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COMPUTER SECURITY

HEARING
BEFORE THE
SUBCOMMITTEE ON
TECHNOLOGY AND COMPETITIVENESS
OF THE
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The Art & Science of Metawar. © 2023-2024 Winn Schwartau, LLC.

Why would bad guys ever want to use the internet?

“Electronic Pearl Harbor”

Congressional Testimony, June 27, 1991

Winn Schwartau, the “Civilian Architect of Information Warfare”
(Commodore Pat Tyrrell OBE Royal Navy, 1996) and

Author, *Information Warfare:
Chaos on the Information Superhighway*



Why would the bad guys ever
want to attack your mind?

Change your beliefs?

Control your behavior?

Does it Matter to You?



NEANDERTHALS



DENISOVANS



FLORESIENSIS



LUZONENSIS



SAPIENS



JULUENSIS

THE 6 Fs OF PRIMAL SURVIVAL

Trauma - Fear Challenge



Flee/Flight



Freeze



Fight



Fawn

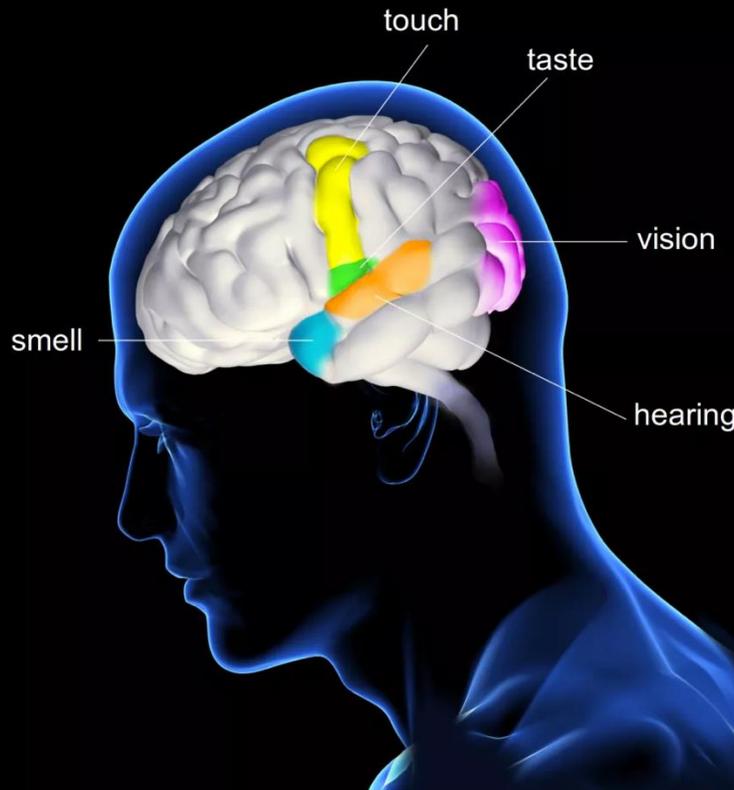
Evolutionary Primal Need



Feed



Mate



Human – Technology Relationship



Love

Hate



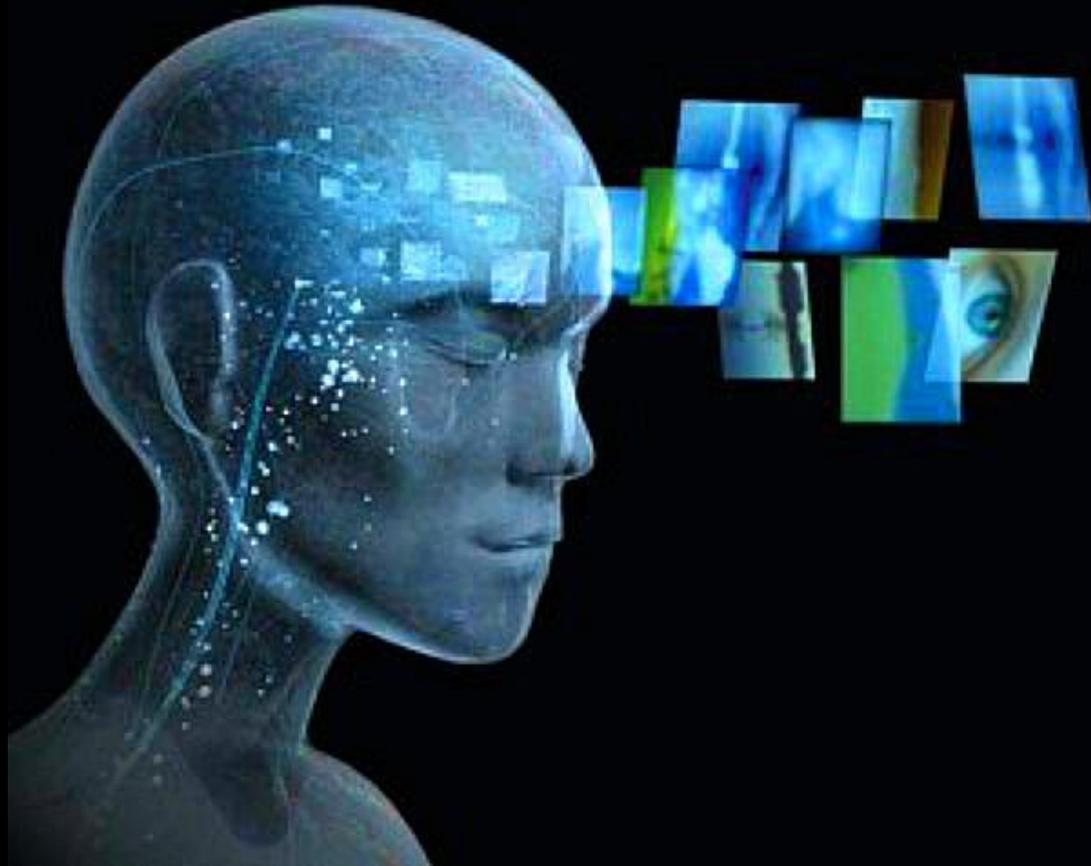
Confusion



Fear



HUMANS WERE BUILT FOR SURVIVAL: BUT NOT AGAINST INFORMATION OR TECH



The key to survival and autonomy for **any** system is the ability to adapt to change quickly.

To coexist with tech, we must adapt by strengthening our cognitive immune systems.

Human view of Tech

We expect tech to always be on or connected.

We expect tech always to work.

We assume the tech is correct.

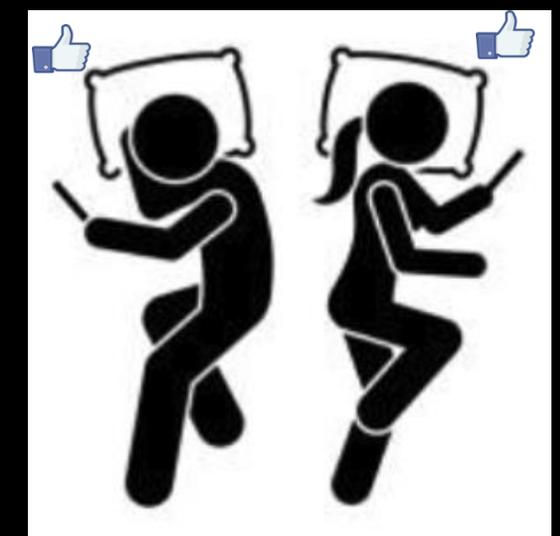
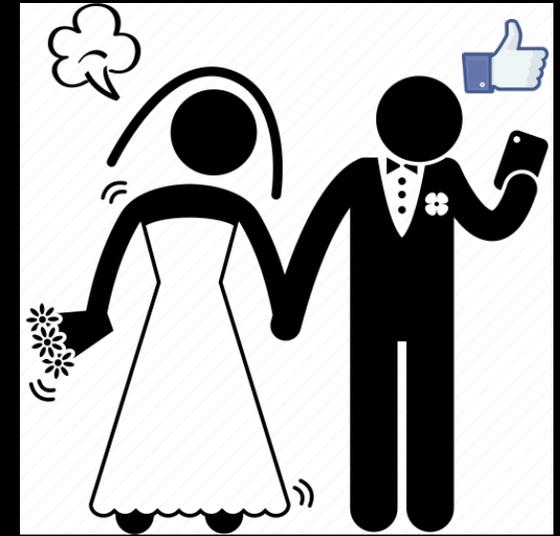
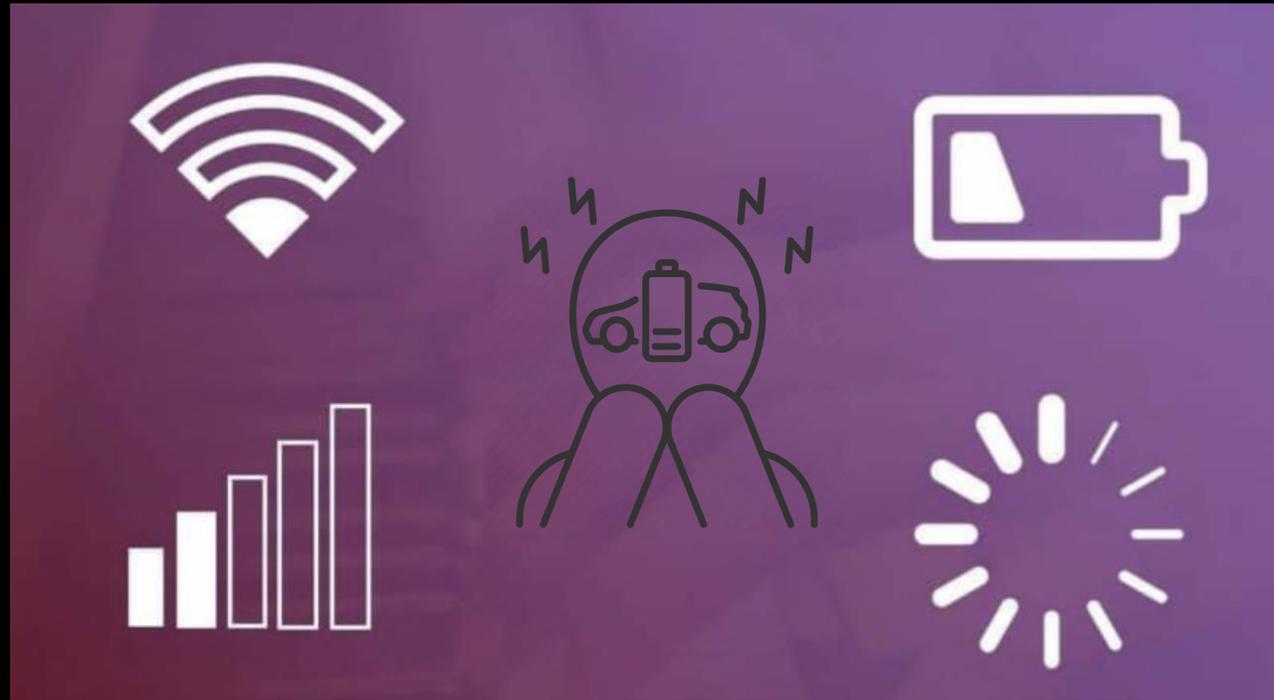
We expect responses in less than 250ms. (A delay-free reality)

We blame the tech first instead of user error (Apply Occam, please).

