

Biomedical Sciences Orientation

Integrity – Service – Excellence



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Decision Making

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SAFMLS 07



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Decision Making

“If an important decision is to be made [the Persians] discuss the question when they are drunk and the following day the master of the house submits their decision for reconsideration when they are sober. If they still approve it, it is adopted; if not, it is abandoned. Conversely, any decision they make when they are sober is reconsidered afterwards when they are drunk.”

Herodotus, 450 B.C. “*The Histories*”



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Decision Making

“The capacity of the human mind for formulating and solving complex problems is very small compared with the size of problems whose solution is required for objectively rational behavior in the real world.”

Herbert Simon, 1978 Nobel Prize in Economics



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Decision Making

- Decisions are made based on available data at the time
- If the facts change...you get to make a new decision
- Why is decision making important?
- Someone is going to make a decision
 - You want it to be you because...
- If you give someone else the opportunity to decide
 - You relinquish power
 - You assume risk
 - You live by their decision



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Decision Making

- Two core principals
 - We all have the power to decide what we do and say
 - We are all responsible for our decision's consequences
- Goal is to make effective, **defendable, value added** decisions
- Decision making improves with practice
- You need to practice...because...
- Big mistakes made as a young/junior leader are easier to fix and mitigate than mistakes made as a senior leader



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Decision Making—P2

- Powell
 - $P=40$ to 70 where p is the probability of success and 70 is the percentage of information required
 - Makes a decision when $P = 40$ or higher and he has 70% of the information required to make the decision
- Patton
 - “A good plan executed violently and swiftly today is better than a perfect plan next week.



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Decision Making

- Good decisions require:
 - Broad and faceted perspectives
- Must have an “OPFOR”
- Diversity, practice, exposure and a broad experience base are equipping mechanisms
- Great leaders assimilate and synthesize
- Broader perspectives enable a leader to accept more **ambiguity** and process more inputs
- Both result in a better decision



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Decision Making

- Without broad perspectives **bias** can enter into decision making processes resulting in bad decisions that end careers and destroy organizations
- Must be able to guard against traps that bias can set
- Bad decisions can come from two places
 - Decision making processes
 - Decision makers



