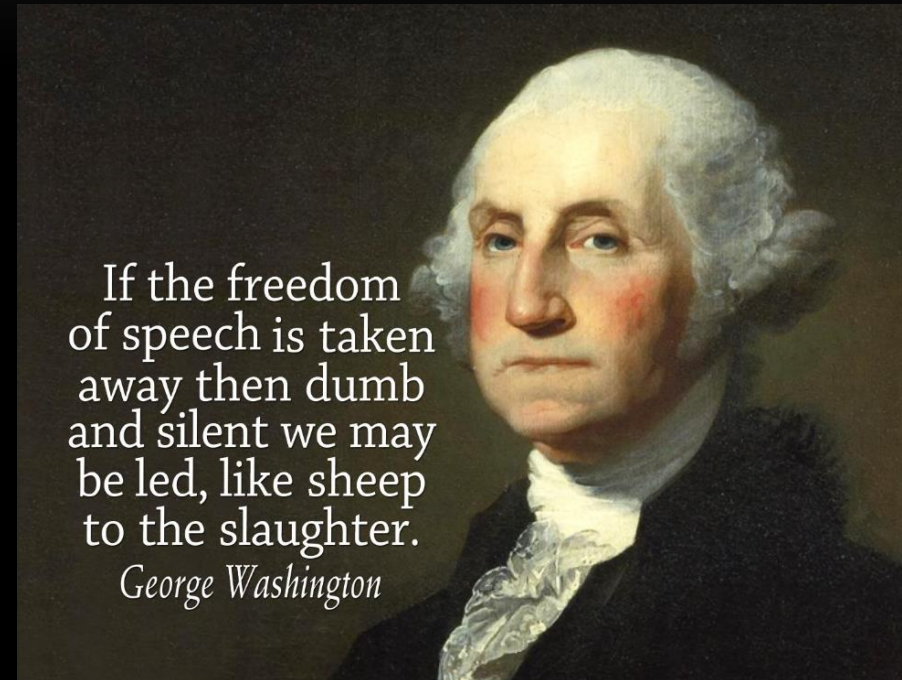


Critical Thinking Skills

# POLITICS

# POLITICS AND CRITICAL THINKING

- *“He that would make his own liberty secure must guard even his enemy from oppression.”*
  - ~ **Thomas Paine**, 1795
- *I have sworn upon the altar of God eternal hostility against every form of tyranny over the mind of man.*
  - ~ **Thomas Jefferson**