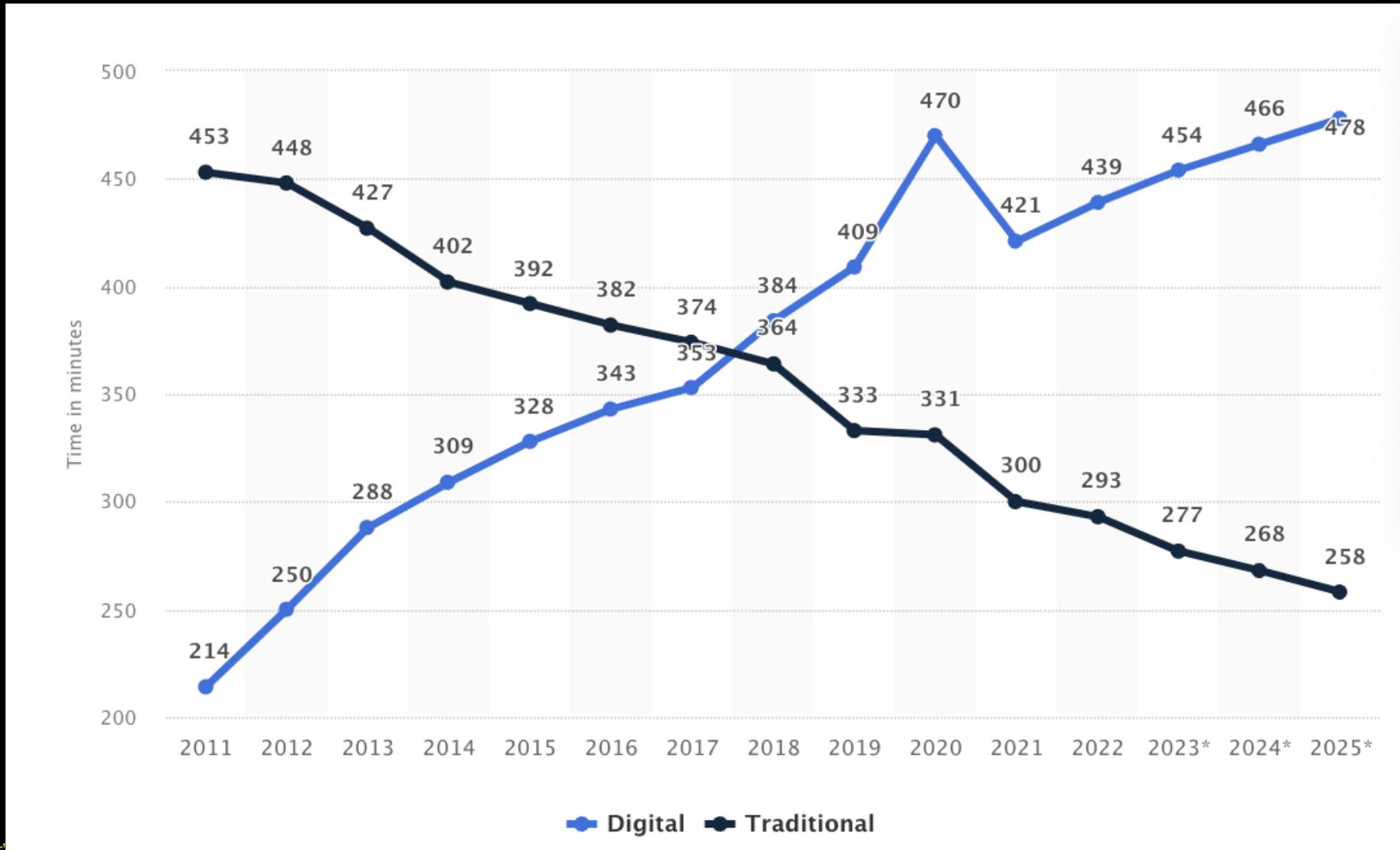
We know tech can be a horrendous time-waster.

Let's build more of it to subsume our lives.

TECH STRESSORS: TMI, BATTERY, FOMO & ADDICTION



DIGITAL VS. ANALOG INFORMATION CONSUMPTION



WTF is Cognitive Defense?

Taking control of the narrative, cognitive detection, and responses, whether carbon or silicon-generated. Agency.

He who controls the technology controls the narrative.

He who controls the narrative controls your beliefs.

How Narratives Create Beliefs

Storytelling, the Narrative, is fundamental to human communications.
He who controls the technology controls the narrative.

An **immersive experience** brings the audience inside the story. It relies upon

Reality distortion to make the narrative more believable by the exploitation of

TMI (mis/disinfo-/BS) to form mental images, which is how stories are told.

Using **Manipulation** the participants' worldview and belief systems are altered.

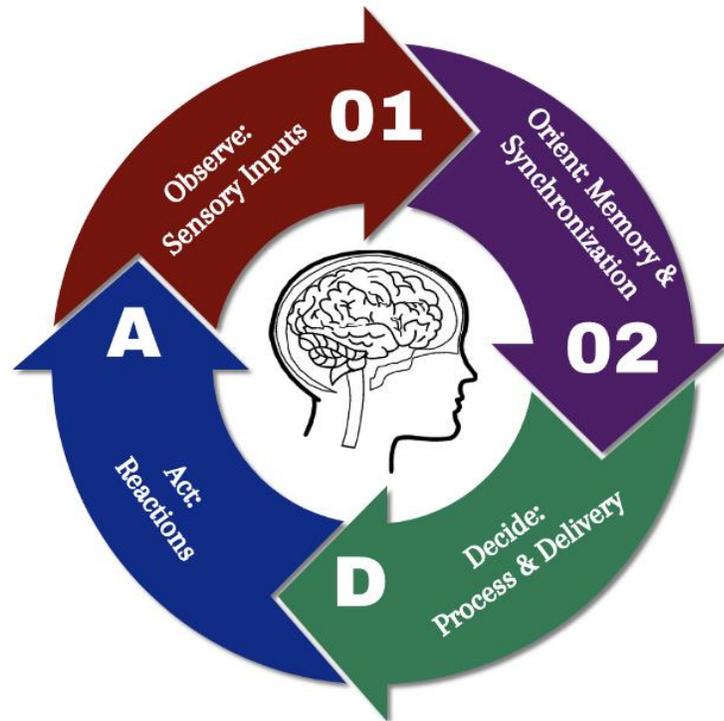
Reward systems target the human mind with digital opioids causing

Addiction to the narrative. The storyteller then induce behaviors and

Compliance through repetition and fear. That is how to create undying, absolute

Belief

COGNITIVE/BELIEF MANIPULATION

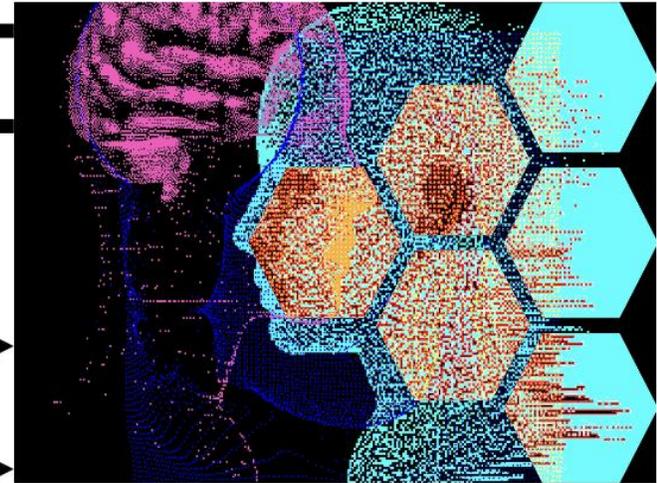


Content Orchestration

Haptic Feedback

Tracking Behavior

Sensor Response



- Gaming
- Advertising
- EDU, Training, Corp.
- Medical, Industrial, etc.
- Propaganda, Indoctrination, Disinformation, etc.



We are Digitally Terraforming the Future
Global Cognitive Infrastructure.

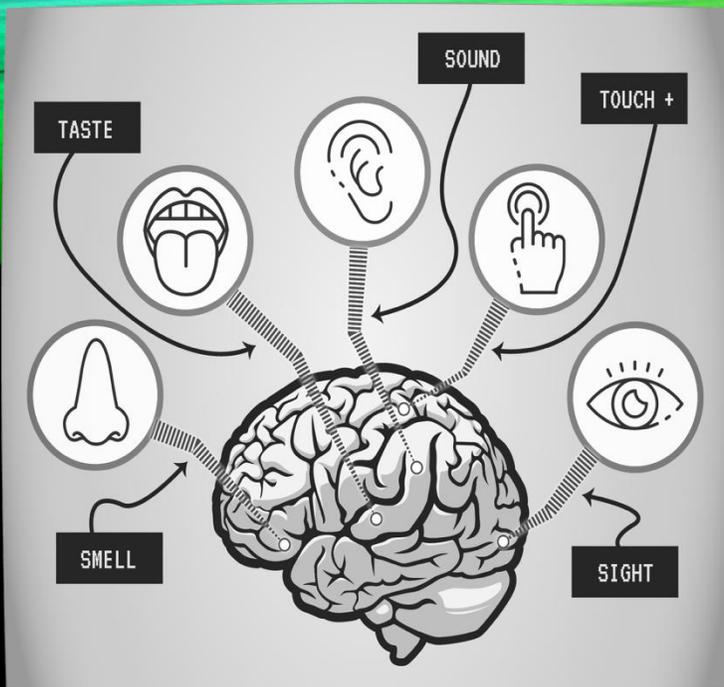
We have ONE chance to get it right.

We will not get another.

THE TWO SYSTEMS IN OUR BRAINS

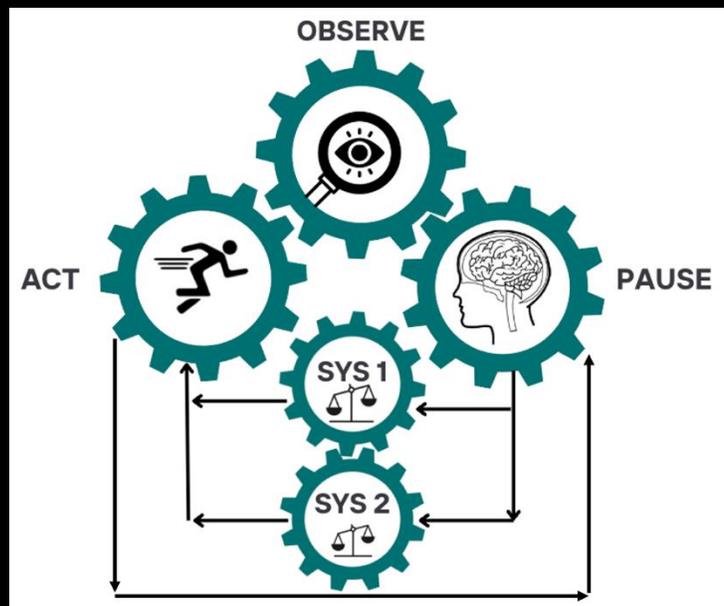


	System 1	System 2
Characteristics	<p>Fast Effortless Unconscious</p> <p>Triggers emotions Associative</p> <p>Looks for causation Looks for patterns</p> <p>Creates stories to explain events</p>	<p>Slow Effortful Conscious</p> <p>Logical Deliberative</p> <p>Can handle abstract concepts</p>
Advantages	<p>Speed of response in a crisis</p> <p>Easy completion of routine or repetitive tasks</p>	<p>Creativity through associations, so good for expansive thinking</p> <p>Allows reflection and consideration of the "bigger picture", options, pros and cons, consequences</p> <p>Can handle logic, maths, statistics Good for reductive thinking</p>
Disadvantages	<p>Jumps to conclusions Unhelpful emotional responses</p> <p>Can make errors that are not detected and corrected, such as wrong assumptions, poor judgements, false causal links</p>	<p>Slow, so requires time</p> <p>Requires effort and energy, which can lead to decision fatigue</p>