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Decision Making Process

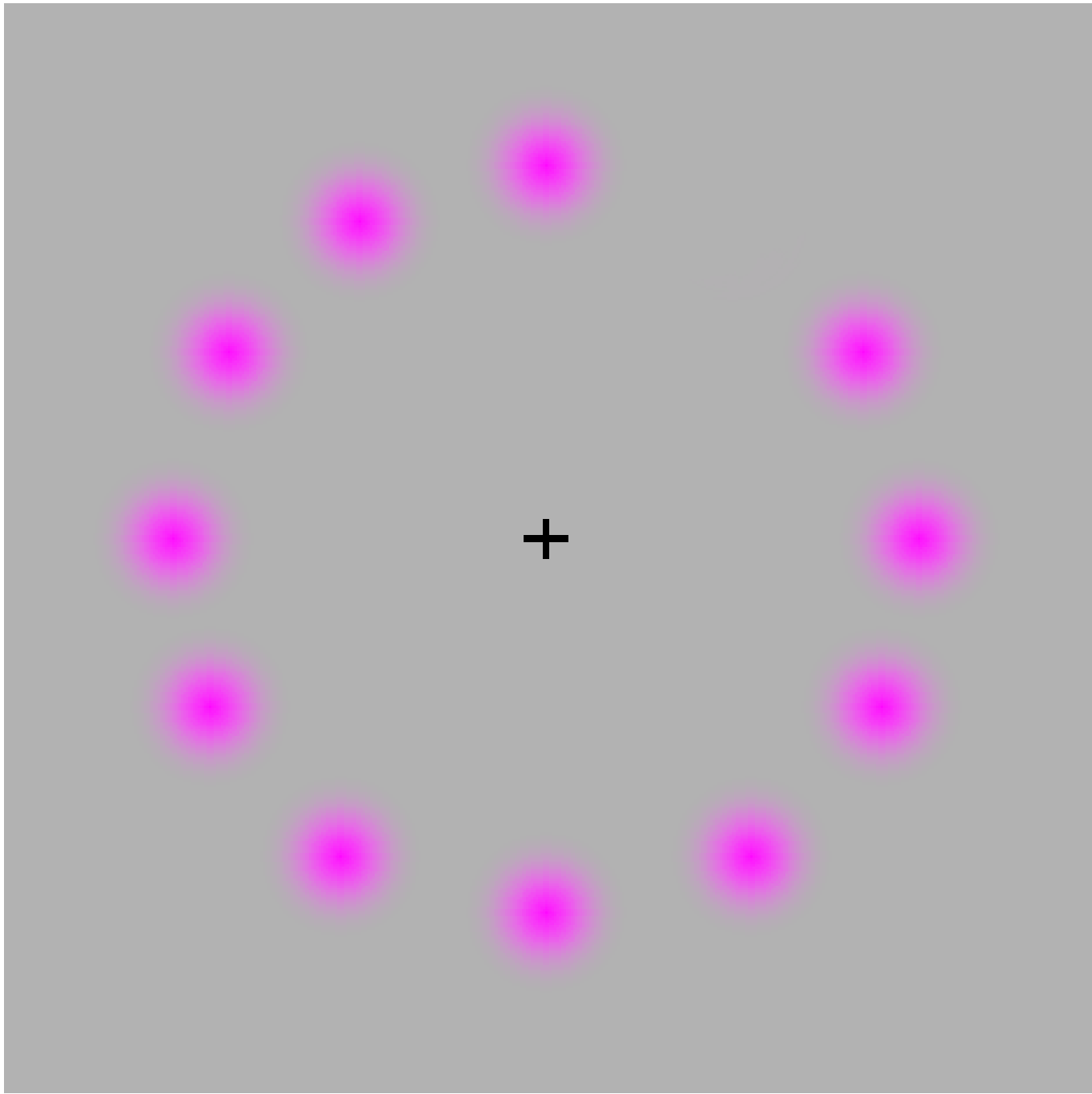
- Rational Decision-Making Model
 - Steps:
 - Identify problem, initiative, new idea
 - Identify options
 - Identify evaluation criteria
 - Evaluate options in light of criteria
 - Select option that maximizes criteria
 - Problems:
 - Probabilities and all alternatives are rarely known
 - Values (preferences) may be unclear or in conflict
 - Perceived rationality may become a “rationalization”



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Decision Makers

- Benchmark study, HBR 1998 reprinted in HBR 2006; Hammond, Kenney, Raiffa, *Hidden Traps in Decision Making*
- Human brain can sabotage decisions
 - Alternatives not clearly defined
 - Right information not gathered
 - Costs/benefits not properly weighed
- Unconscious routines cope with complex situations
 - Human/Engineering fuzzy logic (cruise control)
- Routines are called heuristics and serve us well in many daily situations to decipher complex events







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Decision Making

- Fight or Flight responses
- Adaptive unconscious
 - Powerful
 - Automatic
 - Permits you to size up a person, situation, event, condition almost instantly even when you are not aware you are sizing anything up



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Decision Making

- First impressions
 - AABB Symposium
- Teacher's Lab
 - Psychologist Professor Ambady study
 - Ten second video clips with no sound
 - Five second video clips with no sound
 - Two second video clips with no sound
 - Students who had the same teach for a whole semester



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Decision Making

- 50 cards
- 80 cards
- 10 cards



Taken from a University of Iowa Study



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Decision Making

- Our world trusts conscious decision making
 - Haste makes waste
 - Don't judge a book by its cover
 - Look before you leap
 - There are always two sides to a story
 - Stop and think
 - Guidance to new commanders
- Are we always better off if we can deliberately stop and think about decisions before we make them?
- “Blink of an eye” decisions can be just as effective and value added as conscious, deliberate decisions



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Heuristics

- But...heuristics can also be wrong...they can be fallible
- Mental routines can skew decision-making data leading to: sensory misperceptions, biases, irrational anomalies—all resulting in bad decisions
- Over time heuristics, based on experience, are hardwired into our brains making it very difficult to realize when they come into play
- Awareness and recognized vulnerability are the best methods to combat bias in decision making