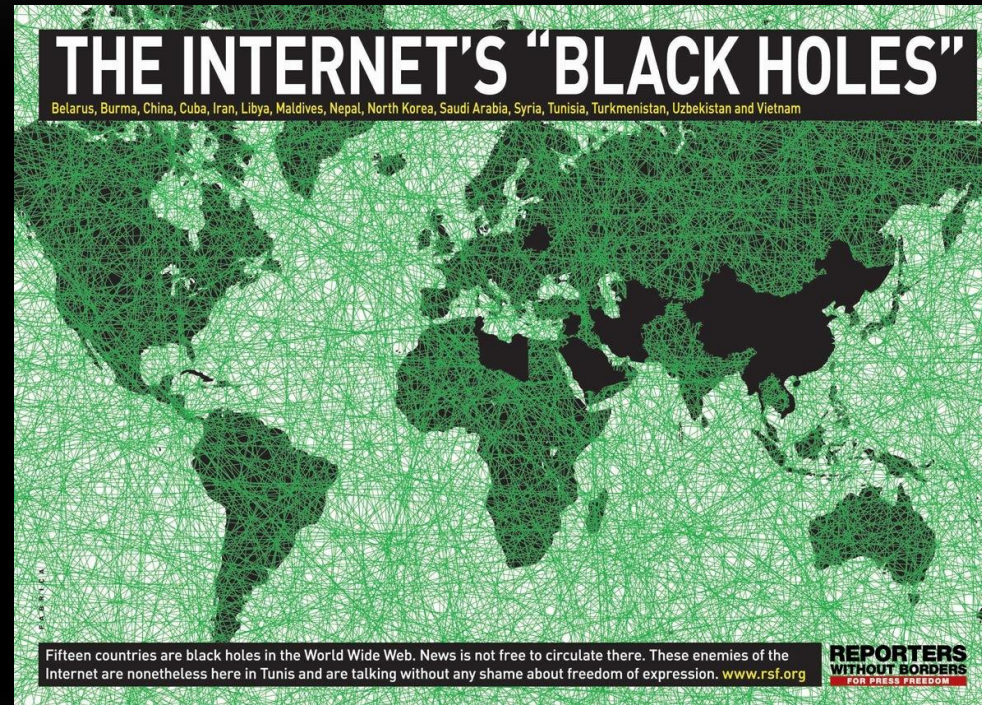


WHY IS CRITICAL THINKING EVEN MORE IMPORTANT TODAY  
THAN EVER... IN THE CURRENT ERA OF THE INTERNET?



# BLACK HOLES OF INFORMATION

- Is the World Wide Web Threatened?
- In the name of cyber-security and protection of sovereign “spiritual and cultural environment” the WWW is slowly being chipped away at
  - The PRC, Russia, and others are becoming expert at filtering information on the World Wide Web and have formed the SCO (Shanghai Cooperation Organization)
  - North Korea has a separate internet called the “Kwangmyong Network”
  - Iran is implementing the “Halal Internet” a National Internet cut off from the WWW.
    - Iran has blocked Pokémon Go after the country’s High Council of Virtual Spaces expressed concerns about it posing a ‘security’ risk



Democratic Republic of Congo internet shutdown shows how Chinese censorship tactics are spreading

By James Griffiths, CNN

Updated 2:07 AM ET, Wed January 2, 2019

Critical Thinking

# LIFE AND DEATH

# COULD CRITICAL THINKING AND BETTER TRAINING HAVE PREVENTED THE CRASH OF ASIANA FLIGHT 214 AT SAN FRANCISCO INTERNATIONAL AIRPORT?

- Case Study:
- San Francisco July 6, 2013
- “I then noticed at the apparent descent rate and closure to the runway environment the aircraft looked as though it was going to impact the approach lights mounted on piers in the SF Bay. The aircraft made a fairly drastic-looking pull up in the last few feet and it appeared and sounded as if they had applied maximum thrust. However the descent path they were on continued and the thrust applied didn't appear to come soon enough to prevent impact. The tail cone and empennage of the 777 impacted the bulkhead seawall and departed the airplane and the main landing gear sheared off instantly.”
  - United Flight 885 first officer, Inside United Flight 885: A pilot's gripping account, Chicago Business Journal[75]
- Result
  - 3 passengers were killed
  - 180 of 307 on board were injured
  - Plane destroyed



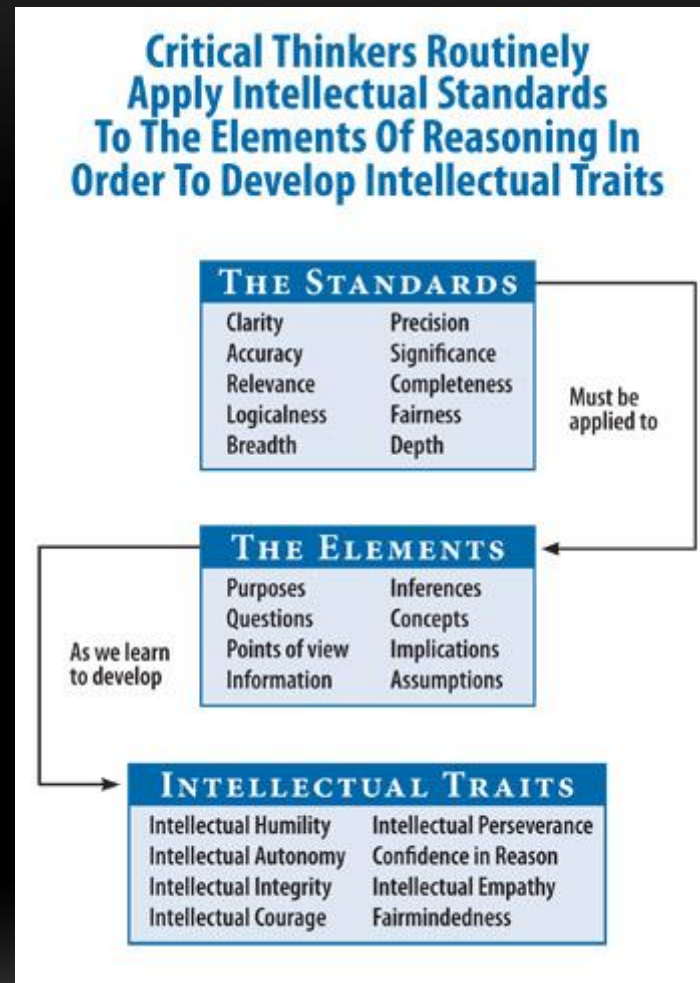
# COULD CRITICAL THINKING AND BETTER TRAINING HAVE PREVENTED THE CRASH OF ASIANA FLIGHT 214 AT SAN FRANCISCO INTERNATIONAL AIRPORT?