Human Sensory System

- Max Bandwidth: 11.1 mb/sec
- With eyes closed: 1.7 mb/sec



Human Detection/Reaction System

- System 1: 30 – 300 ms
- System 2: 300 ms +
- Feedback strengthens

Bandwidth is a Time Function

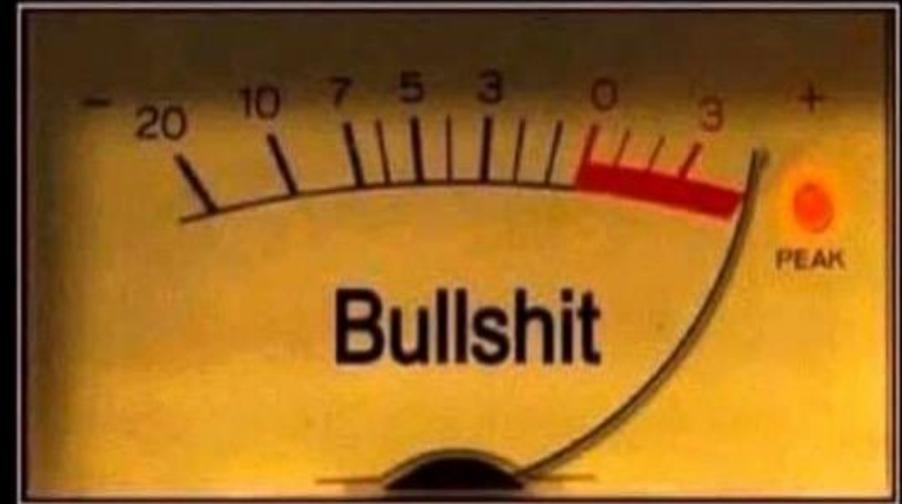
COGNITIVE DEFENSE TRIAD



TMI



CRITICAL IGNORING



BS

Do y'all remember, before the internet, that people thought the cause of stupidity was the lack of access to information? Yeah. It wasn't that.

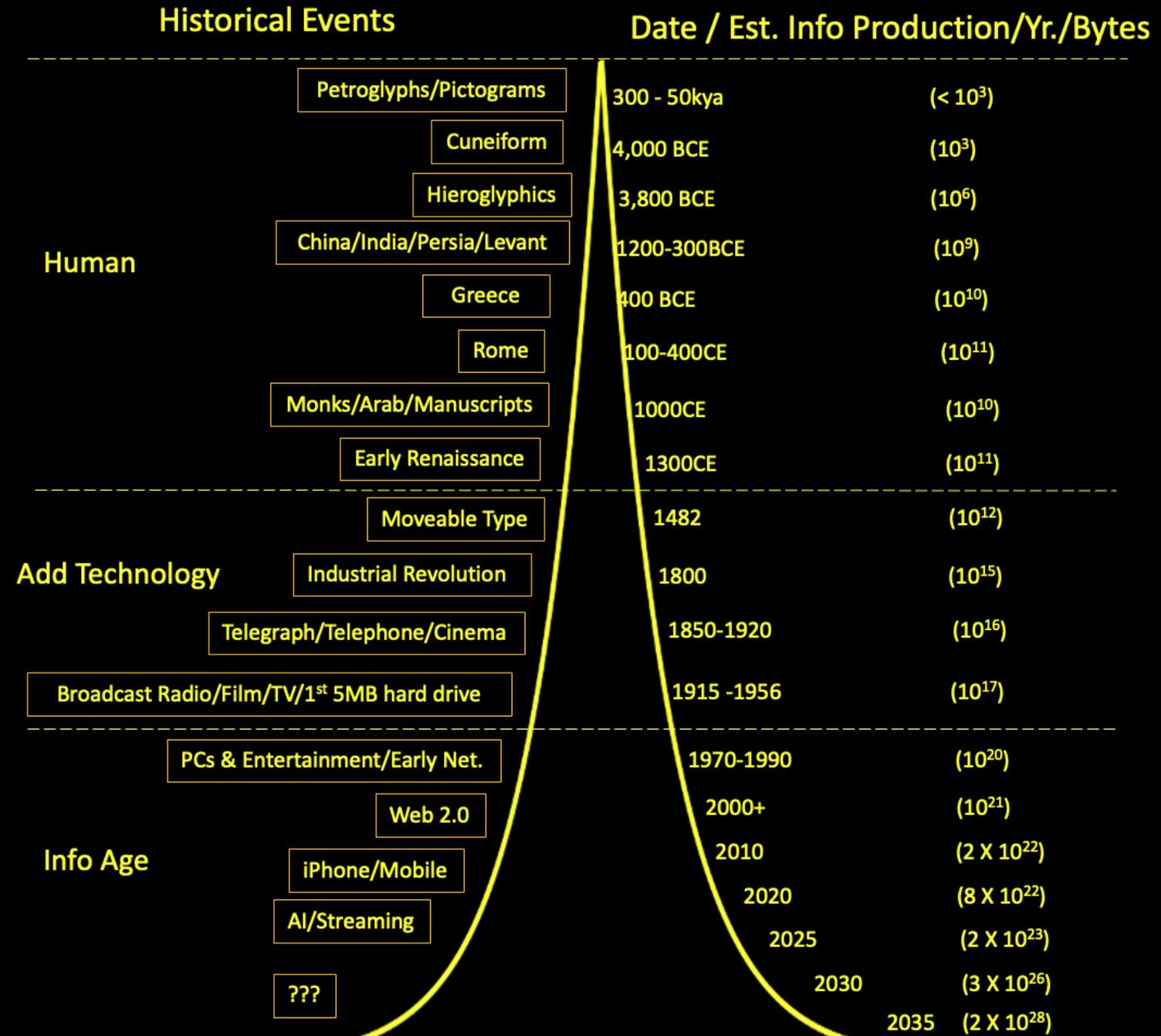


TMI?

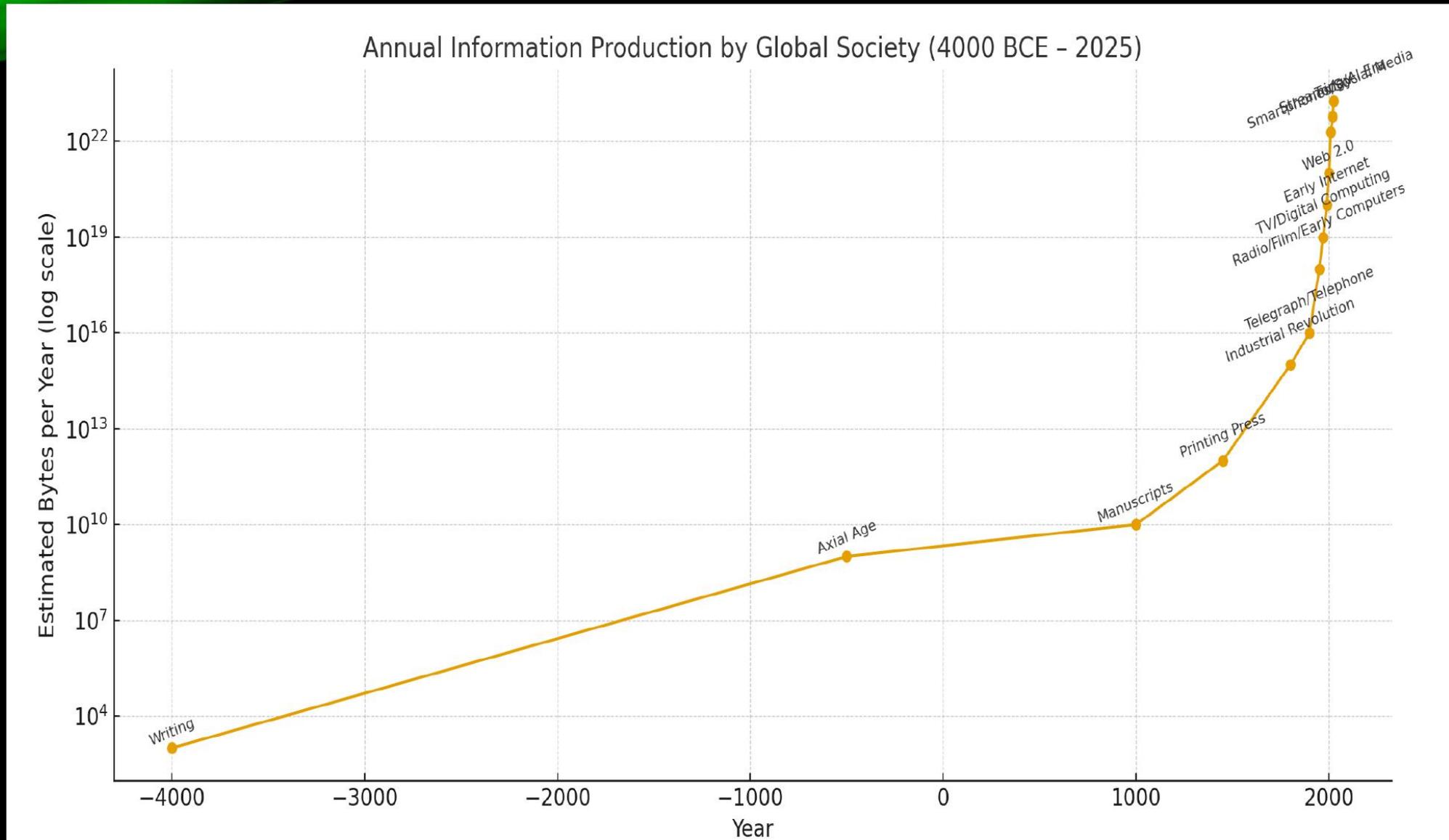


TMI in Human History

300 kya – 2035CE
 (10^{25} increase)



TMI BY THE NUMBERS



Too Much Information

Cognitive DOS/DDoS, confusion, anxiety, sleep, attention, and memory problems, loss of trust, poor decision-making, leading cause of mis- disinformation/BS.

Stress & Anxiety

FOMO, distraction, time-wasting, fear of loss of power & connectivity, social acceptance, self-identity, mental health issues, technophobia, online crime.

Behavioral Algorithms

AI, ceding control of decision-making, exploiting PIB, cognitive influence, bias exploitation, trusting the tech, saves time and is too easy to not use.

Digital Addiction

Digital & sensory-induced dopamine, emotional compulsion, distorted reward system, behavioral compliance, trust established.

PIB

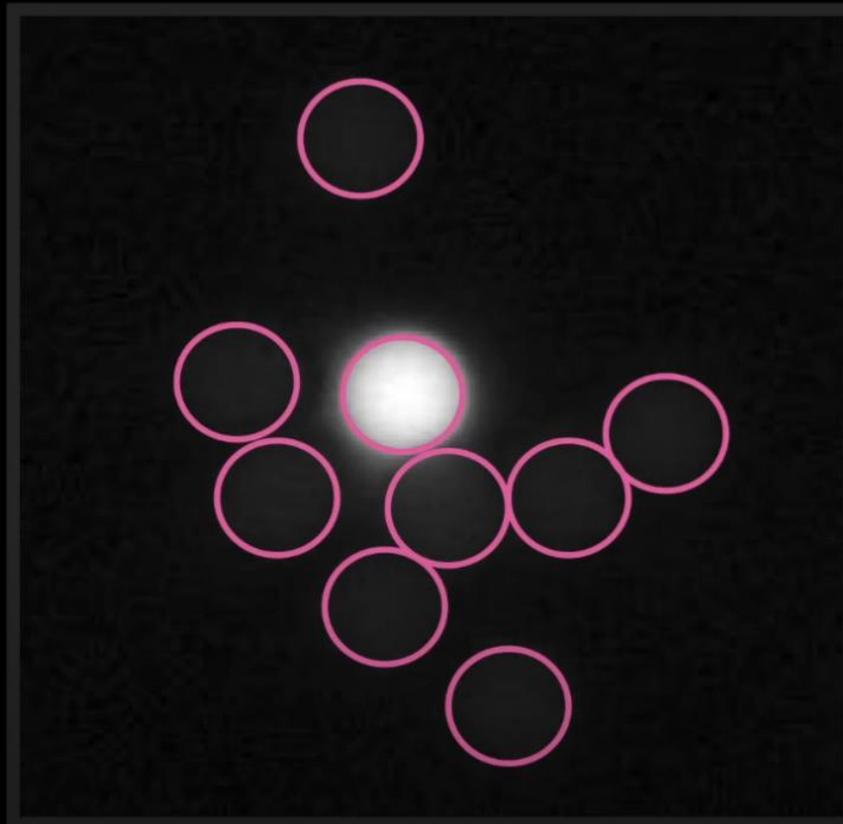
Abuse of tech and data that predicts and influences human reactions with Personally Identifiable Behavior by complicit or bad actors.