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Estimating and Forecasting

- Uncertainty traps
- We make estimates all the time about things we know
- Minds are finely calibrated with repetitive, quick feedback
 - Golf, blood donor center, wood working
- Three common conditions can distort or cloud the ability to accurately assess probability
 - Overconfidence trap
 - Prudence trap
 - Recallability trap



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Overconfidence Trap

- We tend to be overconfident about our estimation or forecasting accuracy—even when dealing with uncertain situations
- Top and bottom 1% range of Wall St estimate
- 20-30% inaccuracy rate among experts
- Must not be overconfident about setting ranges for future results



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Prudence Trap

- Prudence or overcautiousness
- Forecasts adjusted “Just to be on the safe side”
- Automotive development cycle
 - Each functional department over estimated demand, sales, incentives—just to be on the safe side
 - Executive team took values as presented and over produced autos—six months to liquidate at huge consumer discounts
- Arms race and weapons development
 - Worst case scenario
 - Military is one of the biggest offenders
 - Intelligence briefings: Worst case/Most likely



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Recallability Trap

- We tend to give more weight to things that we encounter more frequently—we can recall them
- In our mind, what is easily recalled must therefore be more likely
- A lifetime of experience also tells us that we recall more frequent events more easily than infrequent events
- Lists
 - Same number of men and women on the list
 - One list had more famous men than women
 - One list had more famous women than men
 - Audiences guess accordingly
- Recent or repeated events can cause you to over-estimate frequency or prevalence



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Recallability Trap

- Which is a more likely cause of death in the United States?
 - Falling airplane parts or Shark attack?
 - Death from falling airplane parts 30x more frequent
 - Diabetes or Homicide?
 - Diabetes 2x more common cause of death
 - Tornados/Lightening
 - Lightening
 - Car accidents or stomach cancer?
 - Stomach cancer 2x more likely
 - Suicide/Homicide
 - Suicide more common



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Decision Traps

- Overconfidence
 - Consider the extremes in any situation to avoid being anchored by initial estimates or past trends
 - Try to imagine events that could fall outside the extremes to measure the upside or downside of a decision
- Prudence
 - State estimates honestly...as estimates
 - Test estimates over a reasonable range to assess impact
- Recallability
 - Examine all assumptions and make sure they are not skewed by your memory



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- Ancient statues in Greece
- The museum in 1983
- The science: marble, calcite
- The legal
- The skeptics
- The trip to Athens
- The dilemma
- The investigation
- The conclusion

Ancient Greece





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Trap One

- I will give you a series of three numbers which conform to a simple rule
 - Rule relates to their relationship not their magnitude
- You are to discover the rule
 - Write down as many sets of three numbers you think you will need to discover the rule
 - After each set of numbers I will tell you if it conforms to the rule
 - When you have enough information, guess the rule
- The 3 numbers:
 - 2, 4, 6



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Confirming Evidence

- You find yourself in a situation you've never been in before or you are facing a situation you've never faced before
- What do you do?
- Call someone who has been through that situation and ask advice
- Be careful. If they went through a similar situation, what kind of advice do you think you will get?
 - Did the results they get work well enough to adopt?
 - This conversation cannot be the clincher!



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Confirming Evidence

- Seeking evidence that only confirms your instincts or your current/proposed course of action is called falling into the confirming evidence trap
- What advice did you expect your colleague to give other than evidence backing their original decision?
- Two forces are at work here
 - There is a tendency to subconsciously decide what we want even before we know why
 - We are drawn to things that agree with us or we like more than we are to things that turn us off or we dislike



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Confirming Evidence

- What to do about confirming evidence
 - Original inclination may be correct but you must put your decisions to the test--OPFOR
 - Discover the strongest reason to do something else
 - Then discover the second and the third
 - Don't ask leading questions when seeking advice and avoid surrounding yourself with "Yes" people



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The Questions

- Group A
 - Is the population of South Africa more than 23 million?
 - What is the actual population of South Africa?