- Cause of crash - low air speed; the jetliner was coming in for landing at 118 miles per hour, well below the required minimum of 158 mph
- Contributing factors the accident chain of events,
  - the auto-throttle changed from "thrust" to "hold" at an altitude of 1600 feet. Testimony from the pilot's colleagues who said the trainee, Lee Gang Guk, had been warned that the auto-throttle doesn't always re-engage as it should
  - The pilot reported being blinded by light as he got closer to the ground, complicating his efforts to fly manually. The pilot admitted he didn't wear sunglasses because it was considered impolite.
  - A number of cultural factors cited by the NTSB as contributing to the chain of events in the crash including the unwillingness to challenge superiors in an emergency, an issue in other major crashes in the past.
- The NTSB determined that the flight crew mismanaged the initial approach and that the airplane was well above the desired glidepath.
- In response the captain selected an inappropriate autopilot mode, which without the captain's awareness, resulted in the autothrottle no longer controlling airspeed.
- The aircraft then descended below the desired glide path with the crew unaware of the decreasing airspeed.
- The attempted go-around was conducted below 100 ft by which time it was too late.
- **Over-reliance on automation and lack of systems understanding by the pilots were cited as major factors contributing to the accident.**<sup>[83]</sup>





# DEEPENING YOUR CRITICAL THINKING CAPABILITY



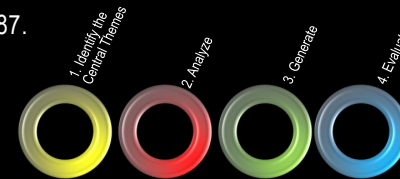
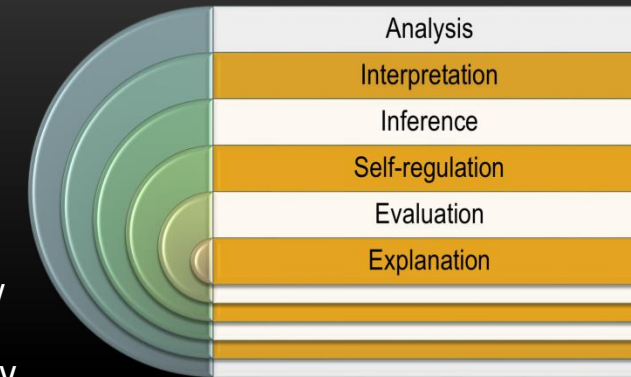
Critical Thinking

# SUMMARY

# SUMMARY

- Critical thinking is... the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.
  - **Critical Thinking as Defined by the National Council for Excellence in Critical Thinking, 1987** by Michael Scriven & Richard Paul, presented at the 8th Annual International Conference on Critical Thinking and Education Reform, Summer 1987.
- When in doubt use the TAG-E Process
- In the age of the Internet, Big Data and Sovereign Intra/Internets your critical thinking skills have never been more important

## CORE CRITICAL THINKING SKILLS



**Develop Your Intellectual Honesty and  
Keep Thinking!**

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- Presenter: Kent Kaufman is the CEO of the Growth and Leadership Center, one of Silicon Valley's long established and prestigious providers of executive coaching and leadership development, [kkaufman@glcweb.com](mailto:kkaufman@glcweb.com).