Time

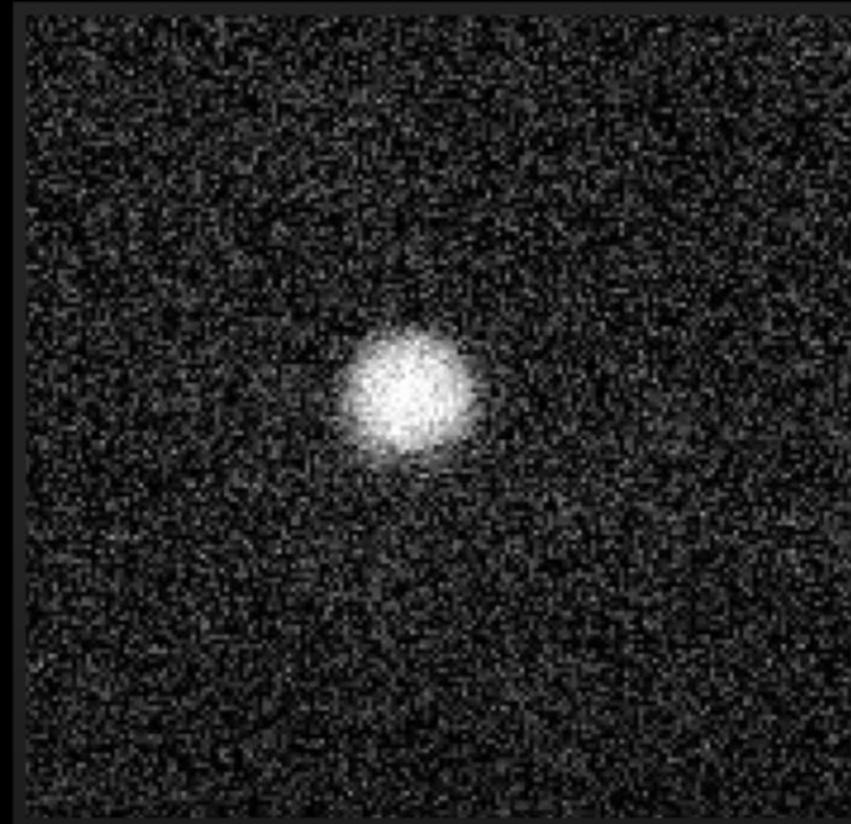
Tech is always on, constantly pushing the first five vectors 10^6+ faster than humans can absorb. Faster OODAs win. Chronoception/-type manipulation.

SIGNAL TO NOISE RATIO

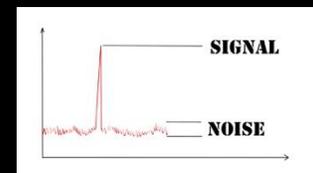
(YEP, IT'S ANALOGUE)



decent SNR



increase noise



TMI?
Noise?
TRY CRITICAL IGNORING.



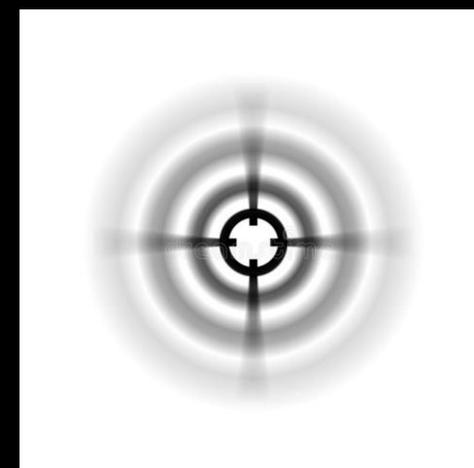
Earliest Public Usage

May 17, 2021 — Sam Wineburg, Nieman Journalism Lab.
Introduces the phrase "critical ignoring" in the context of online literacy.
Link: <https://www.niemanlab.org/2021/05/to-navigate-all-the-junk-on-the-internet-you-need-powers-of-critical-thinking-but-also-critical-ignoring/>

Earliest Peer-Reviewed Academic Definition

Kozyreva, A., Wineburg, S., Lewandowsky, S., & Hertwig, R.
"Critical Ignoring as a Core Competence for Digital Citizens."
Current Directions in Psychological Science, Epub Nov 8, 2022 (print 2023). DOI: <https://doi.org/10.1177/09637214221121570>
PubMed: <https://pubmed.ncbi.nlm.nih.gov/37994317/>

AUDITORY & VISUAL CRITICAL IGNORING



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SENSORY HABITUATION: CRITICAL IGNORING



Tier 1,2,3 Defenses

- Next-Generation Firewalls (NGFWs) (IPS/IDPS)
- Secure Web Gateways (SWG)
- Email Security Gateways: Distributed Denial-of-Service (DDoS) Protection.
- Web Application Firewalls (WAFs)
- DNS Filtering & Security
- Data Loss Prevention (DLP)
- CDN Security Layers
- Anomaly Detection
- Network Behavior Analytics (NBA)
- AI/ML-based and Threat Detection.
- Bot/AI Detection

Enterprise Defenses

- Firewalls (Next-Gen, UTM)
- Web Application Firewalls (WAFs)
- Geo-blocking Filters
- Rate Limiters / DoS Protection
- DNS and Web Filters
- Threat Intelligence Filters
- Data Stream Filtering
- DLP (Data Loss Prevention)
- ML/AI Sorting Models
- Queue Systems (Kafka, RabbitMQ)
- SIEM & SOAR
- Zero-Trust
- Bot/AI Detection

Endpoint Defenses

- Antivirus/EDR Agents
- Local URL/Domain Blocklists
- Application Whitelisting
- User Behavior Analytics (UBA)
- Reputation Services
- Security Awareness Training
- MFA, MDM, & FDE
- Personal Firewalls
- Sandboxing, VPN
- Bot Detection

Data Production
 2×10^{21} /Bytes/Day

Cyber Critical Ignoring
($\sim 10^{12}$)

Time?

Data Capacity
7.4Human $\times 10^9$ /Bytes/Day

Immune System 1

Your skin and mucous membranes are the body's first line of defense. They physically block germs and harmful substances from entering your body.

Your immune system uses PRRs (Pattern Recognition Receptors) to spot harmful invaders based on common traits, called PAMPs (Pathogen-Associated Molecular Patterns).

IgA (Immunoglobulin A) antibodies in your saliva and nose trap viruses and bacteria early - before they cause trouble.

Cytokines are chemical messengers that help your immune system figure out how to respond to threats - like deciding between a cough or a fever.

Pathogens

Immune System 2

Your immune system remembers past infections and prioritizes its response based on danger and familiarity.

Your cells have built-in defenses like interferons that stop viruses from replicating inside them.

Biological Critical Ignoring
(Don't know the math yet)

Vaccination

Vaccines train your immune system to recognize and respond faster to known pathogens - like blocking a virus before it spreads.

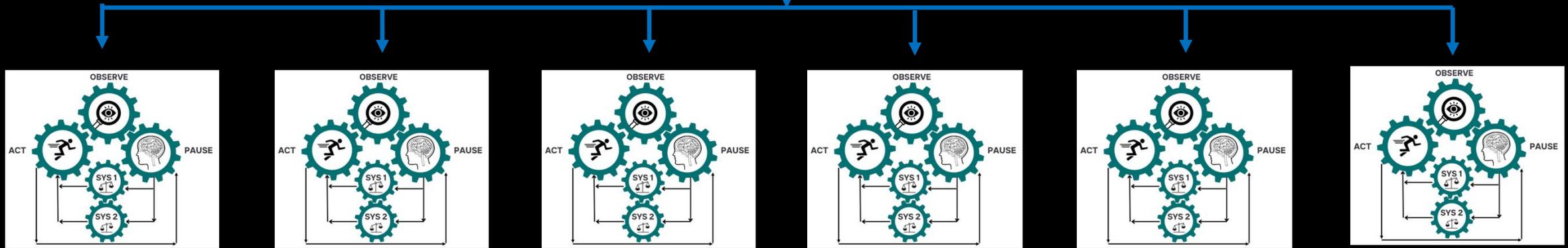
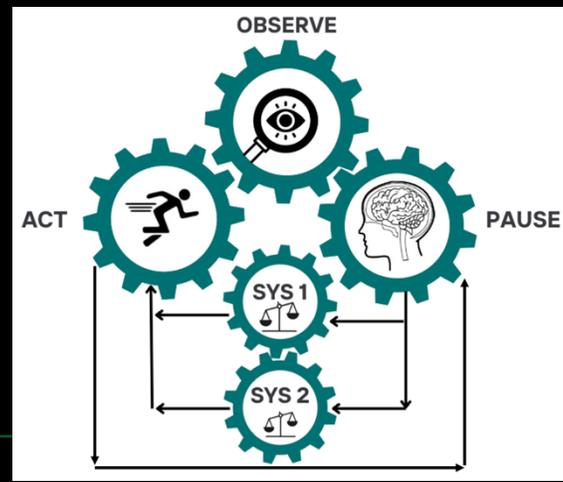
Auto-immune strengthening

TIME-BASED COGNITIVE ACTIVITIES

The Issue	The Facts
Kids K-12 go to school:	~1,260 hrs/ year. (7 hours or 420 minutes per day for 180 days)
Average adults work	~ 2,000hr per year (8 hours or 480 minutes per day)
Checks a mobile device:	~370 times per day. That's roughly once every 3 minutes in a 16-hour day.
Internet consumption:	6.5 hours per day (390 minutes per day, ~2,500 hours per year. More than an American works in a year.)
TV/Streaming consumption:	4.5 hours per day (270 minutes per day or 1,642 hours per year)
Social Media consumption1:	2.7 hrs per day (162 minutes per day or ~1,000 hours per year)
News Consumption.	~70% online. ~30% claim never to see the news.
Uploading videos:	817,000 unique video content program titles in February 2022
YouTube uploads:	18,000 hours of content every hour.
Pix posted:	100 million pix daily on Instagram.
Average reading speed:	~238 wpm (words per minute) or 14,280 words per hour.
Spoken word speed in media:	~160 wpm (9,600 words per hour on average)
Reading books in the US:	~20 mins per day. RUFKM?
Adult American reading skills:	7th/8th grader, 12 to 14 years old

I have ~16 hrs. per day to spend my limited mental resources on the things **I Choose**. *Critical Ignoring is our System 1 personal defense against TMI..*

Critical Ignoring (System 1)



I don't care

I don't have
the time.

The algorithm
and addiction.

I already know
that stuff.

Bespoke choices

BS

A strong mental immune System 1 works fast and talks to' System 2.
Critical Thinking. It takes time, mental energy, and an open mind.