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The Questions

- Group B
 - Is the population of South Africa more than 98 million?
 - What is the actual population of South Africa?
- Remember South Africa is an English speaking country, has a robust diamond and gold trade and a population in the one city of Johannesburg alone of over 8 million people



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The Questions

The population of South Africa was 44 million in the official 2001 census and projected to be around 47.4 million in the 2006 unofficial census



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Trap Two

- When considering a decision, the mind gives disproportionate weight to the first information (often incomplete data) it receives
- Subsequent thoughts are anchored by the previous data
 - Budget estimates
 - Buying a car—sticker price
 - Past events or trends
 - Sales forecasts, New contracts
 - Real estate
- Usually followed by self-justifying behavior



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Anchoring

- What to do about anchoring
 - View problems with very broad perspectives using alternative starting points for discussion
 - Be open-minded. Expand your frame of reference to push your mind in new directions
 - Avoid anchoring your subordinates or your superiors with your initial thoughts and opinions
 - Go to the negotiating table with a clear idea of what an acceptable solution could be. Stick to that in spite of the initial data sets that are presented



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Trap Three

- Questions are amazing and dangerous things
- Insurance in New Jersey and Pennsylvania
 - By accepting a limited right to sue, drivers could lower their premiums for an annual savings of \$200M
 - New Jersey: limited right to sue unless otherwise specified
 - Pennsylvania: full right to sue unless otherwise specified
- Migration to status quo
- New Jersey: 80% chose limited right to sue
- Pennsylvania: 25% chose limited right to sue
- **Framing** the question made all the difference



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Framing Decisions

- You are a marine property insurance adjustor charged with minimizing the loss of cargo on three insured barges that sank yesterday off the Alaskan coast
- Each barge hold \$200,000 worth of cargo
- All cargo will be lost if not recovered in 72 hrs
- Owner of a local marine salvage company gives you two options, both of which cost exactly the same

Based on classic experiment by Daniel Kahneman and Amos Tversky

Published in Harvard Business Review



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Framing Decisions

- Plan A: This plan will save the cargo of one of the three barges worth \$200,000
- Plan B: This plan has a one-third probability of saving the cargo on all three barges, worth \$600,000 but has a two-thirds probability of saving nothing



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Framing Decisions

- Framing bias can take many forms and is closely related to other psychological traps
 - Status quo
 - Anchoring
 - Sunk Costs
- Two are much more frequent than others
- Framing as gains versus losses
- Framing with different reference points



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- 71% chose Plan A, the less risky plan



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Framing Decisions

- Plan C: This plan will result in the loss of two of the three cargoes worth \$400,000
- Plan D: This plan has a two-thirds probability of resulting in the loss of all three cargoes and the entire \$600,000 but has a one-third probability of losing no cargo
- 80% chose plan D



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Framing Decisions

- 71% chose Plan A, the less risky plan
- 80% chose plan D
- Plan A and Plan C were equivalent
- Plan B and Plan D were equivalent
- People are generally very risk averse with sums of \$600,000 when posed as gains but are risk seeking when posed in terms of avoiding losses
- People tend to accept the proposed frame rather than restate a situation in their own terms



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Framing Decisions

- Would you accept a fifty-fifty chance of either losing \$300 or winning \$500?
- Would you prefer to keep your checking account balance of \$2,000 or accept a fifty-fifty chance of having either \$1,700 or \$2,500
- Framing against reference points
 - First case reference point is zero
 - Second case \$2,000 reference point for perspective



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Framing Decisions

- How do you guard against framing bias?
 - Reframe the problem in various ways
 - Don't automatically accept the presented frame
 - State problem in redundant way: “Would you accept a 50/50 chance of either losing \$300 resulting in a bank balance of \$1,700 or winning \$500 resulting in a balance of \$2,500?”
 - Challenge your subordinates and your superiors with a single problem framed in a different way to remove bias



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Trap Four

- Making new choices to justify and affirm old choices is falling into the “sunk cost trap”
- Throwing good money after bad (stock market)
- Improving employees we should never have hired in the first place
- Banks making additional loans to cover bad decisions
- Past costs are largely irrelevant—they may get you fired but they are irrelevant to current decisions
- Why do we throw good “resources” after bad?
 - It means admitting a mistake