System 1 Critical Ignoring

I don't care.

I don't have
the time.

BS

I already know
that stuff.

The algorithm
and addiction.

Bespoke
choices

System 2 Critical Thinking

Human Data Capacity
11.1 mb/sec

Ignoring Factor
 $\sim 3-5 \times 10^3$
Time?

Processing Capacity
 $\sim 2-4$ kb/sec

Academic Bullshit History & References

- Frankfurt, H. G. (2005). *On Bullshit*. Princeton University Press.
- Wardle, C., & Derakhshan, H. (2017). *Information Disorder: Toward an interdisciplinary framework for research and policymaking*. Council of Europe Report DGI(2017)09.
- Petrocelli, J. V. (2018). Antecedents of bullshitting. *Journal of Experimental Social Psychology*, 76, 249–258. DOI
- Petrocelli, J. V. (2021). *The Life-Changing Science of Detecting Bullshit*. St. Martin's Press.
- Pennycook, G., et al. (2015). On the reception and detection of pseudo-profound bullshit. *Judgment and Decision Making*, 10(6), 549–563. PDF
- Paul, C., & Matthews, M. (2016). *The Russian 'Firehose of Falsehood' Propaganda Model*. RAND Corporation.
- Benkler, Y., Faris, R., & Roberts, H. (2018). *Network Propaganda: Manipulation, Disinformation, and Radicalization in American Politics*. Oxford University Press.

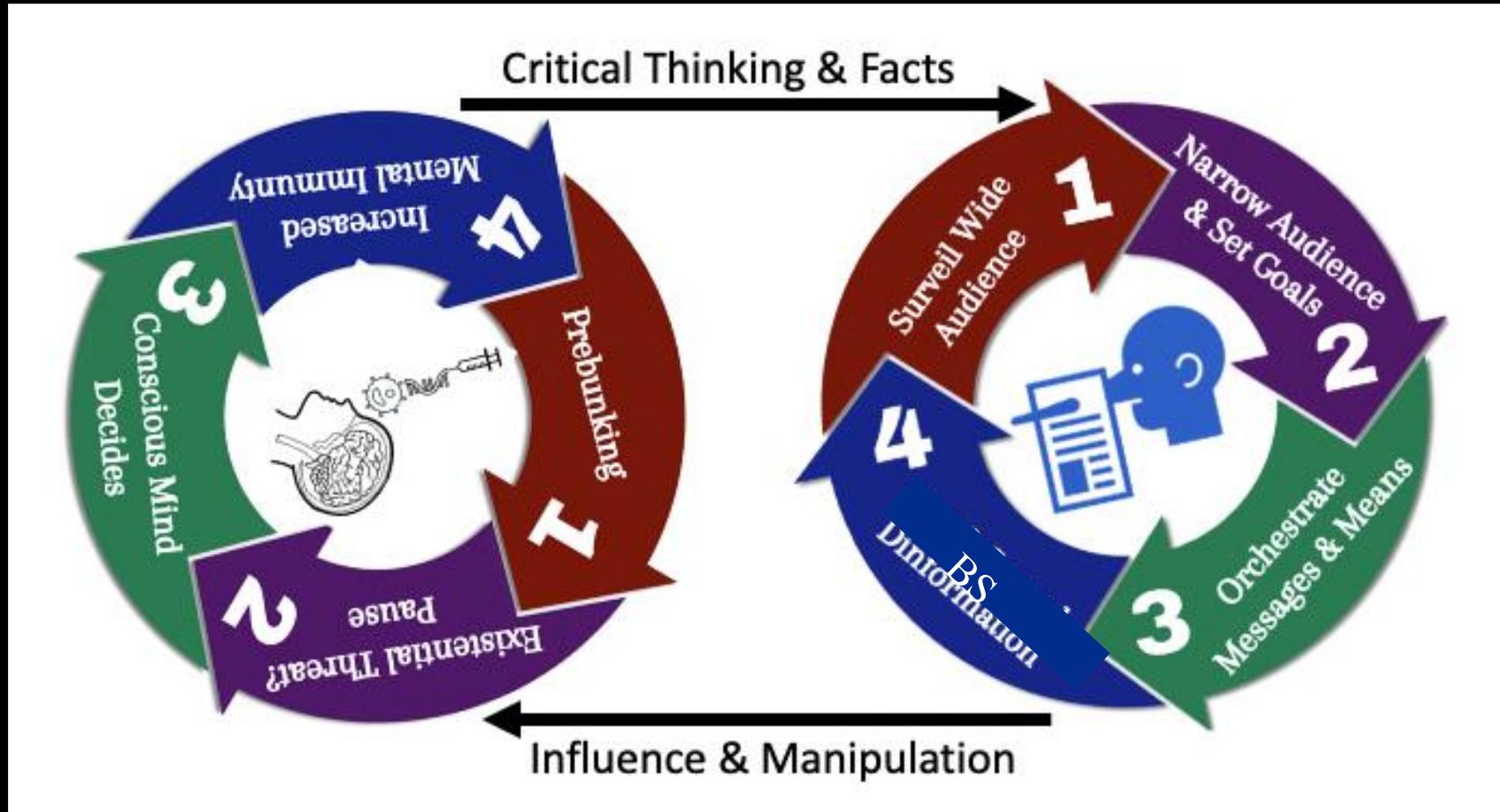
We can argue that 'bullshit,' as defined by Harry Frankfurt and expanded upon in empirical research, serves as an umbrella category encompassing misinformation, disinformation, and malinformation. The argument integrates philosophical foundations, empirical psychology, and information disorder frameworks.

Drawing on Frankfurt's philosophical conception of bullshit as communication indifferent to truth and aligning it with Wardle & Derakhshan's taxonomy of information disorder (mis-, dis-, and malinformation), this paper situates all three categories within the broader umbrella of bullshit.

Empirical contributions by Petrocelli, Pennycook, and others strengthen this framing by showing how bullshit operates in psychological, social, and political contexts. RAND's Firehose of Falsehood and Benkler et al.'s Network

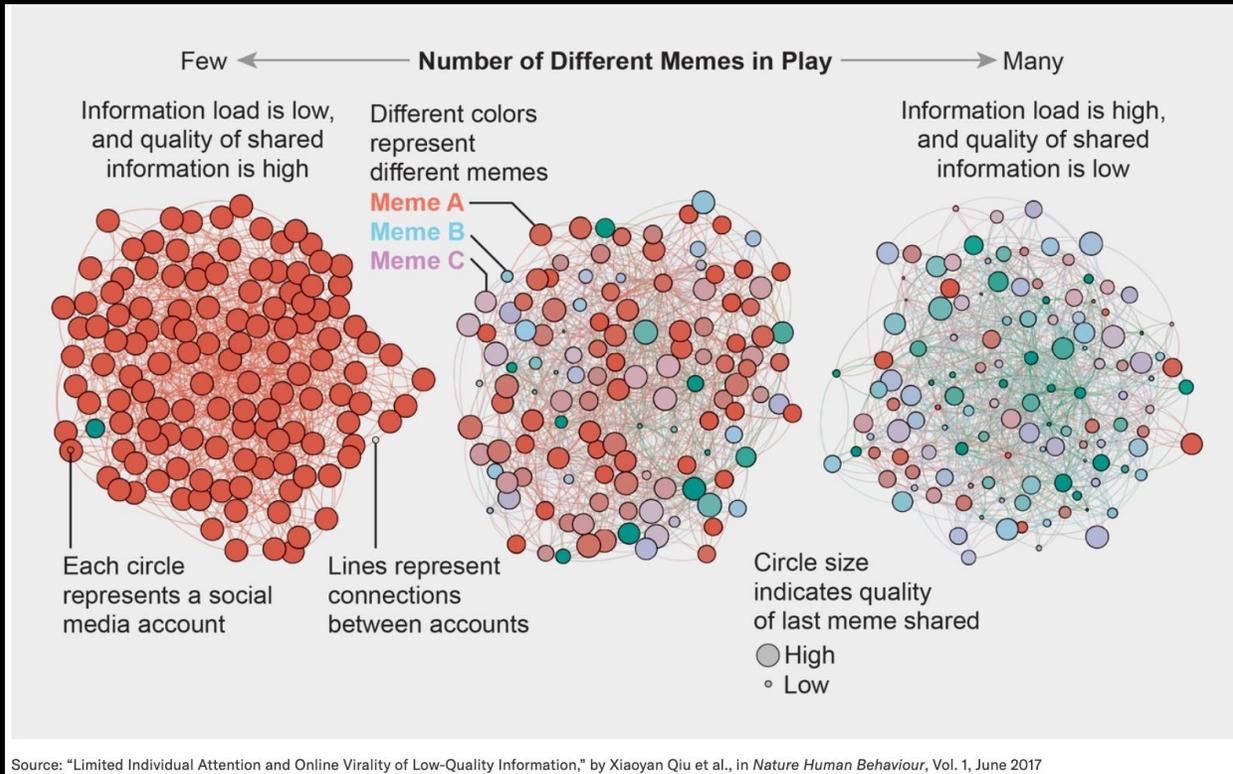
Propaganda further illustrates truth-indifferent communication strategies at scale.

BS OODA Loop



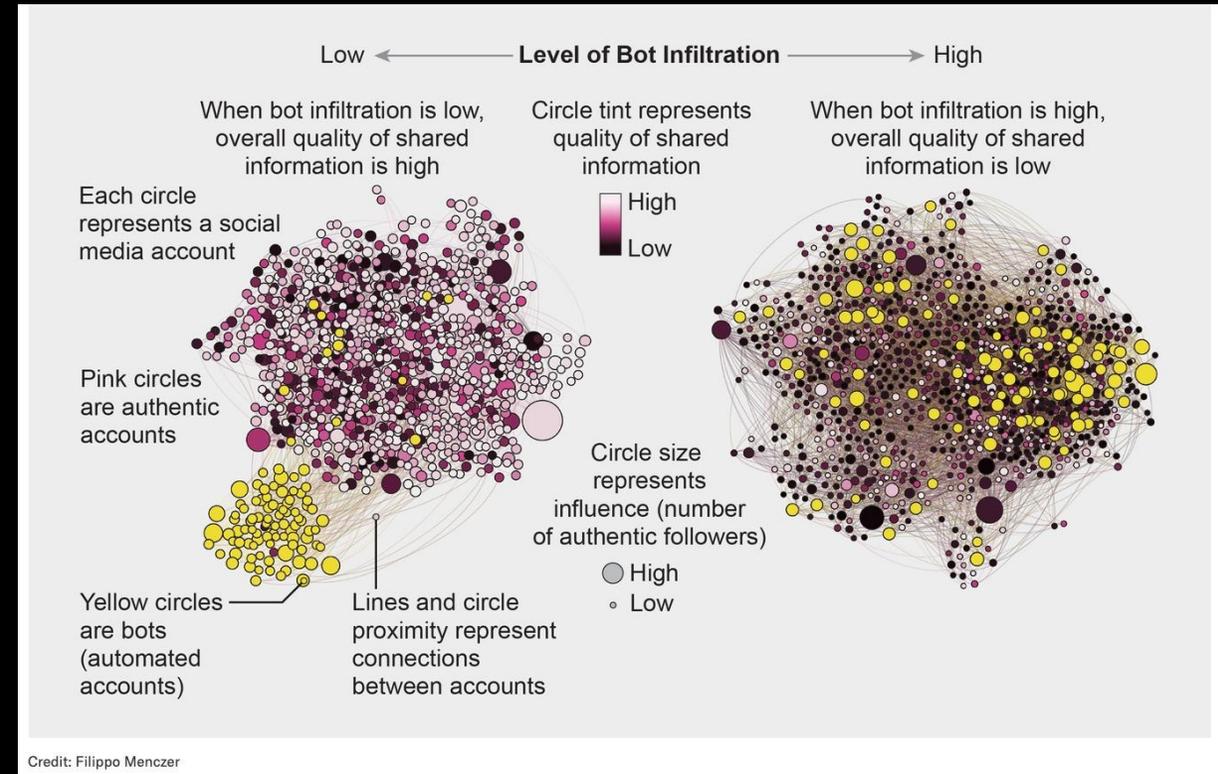
Fast, automatic cognitive defenses and pauses in BS OODA Loops, help engage System 2.

TMI CREATES FERTILE GROUND FOR BS



Source: "Limited Individual Attention and Online Virality of Low-Quality Information," by Xiaoyan Qiu et al., in *Nature Human Behaviour*, Vol. 1, June 2017

Human generated BS



Credit: Filippo Menczer

AI/Bot generated BS is a powerful amplifying weapon.

Evidence-Based Reasoning

Bias Recognition & Calibration

Source & Credibility Evaluation

Logical Fallacies & Argument Analysis

Critical Ignoring Again

Context Awareness

Emotional Regulation & Reflection

Hypothesis Generation & Testing

Systems Thinking

Probabilistic Thinking

System 2:
Post Critical Ignoring
Critical Thinking

~ 2-4 kb/sec

Time?

Decision, Choice, Action, Response, Behavior

~ 20-80 bps

SHALL WE PLAY A GAME?

- System 1 > System 2 Engagement
 - Build Cognitive Resilience
 - Mental Immunity Strengthening
- Build Habituation:
 - Audio/Video Senses (We have)
 - Smell/Taste/Touch (We have)
 - Information (Not native to humans)
- Primal Survival Reactions
 - Enhance Audio/Video
 - Strengthen System 1 > System 2 Engagement
 - Information Valuation (subjective and time objective)

THE "DO I GIVE A S***?" GAME

Critical Ignoring

- Do I care?
- Do I have time?
- Do I need it or want it?
- Human or AI?
- BS Detection
- Do I trust it?
- Quality or Quantity?
- Digital provenance?
- Accuracy?
- Or just BS?



Can I PLEASE Turn Off those Algorithms?

Pre-bunking Proven to Strengthen Mental Immune System



Intellectual and emotional attacks, arguments, and persuasion do not work.

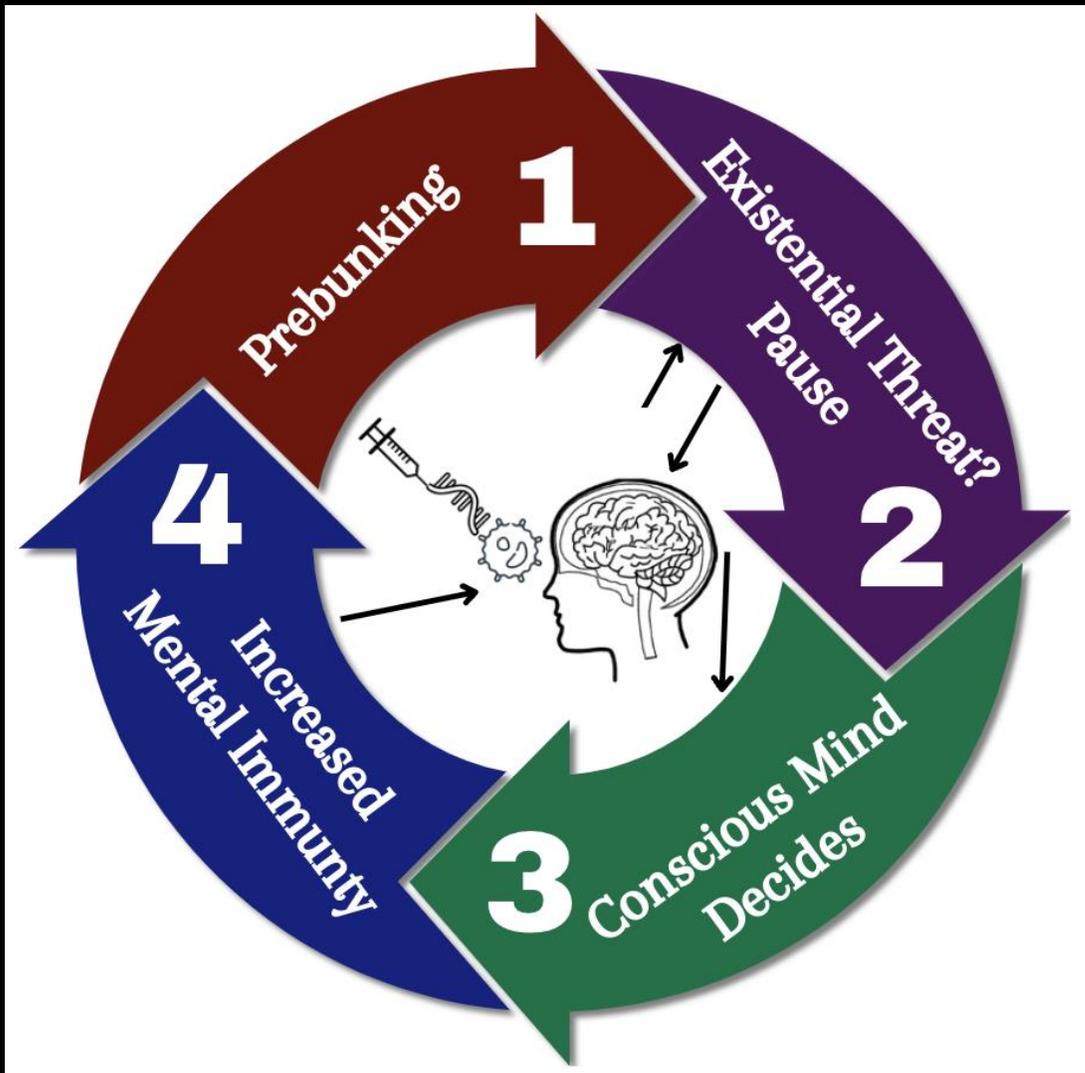
“Over 50 years of research has shown that inoculation is among the most effective frameworks to help people resist persuasion attempts.”

Professor Sander van der Linden
Cambridge Univ., UK

“A bit of fake news and a dollop of explanation and we can inoculate people against disinformation by explaining the techniques used to distort the facts.”

Professor John Cook, Senior Research Fellow
University of Melbourne, AU

COGNITIVE PREBUNKING OODA LOOP



Prebunking is a promising, research-backed strategy for building resilience against BS. It is effective, safe, and scalable,

• **Key Requirements**

- More Research
- Critical Ignoring
- Experimental Cyber Ranges
- Real-world testing
- Interdisciplinary cooperation
- Resources Support

HOW? JUST PAUSE!



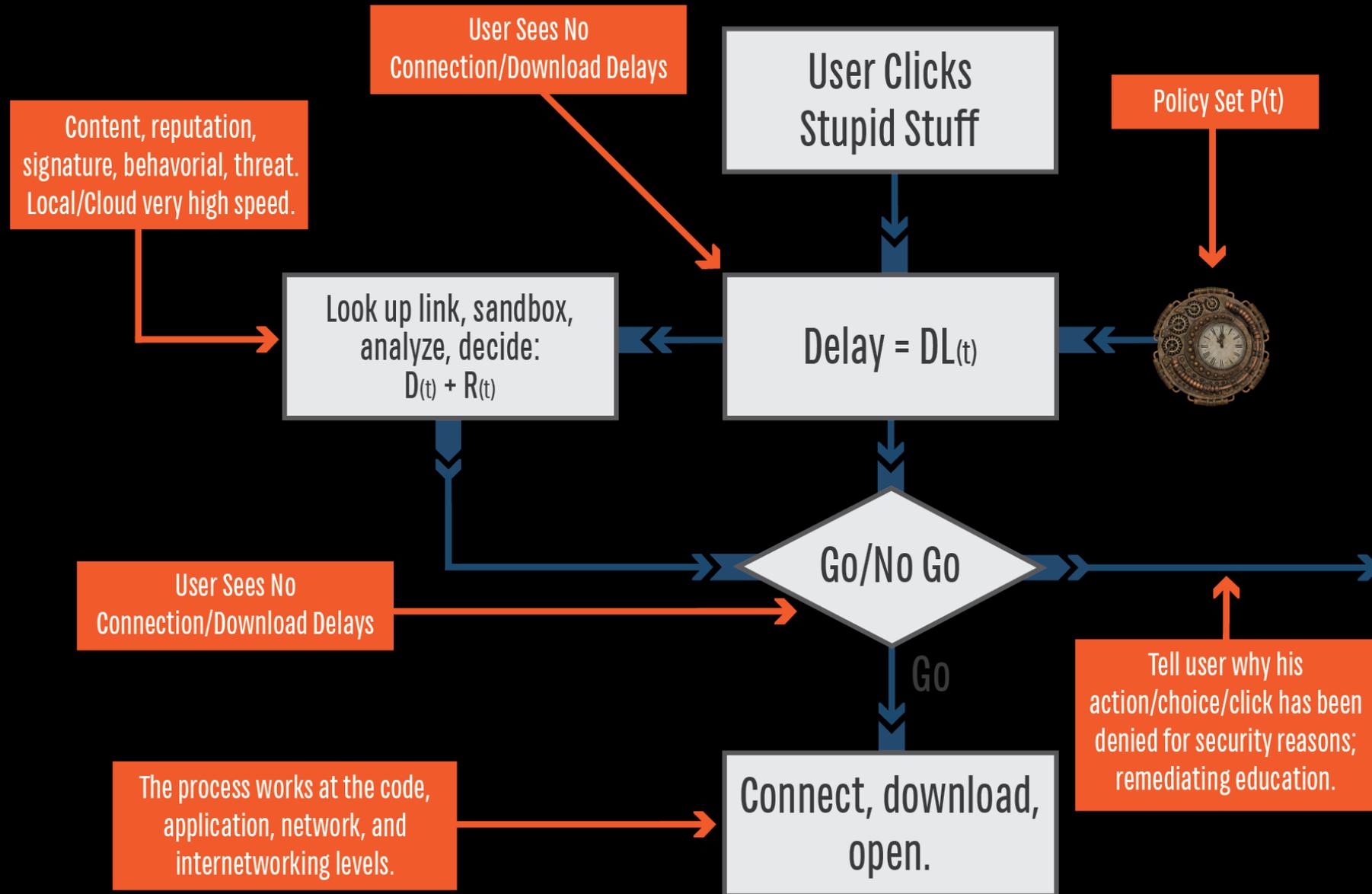
GRAB ATTENTION

- WOW Factor
- Curiosity
- Games
- Chat with AI
- Pre-bunking
- Creative experiences
- Non-confrontational challenges
- Rewards

LAUNCH SYSTEM 2

- Ask a Question
- Take a breath/break
- Count to 10
- Think for a second
- Analyze the situation
- "Thimmmk." (My mom)
- Take the long way
- Sleep on it
- "Men take a day to think about things."