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Sunk Cost Trap

- Must be able to cut losses to move forward
- What to do about sunk costs?
- See uninvolved colleagues to offer advice
- Embrace a wounded self-esteem for a bad previous decision—good decisions can still have bad outcomes
- Reassign personnel when they become too close to see when to cut losses
- Avoid a failure-fearing culture where folks are inclined to keep the status quo because to change course would be admitting defeat/mistakes



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- LGEN (ret) Paul Van Riper
- Vietnam Mike Company Commander with I MEF
- Fast forward to 2000...then 2.5 years/\$250M later
- Millennium Challenge; JFCOM joint exercise
- 13,500 military members in 9 simultaneous live fire or test sites
- Stated purpose—JCS to test a new series of radical ideas about warfare and how to engage a rogue enemy with strong ethnic and religious support

Trap Five





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Status Quo

- Stage was set with Gen Kernan and Paul Van Riper
- Day 1
 - Show of force as a FDO and an ultimatum
 - ONA and CROP were fully functional—confidence
 - Preemptive doctrine—cut land/tower communications
- Day 2
 - Small boat fleet
 - 60 minute cruise missile attack
 - 16 USN and USMC ships lost; 20K forces dead
- Blue forces were using the status quo
- Red forces had the flash of insight advantage



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Status Quo

- In the military, status quo is a logic based condition
 - Strive to reduce uncertainty
- Sometimes we need an insight solution
- Decision makers have strong status quo biases
- New inventions tend to look like their predecessors
 - New automobiles looked like carriages
 - Internet newspapers looked like printed copy
- Financial examples are replete
 - Inherited stock
 - Credit card interest rates



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Status Quo

- Status quo is powerful
- Our society rewards the status quo
 - Sins of commission are more harshly punished than sins of omission (doing nothing)
 - Proposing more than one choice pushes decision makers to the status quo
 - My guidance/direction to new commanders propagates
 - Company mergers often “wait for the situation to stabilize” (BRAC)
 - Every day spent with the status quo makes the inertia required to break into something different that much stronger to overcome



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Status Quo

- Day 4
- JFCOM turned back the clock
 - Resurrected the 16 ships
 - Shot down all incoming missiles
 - Assassinated leaders were healed and functioning
 - Shut off Red radar so it doesn't interfere with Blue
 - Move ground forces so Blue can land unimpeded
 - Can't shoot down any Blue aircraft
- Day 4 was scripted in excruciating detail
- If they didn't get what they wanted they would run it again...Blue team won in a rout



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Status Quo

- Great decisions are a blend of rapid cognition and deliberate, logical analysis
- There is a time and place for each
- Deliberate analysis and deliberate decision making is great given the luxury of time...
- Fire
- But...information overload, especially during execution, can stifle everything
- Identifying a pattern, rapid cognition, or a “snap” decision is all done through subconscious editing



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Status Quo

- What to do about the status quo
- Recognize it and choose it if it still makes sense
- Keep criteria and objectives are the forefront—are they served by the status quo?
- Would the status quo be the best alternative even if it were not the status quo?
- Avoid exaggerating the effort required to change
- Force yourself to choose among great alternatives
- Let the status quo stand on its own merit



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Status Quo

- Ultimately quit the game in protest to avoid being associated with the “validated results”
- "You don't come to a conclusion beforehand and then work your way to that conclusion. You see how the thing plays out." He added, somewhat ominously in retrospect, "My main concern was we'd see future forces trying to use these things when they've never been properly grounded in any sort of an experiment."



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Decisions Final Thoughts

- Your mind is working all the time taking in cues as input and producing decisions as output
- Heuristics/routines can bias or skew decision making even when you don't know your using them
- Traps can occur in isolation or can combine
 - Strong first impression may anchor an event and then we start seeking confirming evidence to support an overconfident position
- Awareness is the best defense
- Know you, your subordinates/superiors are susceptible and be the decision-making watchdog of the unit

Expeditionary Medics



**America's
Air Force**