Cyber: System 1 Engages System 2



MULTI-PLAYER COGNITIVE CYBER RANGES



Languages, GUIs, & Content	Education	Enterprise	Everyone Else
<i>P</i> assive Content	Age based, grade based	Tailored to specific industry	Age based
<i>A</i> ctive Content	Multiple topics of study	Culturally sensitive	Cultural
<i>L</i> ogic-GPT	Cultural differentiation	Cognitive Security Awareness	No contentious content
<i>M</i> ulti-player Range	Learning simulations	Red-Blue Teaming	Real-world simulations

THE COGNITIVE ATTACK SURFACE

Your High-Tech Brain Follow the 8 Sensory Inputs

Red Circuits are inhibitory, all other colors are excitatory

86+ Billion Neurons

15+ Billion Neurons in the Cerebral Cortex

65+ Trillion Connections in the Cerebral Cortex

Avg of 1,000-10,000 Connections (Synapses) per Neuron

(Transistor equivalent of 45,000 17-Dual Core Processors since synapses work like transistor switches)

The Cortex is a 6 layer folded circuit board filled with electronics

1 mm² of cortex contains 50,000+ Neurons

making over 100 Million Synapses (switches)

(Apple A8 processor (iPhone 6) has about 23 Million transistors (switches) per mm²)

The Total Surface area of the Cerebral Cortex = 2,500 cm²

well processing power of over five A8 processors in "this little box"

"Three frontal circuits have been associated with decision making: 1) the OFC (2) the DLPFC, and 3) the ACC, important in sorting among conflicting options, as well as outcome-processing." - "The Functional Neuroanatomy of Decision-Making"

"It can now be recognized that the region (Orbital and Medial Prefrontal Cortex) as a whole receives highly processed sensory afferents, provides for cortical influence over visceral functions, and participates in high-level cognitive and emotional processes." - "The Organization of Neurons within the Orbital and Medial Prefrontal Cortex of Rats, Monkeys and Humans."

"Religious conviction acts like an anxiolytic, reducing emotional reactions to errors or uncertainty, providing people with a meaningful system helping them to understand the complex and uncertain world that we live in. In physiological terms, it reduces ACC activity and consequently distress." - "The Anterior Cingulate Cortex"

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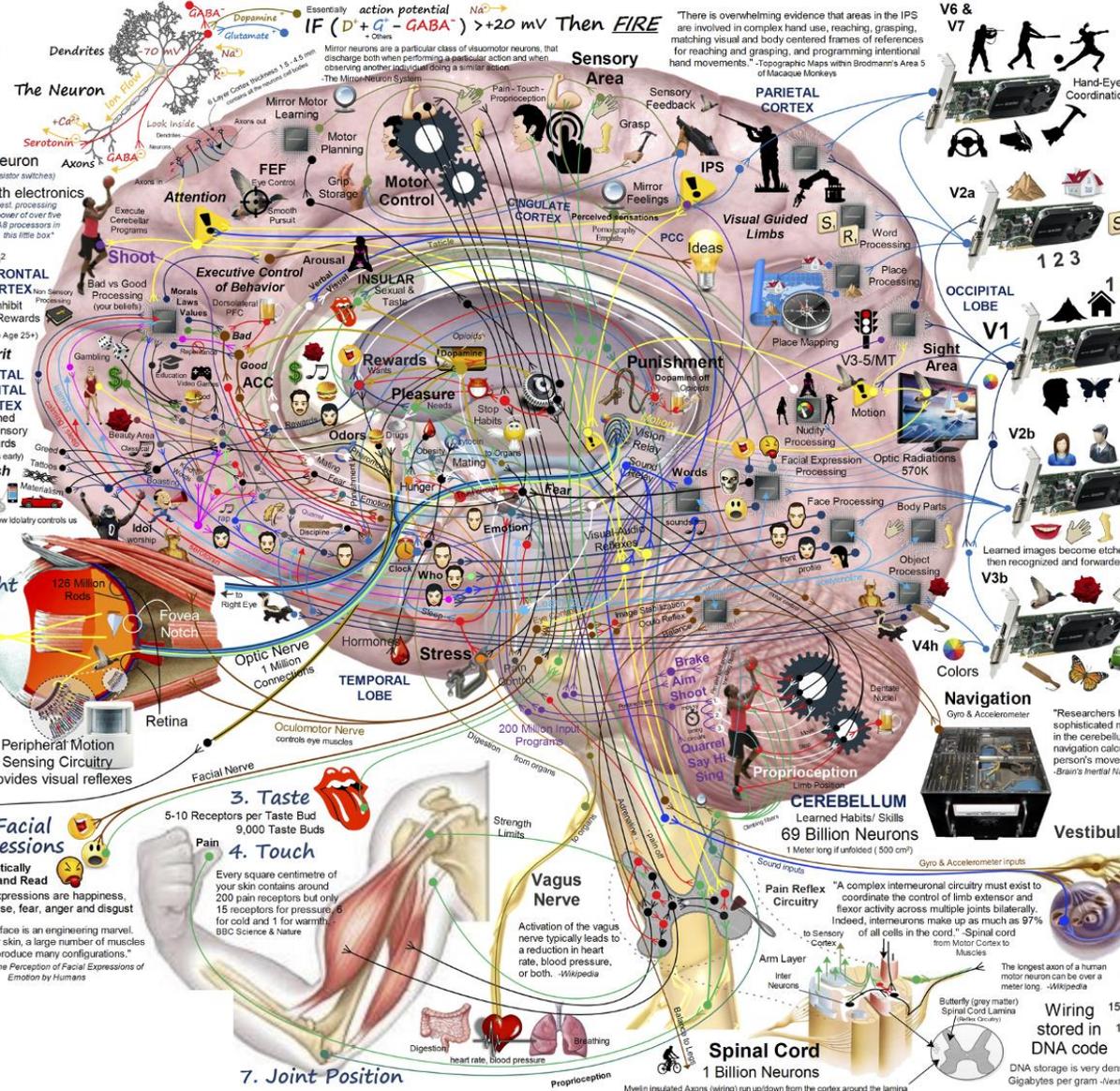
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The Visual Processing System

4-6 Billion Neurons

"The recognition process likely entails a sequence of computations across visual cortex, starting from local computations in early visual cortex related to low-level properties of the visual stimulus, such as disparity, motion, or orientation, conveying little sense of the global object shape, then proceeding to more global computations in higher levels of the hierarchy of visual processing."

"Representation of Shapes, Edges, and Surfaces Across Multiple Cues in the Human Visual Cortex"

"Evidence from functional neuroimaging indicates that visual perception of human faces and bodies is carried out by distributed networks of face and body-sensitive areas in the occipito-temporal cortex." - "Different Cortical Dynamics in Face and Body Perception"

"Our results thus confirm that nudity of human bodies is detected early on during visual processing, and that the human brain exhibits enhanced visual processing to other people's nude bodies. Interestingly, the N170 response to nude bodies was even greater than that to faces." - "The Naked Truth: The Face and Body Sensitive N170 Response is Enhanced for Nude Bodies"

"During head movements, both systems must interact with the vestibular system. The goal of the pursuit system is to keep the retinal target image on the fovea by matching the eye velocity to target velocity." - "The vestibular-related frontal cortex and its role in smooth-pursuit"

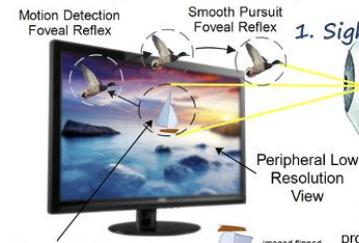
"It is now becoming increasingly apparent that even single neurons can perform complex computations." - "Wikipedia"

"Researchers have discovered a sophisticated neural computer, buried deep in the cerebellum, that performs inertial navigation calculations to figure out a person's movement through space." - "Brain's Inertial Navigation System Pinpointed"

Vestibule is similar to the main sensor used in Military Guidance and the Space Shuttle

6. Balance & Acceleration
Image Stabilization
Navigation
Eye Reflex

5. Hearing
Cochlea
30,000 Connections in Auditory Nerve
15,500 Hair Cells in Cochlea
100,000,000 Neurons in Auditory Cortex



1. Sight
Motion Detection
Foveal Reflex
Smooth Pursuit
Foveal Reflex
Peripheral Low Resolution View
Peripheral Motion Sensing Circuitry provides visual reflexes
Fovea High Resolution View
200,000 Cones in Fovea
Fovea Notch Diameter is 1.5 mm
Retina Thickness is .12 mm, area is 2,500 mm²
The retina does not simply send a picture to the brain. The retina spatially encodes (compresses) the image to fit the limited capacity of the optic nerve. -Wikipedia
"It is now clear that even fairly innocuous-looking experiences can profoundly affect brain development and that the range of experiences that can alter brain development is much larger than had once been believed." - "Experience and the developing prefrontal cortex"

2. Smell
12 Million Olfactory Receptor Cells (Human)
1 Billion Olfactory Receptor Cells (Dog)
5 Billion Olfactory Receptor Cells (Hound)

3. Taste
5-10 Receptors per Taste Bud
9,000 Taste Buds

4. Touch
Every square centimeter of your skin contains around 200 pain receptors but only 15 receptors for pressure, 6 for cold and 1 for warmth. -BBC Science & Nature

5. Joint Position
7. Facial Expressions
Automatically Produced and Read
The six main expressions are happiness, sadness, surprise, fear, anger and disgust
"The human face is an engineering marvel. Underneath our skin, a large number of muscles allow us to produce many configurations." - "A Model of the Perception of Facial Expressions of Emotion by Humans"

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100,000,000 Neurons in Auditory Cortex
Wiring stored in DNA code
DNA storage is very dense. At theoretical maximum, DNA can encode 455 Billion Gigabytes per gram -Next-Generation Digital Information Storage in DNA, Harvard University

8. Facial Expressions
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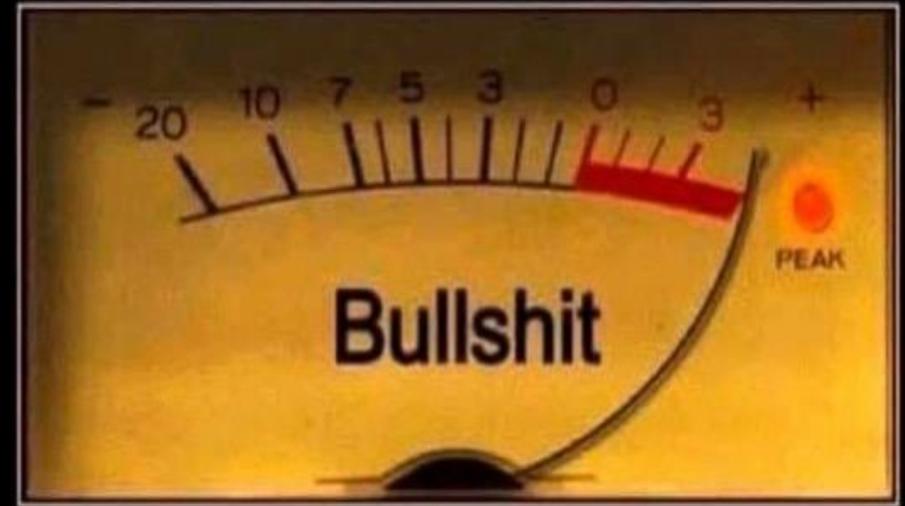
COGNITIVE DEFENSE TRIAD



TMI



CRITICAL IGNORING



BS

Cognitive Defense Is Interdisciplinary

Tech	Policy	Cognitive
Cybersecurity	Lawyers	Behavioral design
Infrastructure defense	Diplomats	Game Designers
AI experts	Policy Makers	Experimentalists
Supply chain	Privacy advocates	Neuroscientists
Blockchain	Educators	Social scientists
Data science	News media	Psychiatrists
Mathematicians	Science & Skeptic	Cultural anthropologists
Quantum scientists	Entertainment	Cognitive psychologists
UI/XI Designers	Economists	Psychoactive druggists
Immersive artists	Public Opinion	Linguistic Experts

Tier 1,2,3 Defenses

- Next-Generation Firewalls (NGFWs) (IPS/IDPS)
- Secure Web Gateways (SWG)
- Email Security Gateways:
- Distributed Denial-of-Service (DDoS) Protection.
- Web Application Firewalls (WAFs)
- DNS Filtering & Security
- Data Loss Prevention (DLP)
- CDN Security Layers
- Anomaly Detection
- Network Behavior Analytics (NBA)
- AI/ML-based and Threat Detection.
- Bot/AI Detection

Data Production
 2×10^{21} Bytes/Day

Enterprise Defenses

- Firewalls (Next-Gen, UTM)
- Web Application Firewalls (WAFs)
- Geo-blocking Filters
- Rate Limiters / DoS Protection
- DNS and Web Filters
- Threat Intelligence Filters
- Data Stream Filtering
- DLP (Data Loss Prevention)
- ML/AI Sorting Models
- Queue Systems (Kafka, RabbitMQ)
- SIEM & SOAR
- Zero-Trust
- Bot/AI Detection

Cyber Critical Ignoring

Endpoint Defenses

- Antivirus/EDR Agents
- Local URL/Domain Blocklists
- Application Whitelisting
- User Behavior Analytics (UBA)
- Reputation Services
- Security Awareness Training
- MFA, MDM, & FDE
- Personal Firewalls
- Sandboxing, VPN
- Bot Detection

Data Capacity
 7.4×10^9 Bytes/Day

Immune System 1

Pathogens

Your skin and mucous membranes are the body's first line of defense. They physically block germs and harmful substances from entering your body.

Your immune system uses PRRs (Pattern Recognition Receptors) to spot harmful invaders based on common traits, called PAMPs (Pathogen-Associated Molecular Patterns).

IgA (Immunoglobulin A) antibodies in your saliva and nose trap viruses and bacteria early - before they cause trouble.

Cytokines are chemical messengers that help your immune system figure out how to respond to threats - like deciding between a cough or a fever.

Immune System 2

Your immune system remembers past infections and prioritizes its response based on danger and familiarity.

Your cells have built-in defenses like interferons that stop viruses from replicating inside them.

Vaccination

Vaccines train your immune system to recognize and respond faster to known pathogens - like blocking a virus before it spreads.

Auto-immune strengthening

System 1 Critical Ignoring

I don't care.

I don't have the time.

BS

I already know that stuff.

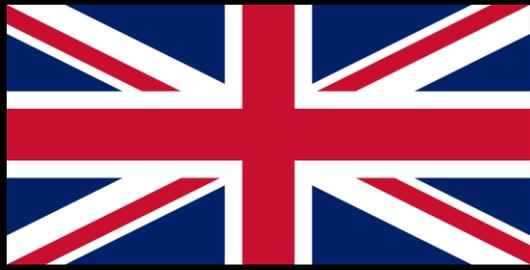
The algorithm and addiction.

Bespoke choices

5.5×10^{20} Bytes/Day

System 2 Critical Thinking

Human Data Capacity
 7.4×10^9 Bytes/Day



UK-EU COGNITIVE DEFENSES

- Cognition is a National Security Imperative
- National Education programs (Toddler+)
- Digital Literacy
- Adult upskilling
- Academic Studies/R&D
- Hundreds of private, public, and hybrid cooperatives
- 80% are publicly funded
- > € 10 billion annual investment

Love Letter To America

Tomas Schuman



One of the most influential booklets (~80pp) I have ever read.

If any aspect of Cognitive Security is on your radar, this one document will change everything.

<https://ia600904.us.archive.org/6/items/love-letter-america/love-letter-america.pdf>

What Can We Do to Strengthen Human System 1?

Agree Solutions Are Needed

Engage with Policymakers

Identify Private & Public Funding Opportunities

Coordinate & Cooperate Globally

Learn & Adapt Other Successes

Support Large Scale Studies

Build Common Taxonomies

Take Moon Shots

Be Willing to be Wrong

Include All Stakeholders

System 1 Critical Ignoring

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Bespoke choices

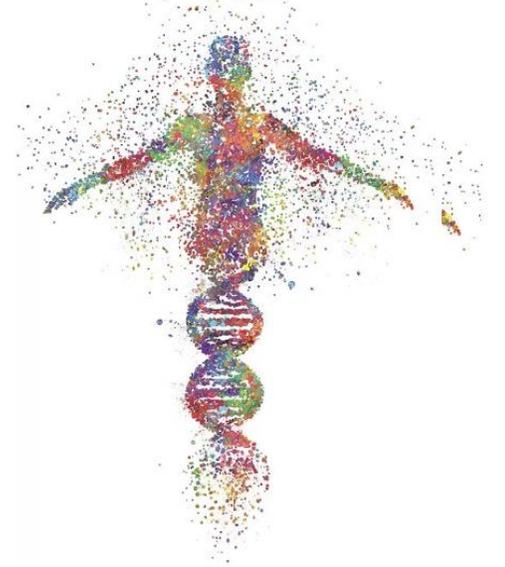
5.5×10^{20} Bytes/Day

System 2 Critical Thinking

Human Data Capacity
 7.4×10^9 Bytes/Day

Never Stop

Long-term Human Survival



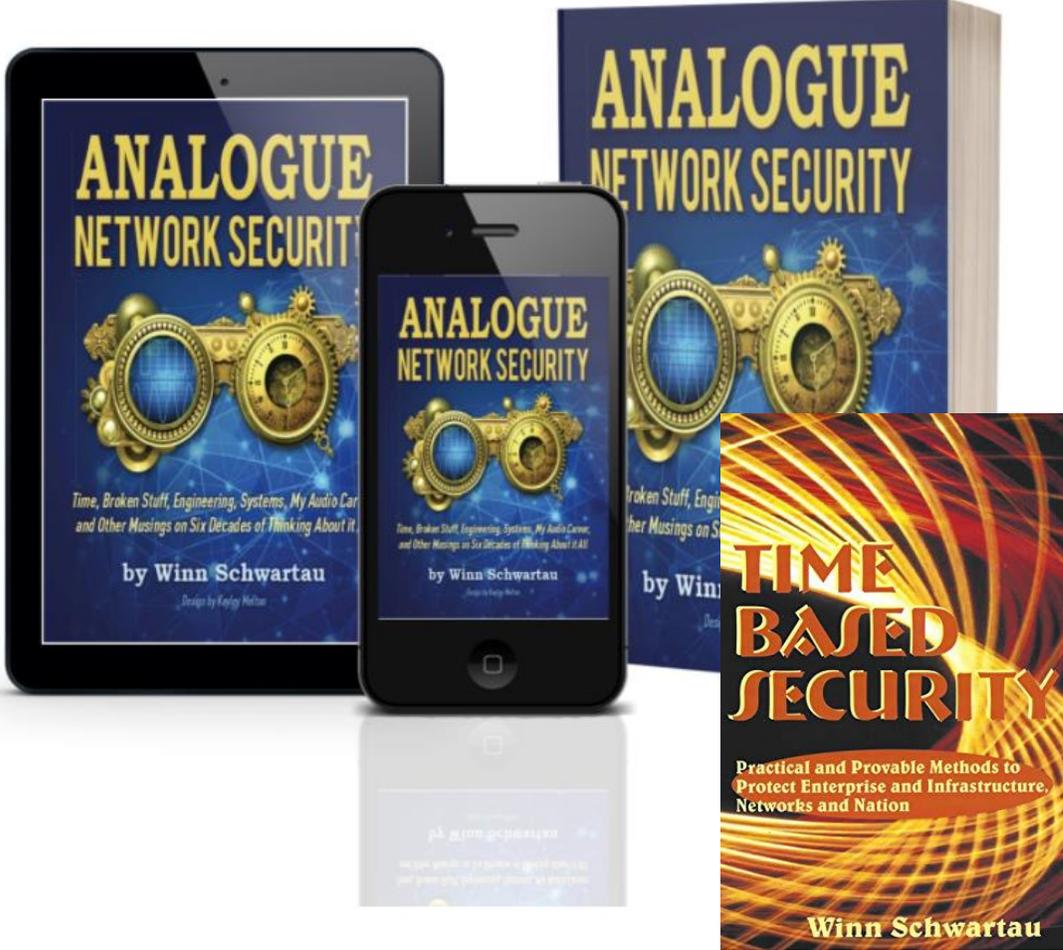
SUPPLEMENTARY READING ON TIME-BASED COGNITIVE OFFENSE & DEFENSE

The Art & Science of **METAWAR**

How to Co-Exist with AI-Driven
Reality Distortion, Disinformation,
& Addiction in the Metaverse



Winn Schwartau
Art by K. Melton



Defending & Strengthening the
mental immune system is a
national security mandate.

We have our work cut out for us.

Winn Schwartzau, FRSA

Director, Special Projects

Cognitive Security Institute

Info@CognitiveSecurityInstitute.Org

The Art & Science of **METAWAR**

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Winn Schwartzau

Art by K. Melton

SHALL WE PLAY A GAME?

Gamification works because it provides immediate feedback, visible progress, emotional engagement, and habit-forming rewards.

1961:

William McGuire, an American Social Psychologist, developed the theory of Attitude Inoculation.

He postulated that by introducing weaker persuasive arguments, a person could counter larger, more persuasive arguments in the future.

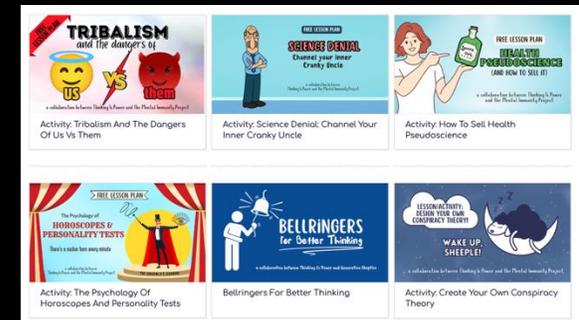
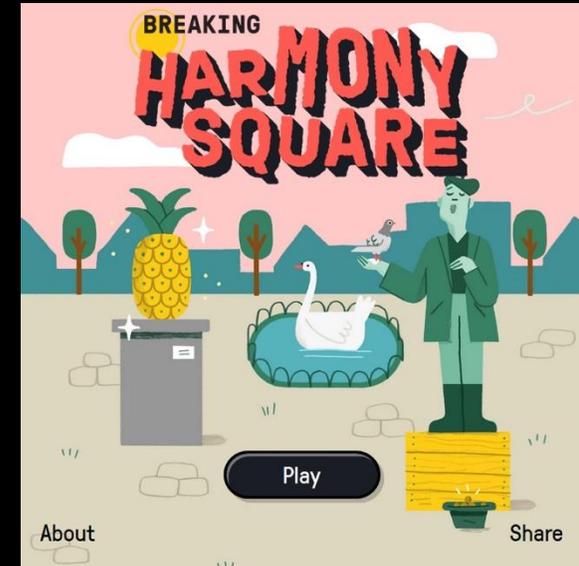
2018:

Psychologists Jon Roozenbeek and Professor Sander van der Linden led a team at the Department of Psychology, University of Cambridge, UK, that asked:

“What would our online inoculation task look like? Our answer was an online game we created called Bad News, in which people pretend to be a fake news creator.”

GAMING WORKS

- *Motivation & Engagement*
- *Safe Failure*
- *Reinforcement*
- *Narratives*
- *Critical Thinking*
- *Adaptive Difficulty*
- *Collaboration*
- *Learn to Lie, Cheat, & Deceive*
- *Fallacy bingo*
- *Bias Quests.*
- *“Beat the Algorithm”*
- *AI or Not?*
- *Deep Fakeny*
- *Telephone Game*
- *Cognitive Phishing*
- *Escape rooms*
- *Red vs Blue Roleplay*
- *BS Offense & Defense*



Gaming is Necessary in Cognitive Security Awareness Programs

Thank You!

